THE INTRODUCTION INTO NEW PHYSICS

THE FIRST PART

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HOW I AM WRITING THIS BOOK

I am writing this book with a wish that its content is understandable to as many readers as possible. That is why I will try to be as sipmle as possible in expressing myself. In order not to discourage a single possible reader (be it for his/her youth or old age, or for the type or level of their education), I promise not to use the mathematical apparatus (formulae and other), not even the simplest one, and that I will, whereever it is neccessary or convenient, insert pictures or drawings.

WHY I AM WRITING LIKE THIS

There is a wellknown anegdote from a life of a scientist: a young scientist is begging his older colleague to help him understand a new theory, and the response he gets is that he will never understand the essence of the new theory but he will simply only get used to it during the course of time.

To put it simply, I would like that almost all people could understand what I am saying, not only people interested in science and technology. Therefore, I am instantly rejecting the forementioned attitude of getting used to a new theory in science as unacceptable.

The main aim of having the intellect is that, as human beings, we understand the world around us. The more and the

better we understand the world around us, the more we will advance in fulfilling our human destiny. Getting used to changes is a characteristic of lower life forms.

I also reject, as an unacceptable, the attitude, which has unfortunately taken on, that only a few individuals can understand new ideas or theories in science, and that all the others should blindly believe or get used to them.

My deepest conviction is that the majority can understand new accomplishments in science if they are properly explained.

After all, creating rumours about certain things is always a consequence of two facts. The first one is that the peson is dealing with a certain matter does not essentially understand the whole matter, and the second is that for some reason he or she does not want to tell the whole truth about what he or she knows.

WHAT I AM WRITING ABOUT

I am writing about my understanding of the world that is surrounding us, whether we see it with our own eyes or whether we perceive it using different helping aids that we have invented so far.

I did not intend to write a book about it, not even a theory, because it all started from one idea. As I was developing, that is checking my idea, I slowly started realising that it can not just

blend in with the existing theories in physics thus supplementing or improving them. In time I realised that I would have to make a whole new theory out of my idea. And when I started developing and checking my new theory in different areas of physics, I came to a surprising conclusion even for myself, and that is that I would have to start creating a new physics.

To put it simply, when repairing of an old car becomes meaningless because of the finances as well as the time needed, and there is complete uncertainty of whether it is even fixable, a man logically concludes that it is time to buy a new vehicle

The same is with, let's say, Nicolaus Copernicus, who could not reconcile his discoveries about the movement of celestial bodies with the existing astronomy, so he had to create a new astronomy which claimed that the Earth revolves around the Sun, as well as all other planets.

In the Middle Ages the flow of ideas was not only slow, but also prevented by the Church, so it took 150 years for his „New astromomy" to become accepted.

It is going to be very interesting to see how it is going to be with the new physics today in the 21st century when electronic media and the internet have made people very well informed and closely connected.

NATURE IN CONTINUOUS MOVEMENT

Human beings are different from other beings with whom they share this planet for they have developed intellect or sense. That heritage of the evolution of the living beings enables people to understand the world around them that is the laws and processes by which nature functions.

All living creatures notice with their senses that nature is constantly changing, that is, it is constantly moving. One does not need intellect to notice the change of day and night, movment of the Sun and the Moon in the sky, the stars in the night sky, movement of the clouds and different kinds of precipitation they bring, movement of the air, that is, the wind and its temperature, the flow of water in brooks and rivers, and waves in lakes, seas and oceans, and many other changes in nature. All living creatures have the ability to adjust to the laws of nature and thus play the game of life on this planet. Understanding of the laws by which nature functions is not necessary for the living creatures to survive on the planet – all of them have a certain form of intelligence that enables them to survive in nature.

However, to a human being the survival itself is not enough; a human being has the inner urge to understand why nature is moving the way it is moving. Of course, complete

understanding of the laws that move nature is a difficult task and requires time, a lot of time.

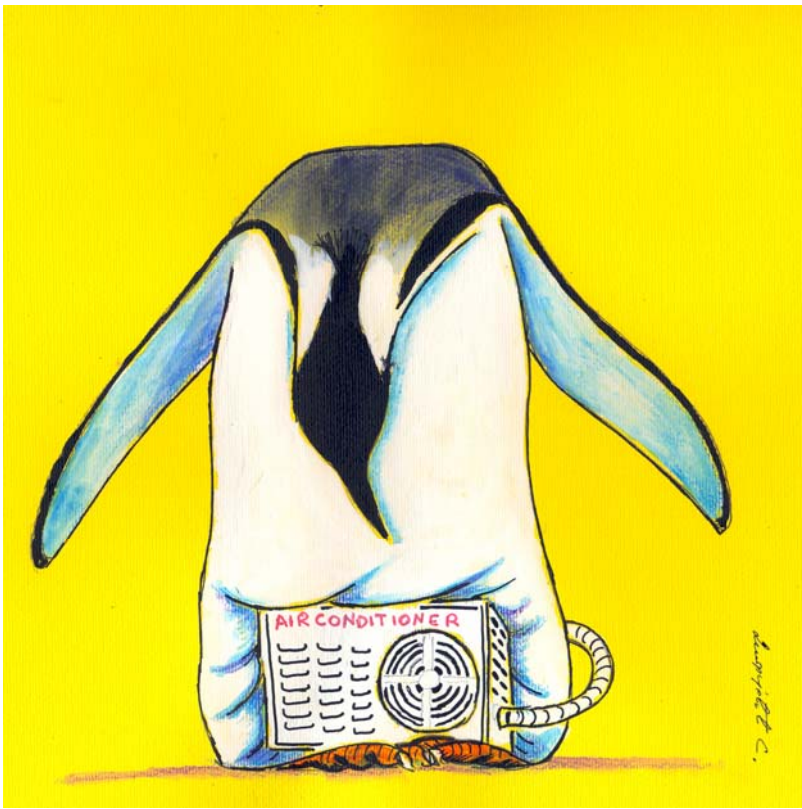
That is why people realised that they have to spread the knowledge to the young generations in order not to discontinue the process of understanding the laws of nature, that is, so that the new generations could continue where their ancestors had stopped. That process started a long time ago and continues today. Even though that process has lasted for a long time, it has not been a peaceful and quiet one. There are numerous examples of clashes of different understandings, but of constant appearing of new understandings as well. History of science is a continuous series of refuting old knowledge with new, better and universal. That is how it is today, that is how it is going to be in the future. I am not going to write about that because it has nicely been described in many books.

CAUSES OF NATURAL MOVEMENT

Since in continuous movement thgrough nature, a man has quickly understood that in order to move one needs energy. The source of energy for our movement, as well as for the movement of all other living creatures, is food. OK, but what kind of energy sets in motion everything else in nature?

Since nature is in continuous movement, it logically leads to the question – 'Where does all that enormous energy come from?'. Noticing the clear difference between day and night, a man quickly realised it must be the Sun. The Sun with its rays unevenly both illuminates and heats the surface of our planet and exactly those differences in temperature lead to the movement of the air and water that enable life on the Earth. The energy of food that is used by almost all living creatures also has its roots in the Sun's energy. Therefore, the Sun's energy is the source of movement, that is life. We already know that energy can be neither created nor destroyed. We have realised that energy is constantly transforming from one form into another, that it can be in passive or active state (potential or kinaesthetics). Today we speak of mechanical, electric, magnetic, solar, chemical and nuclear energy, energy of radiation and other forms of energy. Still, the closest and the most clear to us is the thermal energy because we all feel the uncomfortable effects of both high and very low temperatures,

as well as the pleasantness of the moderate temperature. In order to quantitatively measure the level of warmth, men introduced the notion of temperature as the warmth measure of a body. We have defined temperature scales and their classification into degrees/gradients and started measuring temerature whereever we wanted using different devices whose mutual name is thermometres.


AIR CONDITIONER

TEMPERATURE RELATIVITY

The concept of relativity is used in physics for all those values and notions that are for any reason variable, that is, do not maintain the same value. Popularity of the term 'relativity' has abruptly risen and stayed on the high level since the appearance of Einsteins theories of relativity up to now. We shall leave Einstein's theories of relativity for later, because in them relativity is in connection with speed. Here, I would like to talk about the reletivity of values and notions in terms of temperature. Let's see which things and how they change in nature with the change of temperature.

Physical body – one of the basic notions in physics – can be: solid, liquid and gas, because those are the three essential states of agregation we encounter in our everyday lives. However, when we say a body, firstly we think of something that has a stable shape and certain firmness. That is why, we will start from that point, the solid body, that is, from the body in the solid state of aggregation.

When we observe a solid body and follow what happens with changing of its temperature, firstly we see that its dimensions change. With the increase of temperature, dimenisons enlarge, and with the decrease of temperature dimensions reduce. Briefly, „all bodies expand in heat and shrink in cold", thus they change their volume (V). Then we will

notice that the sole hardness of the body is changing. As the temperature of the body is rising, its hardness is decreasing and we can more easily change its external shape. As the temperature is decreasing, its hardness is increasing and any attempt of reshaping is hardly possible or leads to cracking or breakage of the body.

Next, any further increase in the temperature of the body leads to its melting, that is transition from the solid into the liquid state of aggregation. Since now the body has no specific shape, we need an open vessel made out of solid material in order to preserve it in the liquid state. The level of hardness is very low which gives us the opportunity of reshaping it by casting it into different molds and cooling them down bringing them back into the solid state of aggregation. That is the essence of metallurgy. If we continue increasing the temperature of the liquid body, we will notice that it is starting to evaporate more and more until it starts boiling until the whole liquid evaporizes rapidly and we will have to keep our body in the gas state of aggregation in a new completely sealed vessel that will have to be considerably larger because this state implies much larger volume then the liquid. The gas state of aggregation implies complete occupation of the vessel's available volume and a certain amount of gas pressure on all vessels' walls. This change of states of aggregation we can most easily overlook in our everyday lives

by observing the game of ice, water and vapour. Liquids and gases can flow, thus we use the term 'fluids' and the inner quality of hardness we denominate 'viscosity'. With the increase of temperature, viscosity is decreased, and with the decrease of temperature, viscosity is increased, that is, warmer fluids flow more easily than colder ones. Accordingly, with the increase of a gas' temperature the pressure of its action upon the walls of the vessel increases as well. With the reduction of a gas' temperature what is reduced in the first place is the pressure on the walls of the vessel, and condensation is what happens next, that is, restoring the body into the liquid state of aggregation and then hardening, that is, crystallization when the body is restored into the solid state of aggregation.

When people started identifying the effects of electricity and magnetism, and when they started studying them, they also noticed that electrified bodies exposed to heat reduce their electricity, reducing it until it is completely lost. When an electrified body is being heated, it also reduces its megnetism until its complete loss.

With the beginning of the usage of electric current for their needs, people encountered problems of its conduction through cables as well as problems of protecting themselves using isolators. We have established that conductors have their own resistability and that it causes energy loses during its

transport. It has also been ascertained that the electric current flow through cables causes their heating, and that causes the increase of resistability, that is the increase of loses. That is why we have to make sure that there is no overheating of the cables for it can lead to ignition of the installations and cause a fire and serious danger. However, cooling down of the cables reduces their resistability. What is especially interesting is that on very low temperatures resistability of the cables is completely gone and there are no loses in the transmission of the electric current. A current circuit that is once established is permanently maintained and that interesting phenomena is called supercondactivity.

As for the isolators, we have discovered that they protect us from the electric current very well when they are cool enough. If they, by any chance, get overheated, the isolators get breached, that is, above certain temperatures they also become cables. There is also a group of materials we call semiconductors, and they are the basis of what we denominate as electronics. Their characteristics are very changeable with the change in the temperature, so we have to take specal care about that.

What we can easily observe is the flammability of different materials. Upon heating to certain temperatures, some materials get inflamed and start burning, and that is why we call that temperature the ignition temperature. In principle,

gases are the most easily inflamable, then liquids, and only then solid bodies. Mankind has been using fire for its own purposes for a long time, so we are all acquainted with the processes of lighting a fire and burning.

We all know that amongst the inflameable materaials tehre are those that incinerate quicker and some slower. Those materials that incinerate the quickest, we call explosives and they are dealt with very carefully. Naturally, we deal carefully with all inflameable materails.

In its essence, burining is a chemical process of oxidation, and a gusty one. That means that the change in temperature changes the chemical properties of a material. In regard to the fact that there is a lot of free oxygen in the atmosphere, oxidation is an omnipresent process, but that process differently takes place in different temperatures. In chemistry it is well known that tempereature not only significantly changes the chemical properties of certain substances, but also leads to their disintegration or their becoming more compound, which results in generation of new substances.

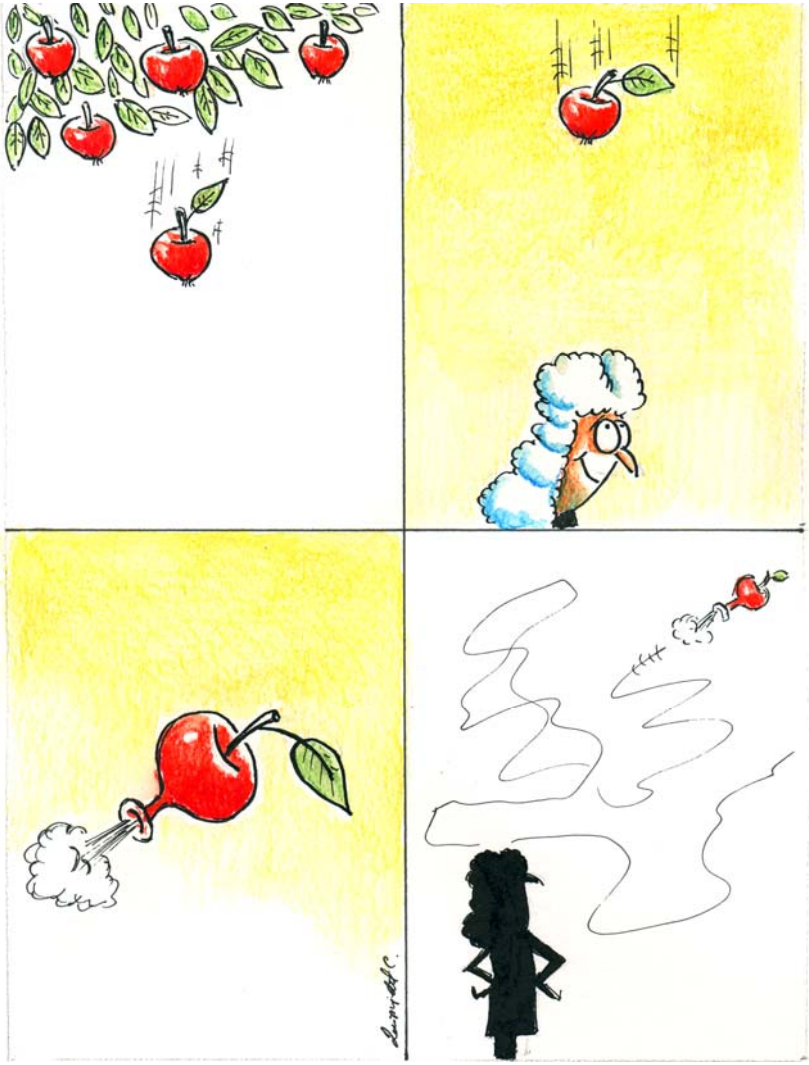
Exactly all the changes caused by lowering or raising of the temperature critically influence the living world and the posibility of its survival and development. Our own life s defined by the temperature of our bodies and if there is severe raising or lowering, we die.

But not only living creatures lose their existance with the raise in temperature. If we continue heating any known materail on and on, it will after the gas state of aggregation change into the state we call plasma. With a matter in the state of plasma, there are no more atoms, because it has come to their disintegration, that is, partial or complete ionisation. With the high-temperature plasma all electrons are detached from the nucleus. Chemical elements lose their existance upon the emergence of plasma.

I will also speak here about emanation of a body in different temperatures. I think we all know that all bodies no matter of their temperature emit electro-magnatic enegry into their surroundings. Temperature of the body is the one that determines the wavelenght of the dominant electromagnetic emanation that a body emits. The higher the temperature of a body is, the more dominant the emission of the short wavelenght and the larger the enegry is. Inversely, the lower the body temperature is, the more dominant the emission of the high wavelenght and the lower the energy is.

People are naurally able to differentiate one part of the spectrum with their eyes and that part is called the visible part of the spectrum, or the visible light. Through our skin, we can also sense a part of the spectrum that we call heat or IR radiation, and a part of the spectrum that is called UV radiation.

By simply touching we can determine if a body is warmer than another one. If bodies are too warm, and we cannot touch them we can simply just by bringing nearer our hands to a safe distance determine which body is warmer. Heating of metal objects where the process of making red-hot can be observed with the naked eye is particularly interesting. With the further heating of such bodies they begin emitting red light, which is called red incandescence, and afterwards there is emission of white light or the white incandescence. Burning is a nice example as well, that is, the flame. If we observe the flame, let's say of a candle, we can see that there are certain areas that burn in different lights. Where the temperature is highest, the flame is the brightest, and where the temperature is lower, at the peripheral area, the flame is a bit darker, that is, more red. While burning different substances create flames of different colors, that is, temperatures, and they can be found in all the colors of a rainbow.



THE IDEA ABOUT ANTI-GRAVITATION

While I lived on the slope of the Cegar hill, which is at the outskirts of the town of Nis, my wife and I regularly hiked to the top of that hill where there is a monument to the unique bravery of the Serbian rebels from the First Serbian uprising against the Turks. Not willing to surrender to the Turks, the leader of the Serbs, Stevan Sindjelic shot a barrel of gun powder thus blowing up both the Serbs and the Turks. Using the heads of the Serbian rebels the Turks built a skull Tower at the outskirts of Nis to intimidate the Serbian people and the rebels. Serbs are a particular nation and they do not allow themselves to be intimidated, so after the failure of the Fist Serbian uprising, they sparked off the Second uprising and managed to free themselves from the five centuries of slaving under the Turks.

In the close vicinity of the monument there is a football field of the village's football club, and the whole hill is covered in vineyards and orchards. We were regularly running around the football field.

On an August day in 1997 we were a bit late, so as we were running, dusk fell. On a field behind the goal that stands closer to the monument, there was a large pile of dried vine stick bunches. The villagers usually use those as a fuel for distilling rakija (Serbian brandy) or as fuel for heating, especially for lighting fire as they burn easily and rapturously. However, that pile was not prepared for transport but for burning at that spot.

And, as we were about to finish running, and it was a bit dark, a villager lit the huge pile, just as we were in the vicinity and we watched the whole scene. Proceeding with our running, we turned our backs to the fire. When we ran around the oposite goal we faced the fire again and saw a fascinating sight. Fire had already overtaken the whole pile and was reaching its maximum. The flame was 10 meters high and it was illuminating the whole top of the hill. I had never seen a larger fire in my entire life. Totally fascinated by the sight, we stood in front of the fire and admired the magnificient sight.

I was delighted and happy as a child and there were no thoughts in my head at that moment – there was just a picture of the huge fire whose flames were rising so forcibly and quickly upward, at the same time narrowing towards the middle that was reaching the highest point. From the top of the flame into the darkness at a great speed sparks were flying out. That enormous force of heated air and particles was clearly revealing its tremdndous speed of going up.

Suddenly there was a flash in my head and a thouhgt: „that's anit-gravitation!", followed by a feeling of a current sliding up my spine, from the bottom to the top of my head. My whole skin was in goose bumps and all my hair bristled. That feeling was already well known to me, because it was a companion to several ideas I had had before, except that this one had the largest intensity I had ever felt. My look at the fire was no longer the same. Now, I was watching anti-gravitation in action. I did not, not for a single moment, suspect of the veracity of the thought

that had occured in my head. Similar experiences to this one had already persuaded me in the veracity of ideas acquired in such a manner. Instanteniously questions appeared – what and how is happening in the process of combustion that was already beginning to decrease and soon ended before our eyes. After the appearance of the thought of anti-gravitation in my head, nothing in my life has been the same. That thought completely seized me and soon my wife asked me what was going on with me. It was only then that I told her what had happened that night when we were watching the fire on Cegar.

It is usual that people think that it is enough just for an idea to appear in your mind and that the problem is solved; anyways, I also used to think like that. However, the truth is reversed: when an idea appears in your mind, it means that a huge work has just begun and that there is a long and arduous work about the complete understanding of that idea, and then its verification everywhere and in every occasion, and in the end its implementation into the existing science.

Even though I was not fully aware of that, I immediately embarked myself into the process of understanding of the very idea. Previously I thought that a person posesses the idea that he or she works on, but in time, I got assured into something completely different – the idea possesses a person who works on it. As if the ideas choose and take people throught whose work they will materialise themselves and become generally known in a way they want to.

MASS TEMPERATURE RELATIVITY

I started by analysing the fire. The flame streches from the bottom of the burning material's pile (because that is how a fire starts) and the higher the material pile, the higher the final height of the flame is. Above the top of the flame there is a part that is invisible, that is, transparent, and it is much shorter than the flame. Above the transparent part begins the zone of the visible smoke. In the beginning the smoke is lighter, and with the increase of the hight it grows darker and darker. With the increase in the height, the smoke goes upward slower and slower and at a certain point it reaches its final height. Since it cannot go up after the final height, and because of the coming up of the now smoke from below, there is a radial spreading of the smoke cloud on that height and then it looks like a thick pancake. When the process of burning finishes, the formed smoke cloud hangs in the air on that maximal height, and then slowly starts loosing height and finally it falls to the ground, farther or closer of the place of burning, depending on the air flow.

Therefore, that visible effect of burning comprises ascendancy of the hot gas up to the final height and its decline to earth when it cools down. But let's analyze individual gas molecules that result upon combustion ($CO_2 + H_2O$). Hot gas molecules emit electromagnetic radiation in IR (infrared) and the visible part of the spectrum and we see those emissions as

flame, lighter or darker. In that stadium they are rapidly going upward. In the transparent zone the molecules have chilled a bit, enough not to emit visible light, but only IR radiation, and continue going upward rapidly. The beginning of smoke is comprised of molecules that are already cooled down so that along with emitting IR radiation they start absorbing Sun's light and continue moving upward in a lesser speed. Upon reaching the final, that is, the maximal height, molecules are in the state when the amount of the emitted energy is the same as the amount of the absorbed energy and they hang in the air for some time without vertical movement. As the process of cooling down of the molecules is continually in action, there comes a moment when they start falling slowly – obviously when their emitted energy is lessening. As the process of cooling down continues, falling of the gas molecules speeds up and ends with their final fall to the ground, when the molecule's temperature assimilates with the outside temperature.

The logic of my thinking was like this. If the molecules of the hot gas that are characterised by high temperatures fly rapidly upward, and if that is anti-gravitation in action, that has to mean that molecules in high temepratures have negative mass. But, as they cool down while moving away from earth they start going upward slowly, that means that the negativity of their mass is changing in a way that it is being reduced. The change in the distance from the mass centers of the Earth as a planet and the molecules of the gas cannot cause such

changes in their mutal interaction, because the whole process ends on a negligibly low height in regard to the Earth's radius. When the molecules of gas reach the final height and start hanging in the air, that means that they lost the negative character of their mass, that is, reached the state massless state and at that point there is no interaction with the Earth, not anti-gravitational, nor gravitational. But their cooling down is happening continuously and that is why they start having the mass of the attracting character and they immediately start falling towards the earth because of the establishing of the gravitational interaction with the Earth. The more they cool down, the faster they are falling toward the earth; which tells us that their attractive mass is changing quatitatively (by growing more and more) with the lowering of the temperature. The molecules have the maximal attractive mass when their temperature is equalized with the temperature of the surrounding air, as they had the maximal negative mass when thier temperature was equalized with the tempareture of the flame. The higher the combustion (fire) tempetature is, the higher the maximal height of the gases will be before returning to earth.

Does it make sense talking about the temperatural relativity of mass?

Well... yes! If temperature influences that many features of a matter, as I had already said, it makes sense talking about

it influencing the feature we name mass. It does, therefore, make sense talking about temperatural relativity of mass.

Temperatural relativity of mass is such that with warming of a body the attractiveness of its mass decreases upon quantity, until it is lost completely, let's say reaches zero. That is a state when a feature we name mass is lost and the body is found in the massless state. That is also a state when the qualitative change of the body mass is performed. With further warming mass of the body becomes qualitatively negative, and with the rise in the body temperature, quantitatively, the negativity of the mass rises. That means, that the feature we call mass changes with the change of temperature not only quantitatively but qualitatively as well.

Does it make physical sense talking about negative mass and anti-gravitation from the aspect of forces in nature?

Let us remind ourselves about what physics says about forces in nature. Until now, physics has defined four types of forces. Those are: strong, weak, electromagnetic and gravitational force. Strong or nuclear forces are forces that work on the level of the atom nucleus between the protons and neutrons and they are responsible for the stability of a matter. By their intensity those are the strongest of all forces known to us, and by range the smallest. Weak forces are those functioning on the level of an atom and they are responsible for the radioactive breakdown of a matter. By their intensity they are weaker from the nuclear or strong (thus the name), but they

are still very strong, and their range is larger than with the strong forces. Electromagnetic forces are easier for us to grasp because in our everyday lives we encounter electricity and magnetism. Electromagnetic force is weaker than the weak force, however, its third place is not to be underestimated. Range of the electromagnetic forces is much larger from both the strong and the weak forces and it is obvious. The closest by experience to us is the gravitational force, because it practically influences our lives and movement. That is the weakest force by intensity of all forces, but the most dominant force in the whole universe because its range is very large. Apart from being different quantitatively, these four forces are qualitatively different as well. How? Well, in such a way that strong, weak and electromagnetic forces appear as attractive and negative, and the gravitational force appears only as attractive. Is the gravitational force an exception?

Temperatural relativity of the mass is just the thing that introduces harmony amongst all forces by introducing the negative character of the gravitational forces, that is, anti-gravitation. All forces now become attractively-negative, which we have been eagerly expecting and which seems so natural and logical to us.

So... The answer is yes! It does make physical sense talking about negative mass and anti-gravitiation. It is just what is lacking in theory.

OBVIOUS EVIDENCE

When a person works on a new ides, apart from the tremendous enthusiasm that he/she is filled with, ocassionally there are periods when doubt overcomes him/her and when he/she starts asking himself/herself if it is all a delusion or a serious mistake.

So did I ask myself those questions: am I not making a mistake, am I not in delusion?

If the mass temperatural relativity is reality, then beside the fire there has to exist at least some other obvious evidence proving anti-gravitation in action. And thus my observation of the world aroud us began. I suspected all vertical movements, upward or downward, as well as all processes where there is warming or cooling.

We live on the surface of the planet Earth in its air layer which we call atmosphere. We breathe the omnipresent air and feel its temperature or movement, although we cannot see it. So, let's 'see' what and how it is happening with this air that is in continuous movement. I think we are all aware of the fact that we learned as kids in primary school, which states: „warmer air is lighter and it goes upward, and cool air is heavier and it goes downward". That is just what proves what I have said about mass temperatural realativity. But, let's go example by example.

When we observe a closed air system like our room, for example, then it is quite clear the coolest air is next to the floor and the warmest just below the ceiling. For those reasons we put the heating objects, that we use to heat our premisses, as lower as possible so that they would heat the air equally by the volume. If we open the door or a window and rise from the floor upward a lit candle or a lit lighter, we will assure ourselves that cool air enters the room from below and the warm air exits the room from above. That is how our room is getting cooler – from below and then upward, after all, we do feel the cool air on our feet first. The warm air that leaves the room, continues its movement upward, since there is no ceiling to prevent it from the movement. If you do not believe me, heat up your oven and then open the door holding your hand above the stove, do not put your face above the stove for the hot air might burn you.

If we want to cool ourselves in the summer, then we will put the cooling system close to the ceiling, because the cool air will by falling to the floor best cool the air in the whole room by the volume.

If we retry the experiment with the lit candle or a lighter with the fridge or the freezer door left ajar, we will notice that cool air is getting out of the object down and that the warm air is entering up into it. Therefore, we have a completely different

situation when we compare airing up warmed and cooled closed space. Why is that so?

When we heat the air in a closed space, the pressure increases in the upper part where the warm air is, and the pressure decreases in the lower part where the air is cold. Heated molecules of air whose mass has become more or less negative exerts pressure on the upper surface of the closed space and piles up in the upper part, creating increased pressure, too. Because of the decrease in the number of molecules exerting pressure on them, the cool molecules slowly move apart and below where the cool air is occurs the decrease of pressure.

When we cool the air in a closed space, the increase in the pressure arises in the lower part where the air is cooler and the decrease in the pressure in the upper part where the air is warmer. Cooled air molecules, whose mass has become even more attractive, exert pressure on the bottom surface of the closed space and pile up in the lower part making increased pressure. Because of the reduction of the molecules that are suppressing them, warmer molecules slowly move apart and up where the air is warmer, the decrease of the pressure arises.

Let us now observe an open system such as the atmosphere of our planet. Earth's gravitation attracts all air molecules and thus keeps them around itself. We know that

the air pressure on the sea level is one atmosphere, and that with the increase of the height it decreases because hte air is getting rarefied. But not even in that lower level on the Earth's surface the pressure is the same everywhere, and we have areas of increased or decreased air pressure, which brings about horizontal movement of air masses, that is, winds.

Why does it come to those differences in the air pressure?

They arise because of the differences of heating of different parts of the Earth's surface. Earth's surface is about one third land, and about two-thirds water. Land and water surfaces are getting warm in different ways. Even land surfaces get warm differently depending on their texture and appearance. Atmospheric air can not get warm directly from the Sun's emission, but it is heated by the surface above which it is located. Warmer surface heats the air molecules more and they go upwards leaving the decreased air pressure near the ground. Cooler, or cold surface, cools the air molecules and they fall down creating the increased air pressure near the ground. Yachtsmen are real masters in catching the warm air currents that go upward and they use them as elevators for lifting their yacths upward.

When people realised how the air moves, they started making flying objects called balloons. Around the balloon they tied ropes that held the basket for the passengers or cargo

were put, and below the balloon's gap there was a burner that heated the air within the balloon. Air in the balloon is heated by turning on the heater. The air then exerts pressure on the upper surface of the balloon thus lifting it upward. Turning off the heater and cooling down the air or letting out the warm air at the top of the balloon (which is accomplished by opening the top), the pressure of the warm air on the upper balloon's surface decreases and the balloon looses its height and starts falling down. That is how people, without even knowing what it is all about, started using anti-gravitation for flying.

Even better for observation than the air, is steam. We can see steam and follow its movement up or down, here or there. Whether we are cooking in the kitchen or having a hot shower in the bathroom, we can notice the hot steam molecules' movement upward and falling of the cooled steam molecules. The same is happening in the atmosphere where steam can be observed in the shape of clouds. During the day, as the Sun heats, the clouds move across the sky carried by the winds, and when the Sun sets, they get cooler and fall toward the ground and then we say it is foggy. The whole story about climate and weather is based on the mass temperatural relativity of the air and steam molecules. As we have seen with fire, that is, smoke, the same is with the steam – there is a certain maximal height which the steam can reach and which, after all, depends on its starting temperature. Planes fly on

heights that exceed the maximal height of clouds, that is, above the clouds, and that provides us with the oportunity to see the wonderful world of clouds from above. Observe it when you have the oportunity to fly. You will see places that look like springs that rise above the level of the clouds.

Television and movies present us, almost every day, with a number of explosions. They are of different origin, so we will analyze one by one category.

First category of explosions by its nature is provoked by an abrupt turning chemical (atomic and molecule) into heat energy. All the materials that this can be provoked with are called classic explosives. The list of classic explosives today is very long and people are continuously working on its extension.

Historically observed, people started out with gun powder, that is, dynamite, then TNT, etc. The army industry incessantly researches and crates more and more powerful explosives, that are then 'very efficiently' used in continuous wars. The idea is that stronger explosives can bring the world closer to the peace is completely wrong and very dangerous, and historically proven – a failure. Alas, what can we see if we closely observe explosions of classic explosives? At the moment of explosion a big fire ball is generated; its dimensions depend on the type and the amount of the explosive in use. In the next moment the ball starts rising, enlarging and losing the

fire glow by turning into a lighter or darker smoke cloud which is getting deformed because of its movement through the air. If we continue following the process until its end, we will see that the speed of going upward and enlarging is going to decrease and that a moment will come when that smoke cloud will achieve its maximal size and more important its maximal height. After a shorter or a longer hanging in the air the cloud starts falling with the inevitable falling apart because of the action the omnipresent air currents. Features of an explosion directly depend on the amount of the released energy.

The second category of explosives by their nature is caused by an abrupt conversion of the nuclear energy into heat energy by the process of fission and tearing apart the atomic nucleus. These materials are called fission-type nuclear explosives. There are only a few, but only one would be enoough to face us with the possibility of self-extinction. People have come into the possession of these explosives in the past century and developed destructive capacities up to unthinkable proportions. 'Nulcear mushroom' stands above the mankind's head as a guillotine. In the very name – 'nuclear mushroom' lies the description of the process of the fission nuclear explosion. By quality it is identical to the description of the explosion of the classic explosive; the only difference is in quantity. The explosion ball is of much larger dimensions, as

well as the explosion cloud, and the maximal height of its ascention reaches about ten kilometres. Again, features depend on the kind and the amount of the nuclear explosive, that is, the free energy intensity.

The third category of explosives is by its nature caused by abrupt conversion of the nuclear energy into heat energy by the process of fusion, or creating helium atoms by fusing hydrogen atoms. This kind of explosives I have isolated on purpose, because I will, in the further course of my presentation, assure you that it is not fusion here we are talking about, but a whole new process that we have not even marked yet, let alone understood. All the same, this category of explosives represents the most powerful explosions that people can provoke. By their quality they are similar to the previous categories of explosives, and by its quantity the exceed all previous categories, because the emitted energy is by far largest.

With all explosions it is in action apparent that we clearly recognize the mass temperature relativity, solely that with explosions unlike with fire, the whole process is finished in a sinlge moment, which provokes the generation of the explossion ball. The explosion ball is generated because of the strong anti-gravitational influence of the over-heated molecules emerged in the explosion, which are instantaneously, forcefully and briskly getting away from each others. In the next moment that ball of over-heated molecules with negative

mass reverberates from earth and goes upward, until it cools down and stops reverberation with earth, when it actually reaches its maximal height. When it gets even cooler and the mass of its molecules becomes attractive, its falling will begin, until all the products of the explosion fall to the gound, where their motion began.

Now I will consider the process of combustion and explosion in the zero gravity state. In the past century men went into outer space. When it bacame a routine and when people started feeling safe in the cosmos, the party started immediately. Those who were spending a long time in the orbit started celebrating their birthdays in the zero gravity state, and since all that was transmitted by TV, we could see a lit birthday candle burning in the zero gravity space. The flame in the zero gravity state has the shape of a perfect ball. Why is it like that, when we all know that the shape of the flame on the Earth looks like a drop with its tip striving upward no matter how we hold the candle? We, on Earth live under the continuous effects of gravity, and each flame, that is by its nature an anti-gravitational occurance, is striving oposite the center of gravitition. In the zero gravity state, the flame, as an anti-gravitational occurance without a centre of gravity to reverberate from, reverberates only from itself and thus forms a shape of a perfect ball. Explosions taking place in the outer space have the shape of the perfect ball like the flame of the candle. Ex-

plosions of novas and supernovas have the shape of a ball, but we will analyse them in the further presentation.

A nice example for proving the previously said could be an insence stick in the zero gravity state. On earth the insence stick's smoke goes straight up in a straight line, because that is an anti-gravitational occurence. I have not had the chance to see a lit insence stick in the zero gravity state, but I claim that its flame would expand like a perfect ball enlarging its diameter. Let those who can, perform this harmless experiment.

An exceptional example both for its relevance and size, as well as its duration and beauty, represent Aboriginal bonfires. Australian natives, Aboriginees, believing that they had been paid a visit from outer space, have a custom to make a huge fire every year in a certain month and keep it burning throughout the whole month, in order to say 'hello' to their visitors and show the that they have not forgotten about them. Maybe this belief seems naive and cute to you, moreover, I used to think like this, but I will assure you that what the Aborignees are doing is not neither naive or cute, but completely sensible and very efficient.

Cosmonauts, who were flying in the Earth's orbit at the time of duration of this Aroriginal ritual, claimed that it was that fire that helped them to orient themselves about the location at nigtht. By observing Australia from above, they could clearly see the Abriginal fire from that hight and they said it was

something really fascinating. They said that they had the clear impression that the blazes were reaching all the way to the orbit. The conclusion is that the Aboriginees know exactly how big the fire needs to be and how long it has to be burning in order to be able to leave the Earth's gravitational field and the peaks of atmosphere in order to emit their light undistrubedly in the wanted direction. We must not forget that the Aboriginees do that in a certain month of a year, which means that they always send their message to one and the same part of they starry sky.

Aboriginal fires are proof that only with fire can the Earth's gravity be surmounted, because with fires there is no limit we call the maximal height. Hot molecules of the Aboriginal fire leave the Earth's gravitational field and those are really the first launchings of material from the Earth into the cosmos. Besides, all the launches performed today are with the help of combustion and fire.

As we are speaking of launching, it is interesting to remind ourselves that men have used a certain launching advice for a long time. That device is called a chimney. As it is used as a thermical isloator, a chimney enables us to launch products of combustion, such as smoke, ashes and soot to a maximal possible height, so that, carried by the wind, they would fall as far as possible from ourselves, even if it is only in our first neighbour's yard.

Let us see what happens with liquids. It is well known to us how we should heat liquids; from below of course. Heated parts of the liquid come out upward, to the surface where they get cooled down and then sink to the bottom where they get heated again, which again leads them to the surface. That is a perfect consistency in behavior, as well as with gases. Mass temperature relativity functions identically with all fluids. In occasions when we heat food up to the point of boiling (dishes, broths, soups, teas, coffees and other.), when we can easily see the movement of the sole liquid as well as the movement of the steam, we observe the anti-gravitation in action like we observe gravitation all the time.

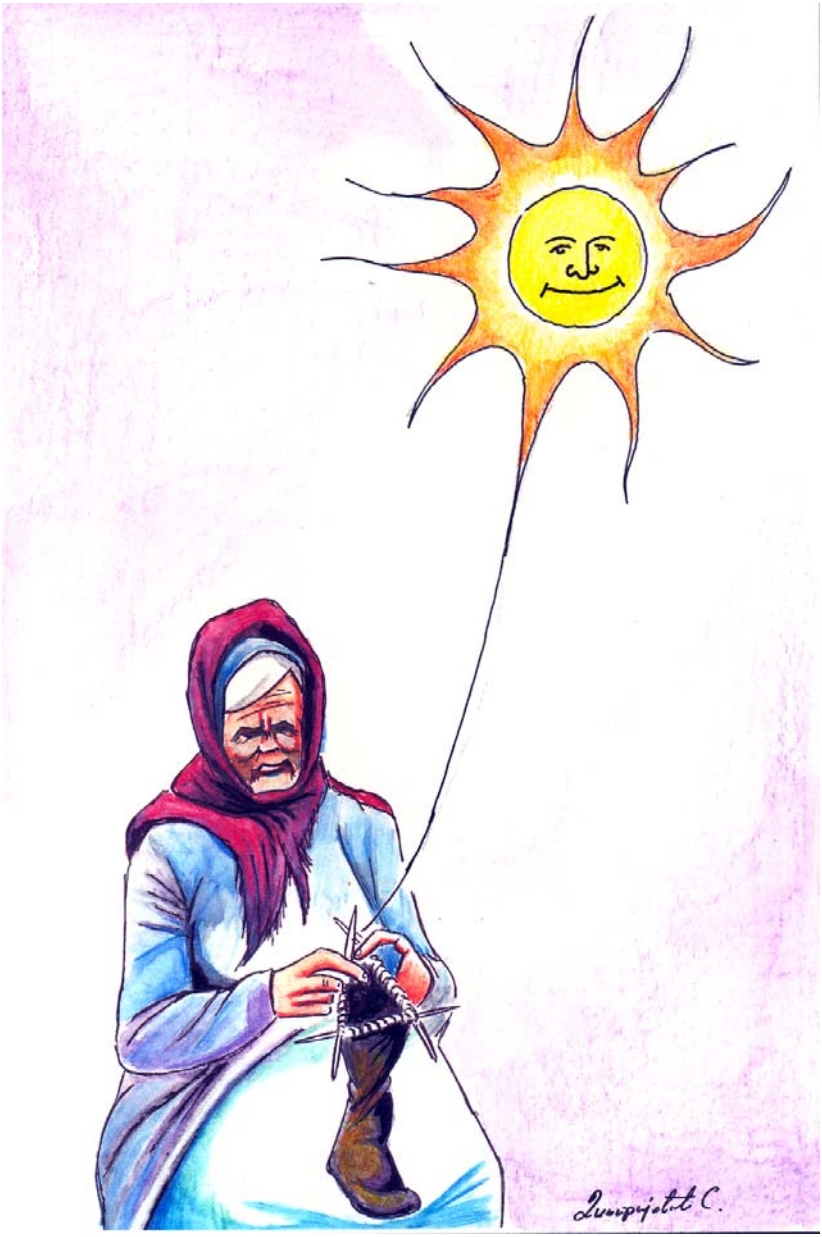
In the zero gravity state liquids form the shape of a ball, larger or a smaller one, depending on its amount. If we could put a heater in the center of the liquid ball and heat the liquid we would provoke circulation of the hot liquid from the center towards the surface in all directions. And if boiling of the liquid occured, it would be visible all over the surface of the ball.

And finally, let us see what happens with solid bodies. In order to understand the principle of the heat stretching through solid bodies more easily, we shall observe heating of the solid bodies that are heat conductors, like, for example, metals.

Should we take a bit thicker metal bar, let us say – 30cm long and 2 up to 3cm in diameter hold it with our hands

by its ends, and we put the middle on a small preheated burner of our kitchen stove, its heating will begin. As a good heat conductor, the metal will be heated in all directions from the heat source, but far the most on the vertical above the place of heat. That can be established by touching it, if we have not overheated the material, or by bending the bar that will bend exactly at the vertical of the heating. The whole blacksmith's technology is based on this fact. So, the model of heat transmission by the vertical from below upward is kept with the solid bodies, too, no matter that in solid body there is no internal movement of the matter as with the fluids, that is the liquids and the gases.

And as we can clearly state at the end of this story, nature around us does not hide anything. It functions by its laws and we, with the development of our awareness and power, discover or identify its laws one by one. The turn has come to gravity. But, it takes a long series of questions with it, and a lot of problems. I have started walking that road, step by step and I have come to the new physics. Now I am taking you to see how it all looks like. Although, to be honest, that process is an infinite story and it will only last until I am writing this book, and it is only then that a big new beginning will occur in understatding the world around us, as of ourselves, too.



SUN, OUR STAR

There are really innumerable examples of red-hot bodies in zero gravity state; if you do not believe me, look at the sky when the Sun sets. Every star we can and cannot see in the sky is a red-hot body. All those stars we can observe with our naked eyes, because they are very far and the intensity of their radiation reaching us is very weak. But during the day we are shone upon by a star whose radiation intensity is so strong that we cannot look at it with our naked eyes because we would become blind. We can only watch its rising and setting. That star is very close to us, and it provides us with pleasant heat and light; however, it is far enough in order not to turn us into ashes and dust. We consider that star – our star and we call it the Sun. People have, from their very genesis been fascinated by the Sun. They followed its movement across the sky and oriented themselves by it in space and time. Then they noticed the annual cycle of the Sun's movement and started counting years; that is how the calendar was made. We have understood when spring comes and when we seed our plant cultures; when the winter comes – in order to prepare enough food and fuel for that period. Before that, we moved south in the autumn, as the birds do, and went back north in spring. We have understood that the temperature on earth is directly dependent of the Sun's position and move-

ment across the sky. During the day, when exposing our bodies to the Sun's rays, we clearly sense the Sun's warmth on our skin. A question has immediately arisen: 'what is the source of that vast energy that the Sun is radiating'?

When, several centuries ago, people invented the telescope, they started observing all the celestial bodies systematically. At night they observed the stars and the planets and during the day – the Sun. Development of astronomy has changed our conception of cosmos. We have realized that the Earth revolves around its axis, and that the Moon revolves around the Earth, and that the Earth, together with the Moon, revolves around the Sun, which is also revolves around its axis and around the centre of our galaxy.

Discovery of the fact that the Sun's light consists of a number of lights in different colors (colors of the rainbow) led to the development of the spectral analysis and creating of different devices for that purpose. We have learned how to, by using spectral analysis, determine not only the temperature of a body emitting light, but it chemical structure, both qualitatively and quantitatively.

Spectral analysis of the Sun's light led to the conclusion that 71% of the Sun's mass is hydrogen (H2), and 27% helium (He). Other chemical elements: O, C, Fe, N, Ne, constitute a bit more that 1% of the Sun's mass. When the total amount of the atoms that constitute the Sun is observed, then

91.2% are hydrogen atoms, and 8.7% helium atoms. Temperature of the Sun's surface is about 5800K.

Scientific analysis and calculations performed at the end of the 19th and at the beginning of the 20th centuries in order to discover the origin of the Sun's energy, had this course.

Possibility that the Sun's energy originates from the exothermic chemical reactions with the present Sun's luminosity leads to results that it is enough for the Sun to be shinging for only about 30,000 years. That is, of course, an utterly unsatisfactory result and therefore that possibility was rejected. The posibility that the Sun's energy stems from the gravitational compression, led to the result of 16.5 million years.That was not a satisfactory result either, so that possibility was rejected, too. Today it is considered that the energy emission by the gravitational compression is dominant only at the early and late stages of the evolution of all stars, thus, the Sun, too.

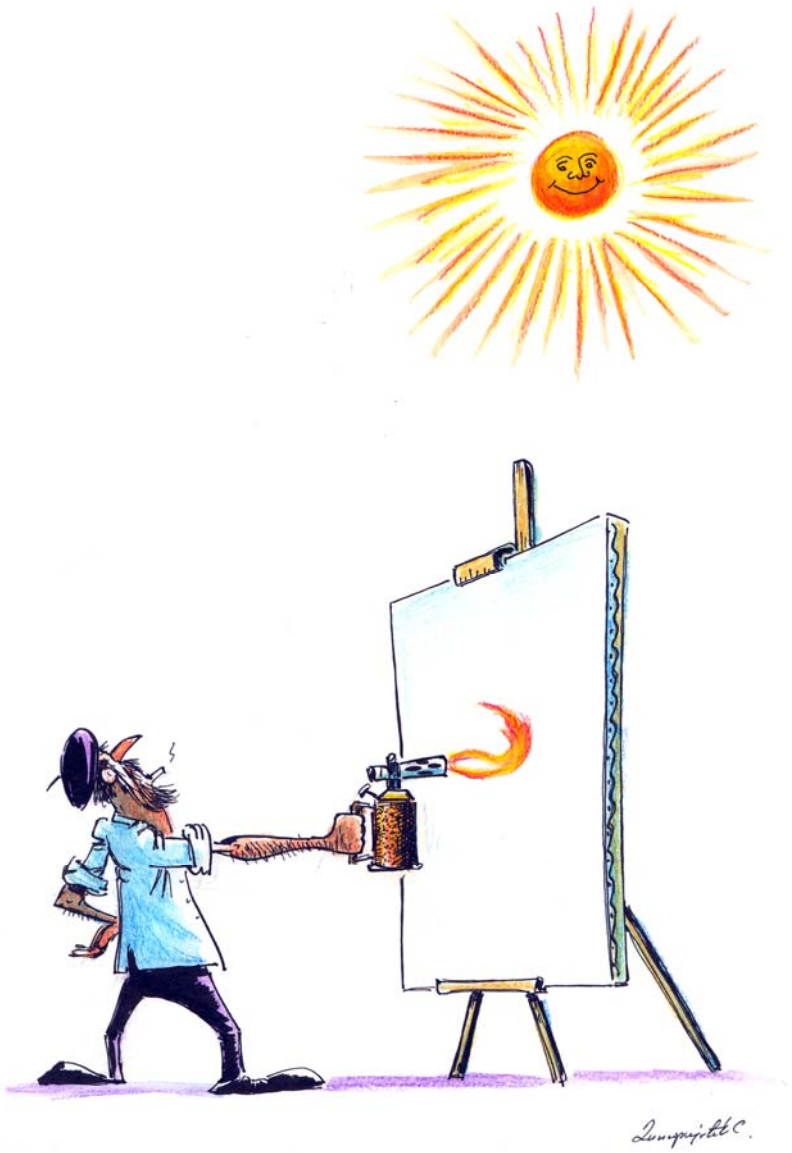
The possibility that the Sun's source of energy is the radioactive decomposition, was also rejected because of its inadequacy.

The idea of the hydrogen fusion was presented by Sir Edington in 1920. Theoretically calculating, he established that upon the 4 H nuclei cohesion, energy of 7MeV per nucleons is extracted to the nucleus of He. In 1938 Weizsäcker identified the possibility of fusion reactions of H2 into He through a pro-

ton – the proton and carbon-azoth cycle. In 1939 Bete and Kritchfield established, by detailed calculations, that hydrogen fusion 'burning' guarantees enough energy for the Sun's luminosity for the period of 10 billion years. That was the result that finally satisfied the scientists. That is how the idea of fusion of H into He become generally accepted as the source of the Sun's energy.

That led to the conclusion that the Sun is a gas sphere in mechanical balance, that is, its own force of gravity tending to compress the star, is balanced by the force of the gas pressure, which tends to melt it away.

Of course, in order for the fusion to be happening in the Sun's centre very high temperature is necesssary. EM radiation we see from the Sun, stems from a relatively thin surface layer. Huge thickness of the Sun's matter and its state lead to its being almost opaque, even for the hardest gamma and X-ray radiation coming from the inside of the Sun. For those reasons, the inside of the Sun is not accessible to the observer, and it is judged on the basis of theoretical models.



STANDARD MODEL OF THE SUN

This standard model that is, with certain modifications and corrections, scientifically acceptable today, was given by Mr. Sears. It was built for stars with mass, radius, glow and constitution that matches the Sun. According to this model, the inside of the Sun is made out of a core (a zone of fusion reactions), radiation and convective zone. In the radiative zone, energy, made in the core, is transferred towards the outer layers by radiation. In the convective zone the principle mechanism of energy transmission is convection, that is, matter flow.

The standard model (SM) supposes that in the centre of the Sun the temperature is 15 million degrees, and the density 150000 kg/m3. Even though the word is about huge density and pressure, it is nonetherless considered that because of the high temperature, the substance is in the state of the completely ionized gas plasma that can be treated as a perfect gas.

SM is in concordance with theories about energy production in the Sun and in that sense it corresponds very well with the direct observations. In order to explain the results of precise measurements in all parts of the EM spectrum and the corpuscle radiation, the standard model has been modified several times, but its basic preferences are still valid in the scientific circles. That is how, for example, today it is consid-

ered that the core temperature is a bit lower than the one predicted by the model and that it is about 14 million degrees.

Sun's core according to SM: I the centre of the Sun there is a compact core, which comprises about 60% of Sun's mass. Its dimensions are r=0,25 R⊙, which means that is takes only about 1.6% of the Sun's value. In order to get fusion reactions it is necessary for the atomic nuclei to get within a reach of less than 10-15m. Then a strong attractive nuclear force starts acting between them. However, in order to bring the particles to such small distances, the strong Culon's force of bouncing off of the electrifications having the same name (which is in that extent larger the smaller the distances between the aprticles are) has to be overcome. One of the possibilities is that the particles are moving in great thermal speeds of more that 100 kilometres per second. Such thermal speeds can be realised in temperatures that are of the order size 10^7K. If the thermal speeds are low, the particles will diffuse themselves before they get to the distance where the attractive nuclear force becomes stronger than the bouncing Culon's force. High internal energy of the Sun is initially provided by the powerful gravitational force that is a consequence of the great Sun's mass. It compresses gas and that is why it gets heated.

SM has determined the temperature for the Sun's core that enables running of the fusion reactions. Temperature of

15 million degrees, to which the Sun's core is heated according to SM, is insufficient for all the existing particles inter-react in fusion. Namely, in clashes particles are usually diffused, and only a few of them enter fusion reactions. Plasma in the core is treated as an almost ideal gas, so that in the end of the Maxwell's classification of particles according to speed there are very few protons that can realize fusion reactions. However, thanks to the quant effect of tunneling, a sufficient number of particles overcome the electro reflecting barrier, entering a nuclear reaction, even on lower temperatures.

Basic fusion reactions in the Sun's core are conducted in two cycles: protone-protone (P-P), which is dominant, and carbon-nitrogen cycle (C-N). Both cycles release aproximately the same energy, about 26.72 Mev per He formed nucleus. Neutrions occur in fusion reactions. They isolate about 2% of the freed energy in P-P cycle and about 7% of energy in C-N cycle. Today a number of very important, and expensive, experimenatal systems for detection of solar neutrions function. The results of the measurements are unexpected for the astrophysicists: The number of the detected neutrions is considerably lesser than that anticipated based on the SM.

According to these calculations, when the Sun is more thatn 9 billion years old, all the sypplies of hydrogen will be consumed and transformed into helium, and the zone of the hydrogen fusion will start transferring towards the outer areas

to the layer encircling the nucleus. This area will expand until it gets to the area in which the temperatures are lower than 10 million degrees. Then it will come to the extinction of the hydrogen fusion. At the same time, the Sun's nucleus, rich in helium, will get compressed by the action of its own gravity. That will lead to the growth of pressure and temperature and the creation of new conditions for starting of fusion reactions of helium nuclei. Carbon and oxigen nuclei will be formed in these reactions, and that will be followed by freeing energy.

Under the influence of the fusion reactions of helium in the nucleus, and the hydrogen in the thin layer far from the nucleus, the solar mantle will 'inflate' which will lead to the gradual enlargement of the solar radius. During this, which will last aproximately 500 million years, the Sun will turn into a red giant. It will than 'swallow' its system of planets, and the effective temperature of its 'surface' will become lower. Then, a short phase of fast fusion combustion of the remained heilum and the heavier elements (of abut 50 million years) will ensue. During this phase of the Sun's evolution in its core only carbon and oxygen will be found. The inside of the Sun will continue its further collapse, which was only temporarily stopped by helium fusion. Core temperature will rise again, but it will not enable further fuison reactions. Atmosphere of the Sun will expand a bit more. Sun will start pulsating lightly, to expand and compress, with the periods about several thousands of years.

Finally, this phase of evolution will end is casting the Sun's atmosphere in the shape of one or two expanding films. In their center a core that will intensely emit ultraviolet radiation will remain. In that way the sun will turn into a planetary haze in whose center a white slowly-cooling dwarf will located. After several billions of years of cooling down, the Sun will turn into a dark, brown dwarf – the ending stadium od its evolution.

Sun's radiative zone occupies the area of 0.25 – 0.85 Ro from the center of the Sun. In the radiation zone, as well as in the core, energy is transferred towards the outer layers by radiation. Since in the radiation zone there are no fusion reactions, there is no 'cumulation' of He, so the mass percentage of H_2 is double compared to the core. At the beginning of the radiation zone T is about $7x10^6$K, and at the end about $2x10^6$K.

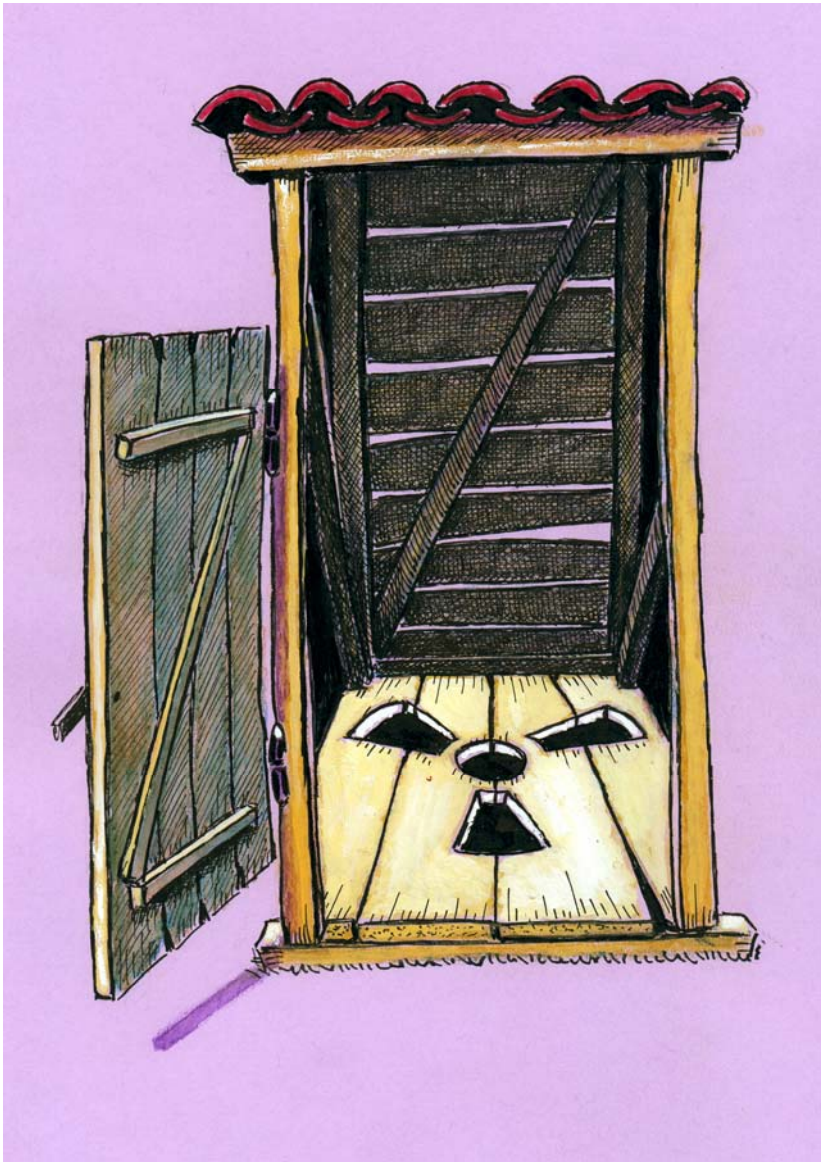
Sun's convection zone spreads to the area from the upper boundary of the radiation zone to the photosphere, that is, the surface of the Sun, which means that its thickness is between 150,000 i 200,000 km. In this zone the dominant transfer of energy is performed by convection, that is substance flow. This zone is of great significance, before all, because processes in it essentially determine the characteristics and the behavior in the external parts of the star (the origination and the variations of the local magnetic fields, activity,

heating of the upper layers of the atmosphere, and so on). In convective layers there is movement of large mass of the Sun's substance, where the warmer mass goes up towards the surface, as the cooler mass lowers towards the deeper layers. Gas that has errupted to the Sun's surface looses its energy bu radiating, cools down and then sinks again deeper and deeper into the warmer layers of the convective zone. By going down, the gas gets heated again and the process of circulation goes on.

The speed of the convective movement at the surface layer of the Sun reaches 2-3 km/s. At the beginning of the convective layer, the temperature is $2x10^6$ K, and at the surface, in the photosphere it is about 5800K.

At the horizontal section, convective cells are almost hexagonal. In their center the substance goes up, and at the periphery it lowers towards the deeper layers.

Substance movement in the highest layers of the convective zone leads to the occurance of granulation in the photosphere, acoustic perturbations and gas oscilation in the Sun's atmosphere, and through them, probably to the heating od its higher layers. That is in brief the essence of the SM Sun. As we can see, it is aready troubled by different problems and unanswered queations. Let's see what happens when we include the mass temperature relativity and the anti-gravitation into analysing.



TN FUSION IS IMPOSSIBLE!

All that physics has so far done, which includes astrophysics too, is based on the theory in which there is only and solely gravitation for mass interactions. When we enrich the mass interactions with anti-gravity, which is a natural course of action, everything will cahnge significanlty. How?

The first and the basic conclusion that we get is that the thermonuclear fusion, or the hot fusion, is absolutely impossible!

It is impossible for the hydrogen nuclei to fuse into helium, because next to the Coulon's bouncing they bounce off anti-gravitationally, too. At the supposed temperature of $15x10^6$K negative mass of the H nuclei is that large that there is no possibility of thier fusion. With the rise of the temperature, that is, thermal speeds, the situation gets even worse for the possibility of fusion.

Fusion is possible on very low temperatures, when the attractiveness of the atomic masses goes that high that it overcomes the force of thier coulon bouncing off. Therefore, nature allows only cold fusion. But we cannot have any energetic advantage out of it.

This claim is far too radical and it demands at least some experimental proof. Is there any such evedence?

Of course there is. Those are multi-decade attempts to achieve controlled thermonuclear fusion in earthly conditions.

What a good idea! Achieve the thermonuclear fusion in earthly conditions and solve the problem of energy on the planet forever. An attempt whose aim justifies all material means and intellectual effort invested.The source of unlimited and pure energy is not only worth of glory, but is also financially completely tempting. Americans and Russians have (a few decades ago) started the realization, both in their own ways.

Americans named thier project ‘Shiva’, by the name of God shiva from the Hindu Holy Trinity, and their concept was to by using very powerful lasers, from different sides, hit a small ball filled with hydrogen. Regardless of all their effort, the enhancement of the laser power and finally, spenditure of all financial means, there wan no expected result.

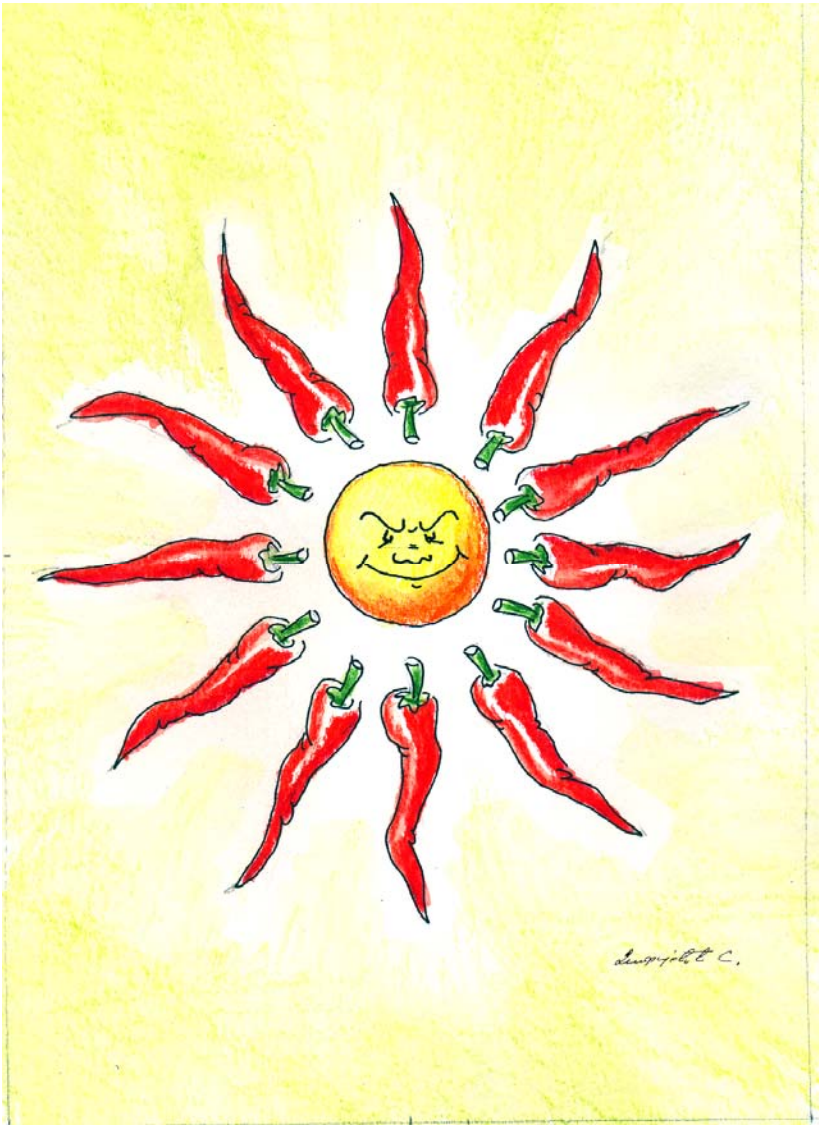
Russians named their priject ‘tokamak’, that is the shortened name of thier experiment. Their concept was to, by using powerful magnetic fields, maintain high temperature plasma in the shape of one ring long enough until conditions for fusion emerge. With the increase in the temperature that plasma ring would always fall apart before thre were any expected results. All the devoted effort, as well as the enhancemet of the power of the magnetic fields, along with the all financial means invested, did not lead to the expected results.

There were no results, nor there will be any, because both parties, lead by an illusion that arose because of the deficiencies in the theory of the natural forces, have been trying to accomplish something that is not possible to accomplish.

All further attmepts in order to achieve thermonuclear ot 'hot' fusion are doomed to fail and represent futile waste of both huge amounts of money as well as large scientific potential.

But, what about the H bomb? Have we not accomplished the uncontrolled thermonuclear fusion in earthly conditions in the H-bomb? The answer is: no, we haven't!

Thermonuclear fusion, uncontrolled, we have not acomplished in the so called H-bomb, and what is actually happening upon the explosion of the H-bomb, we will yet have to discover.

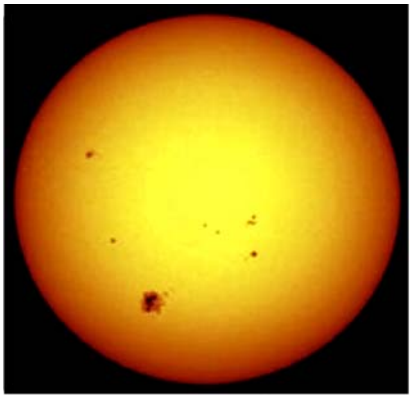


ANTY-GRAVITATIONAL MODEL OF THE SUN

If TN fusion is impossible, then we have to reopen the question of the source of the Sun's energy, and that is the basic atstrophysical question about the origin of all stars.

As for the SM of the Sun, is was a complete disaster and that is why it is necessary to create and think of a new model of the Sun that, becase of the introduction of the anti-gravity, could be named the anti-gravitational model of the Sun.

My anti-gravitational model of the Sun (AMS) I will begin analysing by what we see on the Sun's surface.The suface of the Sun is quite visible. Its temperature has been estimated to about 5800K. That is not that high a temperature. But is the estimate altoghether correct?



Picture 1.

What has caught my eye is the appearance of the Sun's disc border becoming darker. Light coming from the Sun's disc border is of less intensity than the light coming from its center. At this it is clearly visible that the shading of the Sun's border looks the same around the equator and around the poles, that is, it appears that it does not depend on the latitude of the border. Therefore, I conclude that the actuall temperature of the photosphere is actually the temperatre of the Sun's disc border, and it is lower than the previously mentioned. It should be calculated what that temperature is and started dealing with it. When we take into account the enormous gravitational force of the Sun which creates great photospheric substance weight, that is, great amout of pressure under which the photospheric substance is, then it is obvious that photosphere is actually red-hot magma.

We on Earth have direct experiences with magma which is located under the cooled Earth's crust and occasionally erupts to the surface in volcano eruptions. (Magma erupted to the Earth's surface is called lava.) Sun's magma is much hotter than the Earth's, that is, has a higher temperature, but it is under a larger pressure, so the word here is about a substance in liquid state of aggregation.

Sun is, therefore, a ball made out of red-hot substance, which is very thick, but in the liquid state of aggregation for sure.

Let us look again at the Sun's surface shots, without prejudice, and we will see that it is really a surface made out of red-hot, thick, but liquid magma.

It is magma that is in continuous movement, warmer spurts break out to the surface, and after cooling they sink into the depth. Logical – because the hot magma is lighter and the cold magama is heavier.

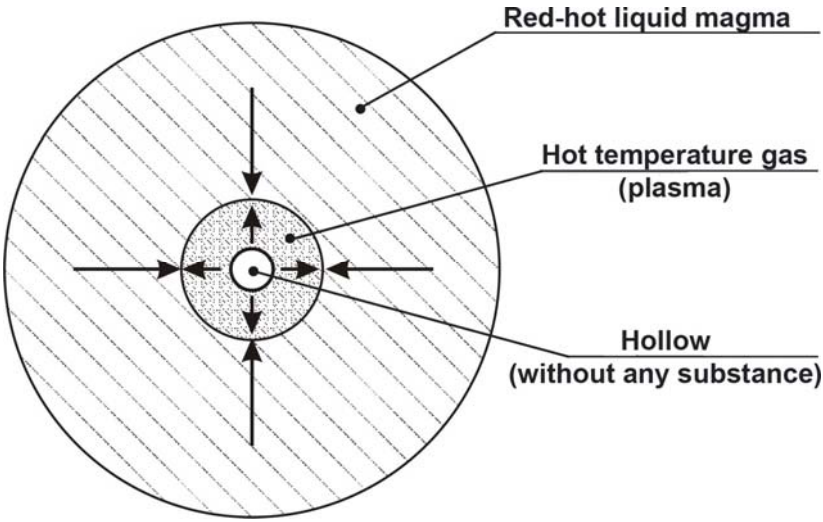
As we move from the Sun's surface to its inside, the temperature logically rises. But the pressure rises as well. The pressure is the consequence of the huge gravitational force of the Sun, and it provokes the rise in the temperature. How will the rise in the temperature and the pressure proceed by approaching the Sun's centre.

By the rise in the temperature the attractiveness of the Sun's substance's mass decreases, therefore decreases the gravitational force of those layers. After transit through the masless state, Sun's substance becomes mass negative and it begins defying gravity. With further rise of temperature anti-gravity continues rising, until at a certain moment it manages to balance itself with gravity. And, what does the inside of the Sun finally look like?

From the Sun's surface up to a certain depth it is liquid magma of different temperatures and pressures. Then comes the gas part in which the substance is in gas state of gravity because of the high temperature and the strong anti-gravity. It

is a layer which with its antigravitational bouncing finally balances the Sun's gravity. There, of course, there is no fusion, because the anti-gravity is extremely strong. In the very centre of the Sun there is no substance – it is a void hollow. There, the anti-gravity does not allow the existence not even of the gas state of aggregation.

Picturesquely presented it would look like this:



Picture 2.

Huge Sun's gravitation is, therefore, balanced by anti-gravity that is manifested in the its very centre (heart). With this we have satisfied the condition for the stability of the sun, but what about the origin of the energy the Sun is emiting?

If the source of the Sun's energy is not TN fusion, what is it then?

The source of the energy is Sun is emiting to the surrounding space is its gravity!

How is it possible now, when that assumption was dismissed as unsatisfactory?

This is how it is possible:

Spurts of hot magma errupting to the surface are cooled by intensive radiation and vaporisation. Gas molecules, occured by magma vaporisation, have very high temperature and thus negative mass, and they are also found in the enormously strong Sun's gravitational field? What is happening there then? What is happening is that Sun is bouncing them off from itself by an enormous force into the surrounding space – anti-gravitation in action. Repulsive force causes their speeding, and the speed increase causes the rise in their tempreature, which, even more, enhances the negativity of their mass, which, again leads to returning of the anti-gravitational force, and so on. Due to such an abrupt rise in temperature, molecules of gas are disintegrated into atoms, and then the sole atoms are disintegrated to α particles and protons. That process of the anti-gravitational speeding of the gas molecules from the Sun's surface is the reason for the temperature rise up to one million degrees in corona.

So, we have a situation that the Sun is 'simmering' at only several thousands of degrees, which means, very, very

slowly, however, owing to the huge gravitation, by the process of the antigravitational repulsiveness of the gas substance of its surface, it emits enormous energy into the surrounding space. Sun is therefore a much efficient producer of energy than we could have ever tought. In that way Sun provides itself with a much, much longer lifespan than we have imagined by now.

Part os the electromagnetic energy that occurs in the forementioned process of molecule and atom disintegration in Sun's atmosphere is oriented towards the sole Sun, so that heats the Sun, that is, its substance magma.

When in the early stager the gravitational compaction heats the Sun from inside, then the Sun ads the temperature to itself with the energy it creates in its atmosphere by anti-gravity.

That game of gravity and anti-gravity in the Sun and wround it, finally, looks like this:

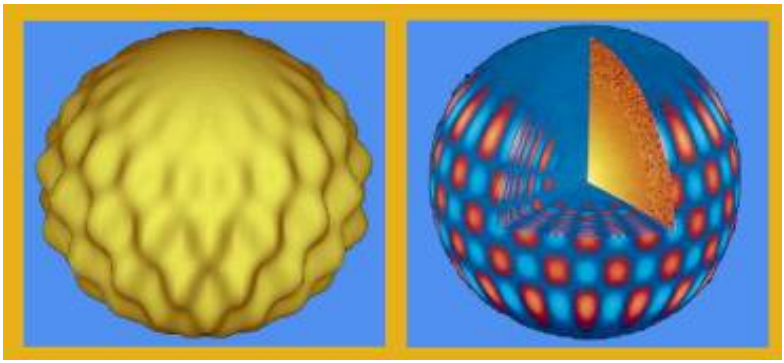
In the heart of the Sun dominates anti-gravity that em-balances its gravity in the outer magma layer. In the Sun's at-mosphere dominates antigravitational repulsion which is the source of energy the Sun is emiting, but with the moving away from the Sun gravity, that keeps the planets and everything else in rotating around it, and the Sun itself in the rotation around the galaxy, dominates again.

A NEW VIEW OF THE SUN

If now, from this perspective, we take another look on the Sun's surface and its atmospere, we will see a completely different picture form the one that has been created up to now.

The Sun is a liquid, thick, red-hot sphere whose radius is $R_0 \approx (696000 \pm 100)$ km, which is approximately 109 times larger than the Earth's radius. The volume of the Sun is 1.3 million times larger than the Earths.

The problem in determining the Sun's exact radius appears because of its periodical and non-periodical changes in different time intervals. The most important short-periodical variations R are the consequence of existence a number of ways of oscilating, present in the inside and the photosphere of the Sun. Oscilations on the Sun are not only local and sporadic, but they spread through its interior, similarly like the seismic waves on the Earth. Because of these waves the Sun vibrates similarly to a gong, which was experimentally proven in 1975. Because of that its surface periodically, in different frequence, rises and lowers even up to 10 kilomotres (picture 3), even though the amplitudes of the global oscilations are considerably lower and they are about 25m.



Picture 3.

Today, as a seperate area of astrophysics, solar seismology is developing (helioseismology), which studies the structure, constitutuon and the dynamics of the Sun's interior by the help of analysis of oscilations detected on its surface. The research methodology in the helioseismography is based on the analogy with the studying of the siezmic waves on the Earth.

In the mid-eighties of teh XX century it was extablished that there is seismic waves' exisctance on other stars as well. Many surface characteristics of the Sun (glow, movement of the spectral line, and so on) are conditioned by the wave processes in its interior. By detailed studying and precise measuring of the wave manifestations in the surface layers, we can get information about the Sun's interior. However, we should bear in mind that the changes in the glow and radius are, provoked by the waves on the Sun, small and they do not exceed 0.002% of the average value.

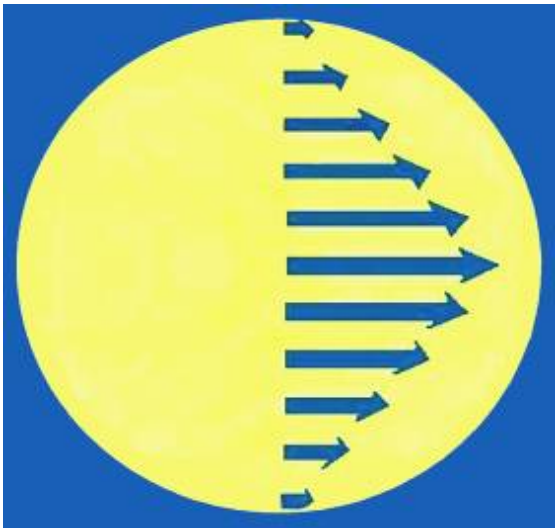
Getting to know the speed of the acoustic waves gives qualitative data about the structure of the surroundings they go

through. Studies have shown that these waves do not only go through the center of the Sun, which can be understood as a confirmatinion of my opinion that there is a hollow in the Sun's center.

The size of the Sun has, in the past 250 years, since it has been systematically followed, practically been constant. However, there are authors who, based on the observation during the eclipse claim that Sun's angular diameter anually reduces for about 0.0015 angular seconds. I consider it a consequence of the Earth's continual distancing from the Sun, but I will write about that later.

Galileus was the one who spotted the Sun's spinning around its axis in 1610, by following the movement of the spots on the Sun's disc from the East to the West. Based on the movement of the visible details (spots, fibres, etc.) on the Sun's disc, even in the XIX century it was established that the Sun spins around its axis, which makes an angle of $7,2^{o}$ with the normal on the ecliptic. Rotation is happening in the direct course, which is characteristic for almost all planets of our system. On average, each rotation lasts about 27 days. The Sun belongs to the group of stars which rotate slowly.

In the XIX century a very important characteristic of the Sun's rotation was established – it is **differential** (zone). So, different parts of the Sun's surface rotate in different speeds (picture 4). That was an inrefutable proof that the Sun is not a solid body.



Picture 4.

Period of the rotation for the points near the equator is about 25 days (peripheral speed of 2 km/s), and in the areas that are about 60^{o} of heliographic latitude the rotation period is about 30 days. So, the speed decreases from the equator to the poles.

Oscilatory changes of the speed with time have been noticed as well, that can be from 10 to 20% compared to the average values. With the reduction of the **Sun's** activity a slight tendency of the increase in speed of defferental rotation is noticed.

Jupiter and Saturn have differential rotation, at which the angular speed decreases from the equator towards the poles. On Earth analog occurences are spotted in the atmosphere and in the ocean.

As soon as the scientists determined the Earth's distance from the Sun a=149,6 $\cdot 10^{9}$m and the speed by which

From the perspective of the temperatural relativity of the mass, this result is only interpretable as the total Sun's substance, according to its heat, that is, temperature and geometric allocation, is equivalent to the calculated value. I have already said that the Sun's substance is mainly in the state of red-hot, thich, but liquid magma.

At that, of course, the density of the Sun is much greater than the density of the Earth because the gravitational force of the Sun is much larger that the Earth's.

By its chemical composition, the Sun is comprised of heavier elements which make magma.

In addition to that I should mention, that up to today, there have been 72 elements detected by the absorbtion lines of the solar spectrum. That does not mean that there are not the remaining 20 element which appear in nature on the Sun – they have simply not been detected yet.

The Sun is a ball of red-hot magma at the temperature of several thousands K, which, thanks to the antigravitational repulsion of the eveporated gas matter produces enormous energy that it emits in the surrounding space. Value of the

That is a value measured by instruments, an lately, by usage of artificial Earth satellites. More precise measurings of its value pointed to its short-term variations with the amplitude 0,1–0,2% from the mentioned value. Rhythm of those variatios is in accordance with the solar activity, that is, 11-year cycle of the Sun's activity. According to some research, in the past 200 years the midvalue of the solar constant has risen betwen 0,25 i 0,6%.

Here, I would like to say that both the Earth and the Sun, as well as the whole Universe, are in the process of heating up, and therefore expansion.

Apart from the electromagnetic radiation from the Sun, there are also electric particles (protons mainly) permanently going out into the interplanetary space and that represents the Solar wind. The Solar wind is a final outcome of decomposition of molecules and atoms' gases that the Sun is speeding up by the antigravitational repulsion and heats to 1-2 million K in its corona.

However, the Sun is losing its substance, but very slowly, and it provides it with a much longer life then 10 billion

years which was how much was considered up to now. Since this casts a brand new light to the process of birth, life and death of a star, I will pay adequate attention to that later when I speak about the stars' evolution.

Even at the end of XVI and the beginning of the XVII century, by Clavius and Kepler's observations and works, a conclusion was made that the Sun has an atmosphere. In contemporary times, thanks to the analysis of the Sun's electromagnetic radiation, it has become known that its atmosphere is of a layer build. As with the majority of the stars, in the Sun's atmosphere three major layers can be isolated: photosphere, chromosphere and corona.

Sun's inside is surrounded by a surface layer that is called the photosphere. Above it there is the chromosphere, whose height reaches up to 10,000 km above the photosphere, and corona attaches itself.

The average value of the layer's basic parametres in the Sun's atmosphere are stated in the table below:

LAYER	Internal radius (km)	T (K)	Density (kg/m^3)
Photosphere	696.000	5.800	$2 \cdot 10^{-4}$
Chromosphere	696.500	4.500	$5 \cdot 10^{-6}$
Transitional layer	698.000	8.000	$2 \cdot 10^{-10}$
Corona	706.000	1.000.000	10^{-13}
Solar wind	10.000.000	2.000.000	10^{-23}

Chromosphere and corona glow more than the photosphere, so that they can be directly observed in certain situations (solar eclipse) or by special devices. During the eclipse, just a few seconds before the showing of the Sun's barrier (photosphere) behind the Moon disc, chromosphere can be seen as a shiny dark-red line with prongs at the picutre above (spicules). They can be seen not only at the Sun's border but along the whole disc, but in the light of a certain wave lenght, which is acomplished with special devices.

Upper parts of the corona are best studied at the time of the complete solar eclipse. Otherwise, corona gradually smears through the interplanetary space of the solar system through the Solar wind.

Starting at the bottom of the photosphere, the temperature slightly falls, in order to start rising above the lower chromosphere in the so called turning layer in the chromosphere. In the transition layer between the chromosphere and the corona, temperature abruptly rises and in certain points in the corona it reaches the value of several million degrees. That is one reason why some authors make a difference between the 'cold' atmosphere which comprises the photosphere and the chromosphere, and the 'hot' atmosphere, which consists of the corona and its extension, the Solar wind.

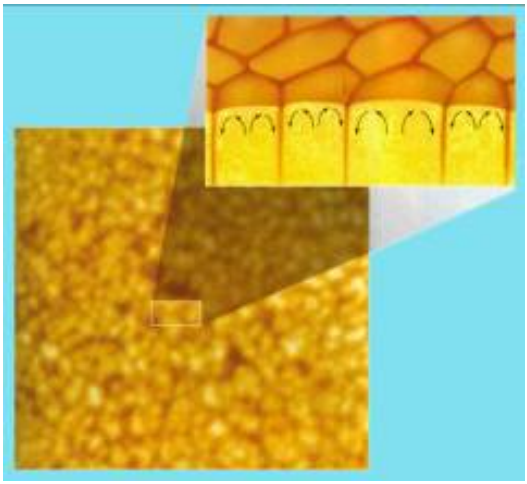
Photosphere: From the Earth it is spotted in the shape of a bright disc. It represents the first transparent layer of the Sun.

Its thickness is 350-400km. At the bottom of the photosphere the temperature is 9000K, and at the upper border its value is about 4500K. Through the photosphere, the energy is transmitted by radiation, which does not mean that there is no convection in it. Manfestation of the convective movement of the matter in the photosphere looks like 'boiling grain poridge'.

Light grain (granule) represent spurts of magma that are errupting at the surface of the photospheric layers. Thier temperature is for about 100–130K higher than the photospheric, so that their glow is 10–30% higher than the middle fons. Granule are separated between themselves by dark areas that are comapred to them most often of smaller dimensions. Granule are 35–40% brighter and 350–400K warmer from these dark areas.

Granule dimensions are between 200 and 1500 km, 1000 km on average. Darker areas between them are up to 1000 km wide. Inside the darker areas very fine, a bit brighter details can be spotted – filigrains. The word is about granule of small dimensions and different irregular shapes. On the Sun's disc, at every moment, there are about two million granulae.

Granule are visible convection elements that stem from the layers beneath the photosphere. In the middle of the convection cell magma is moving upward, and near the top of its movement speed they become horizontal, so the magma is moving, spreading towards the cells edge (picture 5).

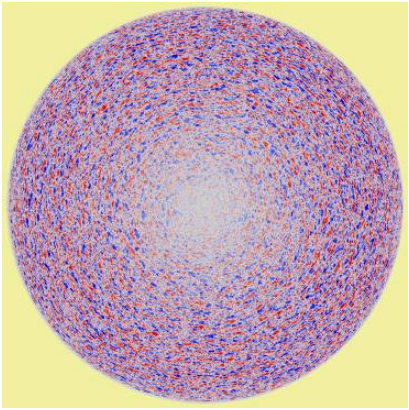


Picture 5.

After the eruption of the cells to the surface, magma cools down by radiating energy and eveporating in to the atmosphere. Magma thus becomes thicker and then it sinks to the deeper layers, and new one comes to its place. In the lifespan of granule there is no mixing of magma with other granule. Aproximate time of a duration of granule is 5-15 minutes.

It has been determined that the granule go up and down in the photosphere. By precise measuring and based on the Doppler effect, it has been calculated that granule move with the speed of 0,3 do 1 km/s.

Convection in photosphere has its own manifestation and in much larger dimentions that granule, which is manifested in the so called supergranule (picture 6).



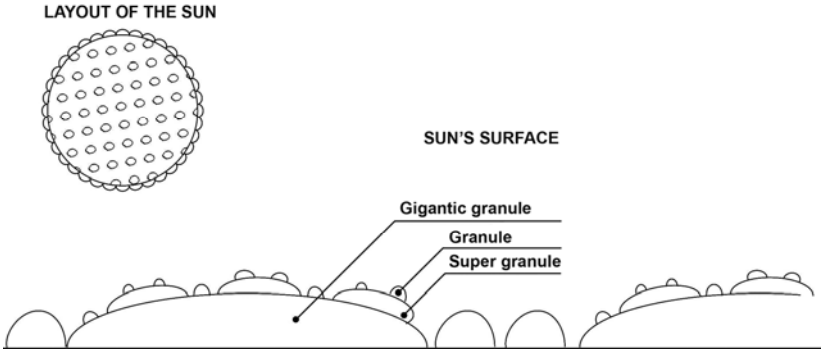
Picture 6.

They are in the shape of polygonal cells with the average diameter of about 30,000 km. They last several hours. They cover the whole Sun's surface and their number is at each moment about 2000.

Apart from being much larger than granule, they are characterised by larger convection per the depth of the Sun's surface layer. In each supergranule, almost symetrically, a horizontal radial leaking of magma from the central parts of the cells towards the periphery is noted. Maximal speeds of such horizontal movements are about 0,4 km/s. In the central parts of the cells, magma from the deeper layers rises up vertically towards the surface, and returns to the depth along their brims. Speeds of these vertical movements are about 0,1 km/s.

In the photosphere even larger forms of convective movement manifestations occur. Those are gigantic convective cells. Differential rotation affects their shape.

So the Sun is, as a ball of magma, in continual turbulence and boiling. As we have seen, there are very big sources as well as the small ones. Big sources make the basis and smaller and the smallest sources appear on them. Because of all that the Sun's surface looks like it is all in bumps that have smaller bumps on them.



Picture 7. Granule, super granule i gigantic granule

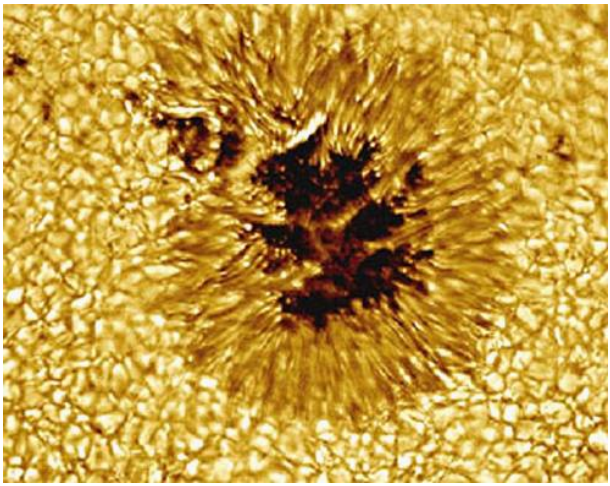
Sunspots: Spots are one of the most important forms of photospheric activity on the solar disc. They represent darker areas on the bright solar disc. For several hundreds of years spots have been systematically monitored, because their number, surface they take, time and place of their appearance, provide valuable information about the activities and proceses on the Sun.

Because of the enormous brightness of the photosphere and small dimensions in relation to the Sun's disc, the spots on the Sun can rarely be seen with the naked eye and that is in cases when they are extremely big, with the diameter over 40.000 km.

A spot appears in the shape of a dark pore, which develops afterwards. They appear on the so called royal heliographic latitudes (5^o – 52^o). Most often they appear on the latitudes of 8^o do 30^o.

Diameter of the smallest spots is granulae dimension (about 1000 km), and the biggest, the so called spot groups even up to 100,000 km. Smaller spots last, often, less then two days, and the majority of them disappears the same day they appear. Developed spots last 10 to 20 days, and the largest ones up to 100 days.

At the developed spot a darker shadow and a lighter semi-shadow can be observed. Shadow and a semi-shadow are visually clearly differentiated (picture 8). On average, a diameter of a shadow is about 17.500 km, and of the semi-shadow about 37.000 km. The surface of a typical spot is about the 10-thousand part of the visible surface of the Sun.



Picture 8.

The glow of the shadow is only 20–30%, and of the semi-shadow 75–80% fons of the undisturbed photosphere. A spot, actually, looks dark (and cold) compared to the high glow of the photosphere. Regardless of that, the glow of a spot of an averge size is about 5000 times larger that the glow of the Moon. The lowered level of the glow in the spot area is kind of compensated by the rise of the glow around it, on the distance of 50,000 km from its center. The glow that is about 3% higher than the average photosphere glow.

Temperature in the spots is 25–30 % lower than the photospheric. Temperature of a shadow decreases with the growth of its surface.

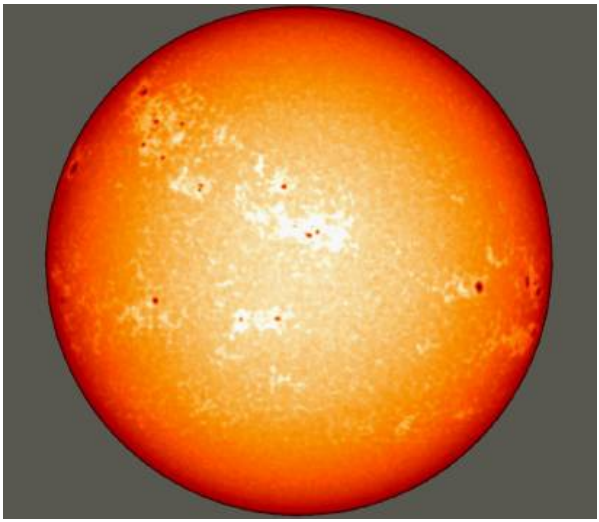
Granulation is present with the spots, too, but in a different form compared to the photosphere, which is a consequence of the changed convextion. Granule in the semi-shadow have the shape of light fibres about 300 km wide. Fibres last about from 30 minutes up to several hours, which is much longer than the durability of the granule in the undisturbed atmosphere. Granule in the shape of bright spots can be seen in the shadow, too. Their duration is about 15 to 30 minutes and their dimensions are about 350 km.

It has been noted, that with the spots nearing the west border of the Sun's dics, the east half of the semi-shadow gradually begins narrowing and disappearing. Upon the appearance on the east border of the disc, the semi-shadow is not visible at the beginning, and the it appears and it starts

becoming wider, but first its west half. A spot is, actually, a shallow funel-like cavity in the photosphere.

Sometimes it can be noticed and it is not so intensive a rotation movement, which speed at the end of the semi-shadow reaches 14km/s. With the solitary spots this rotation can lead to the sreation of the votical structure of the elongated details of the spot.

It is very important to point out the existance of the warmer areas that are called photospheric faculas (torches). They are long-living brihgt areas, that in principle, do not have to be in connection with the spots (picture 9).

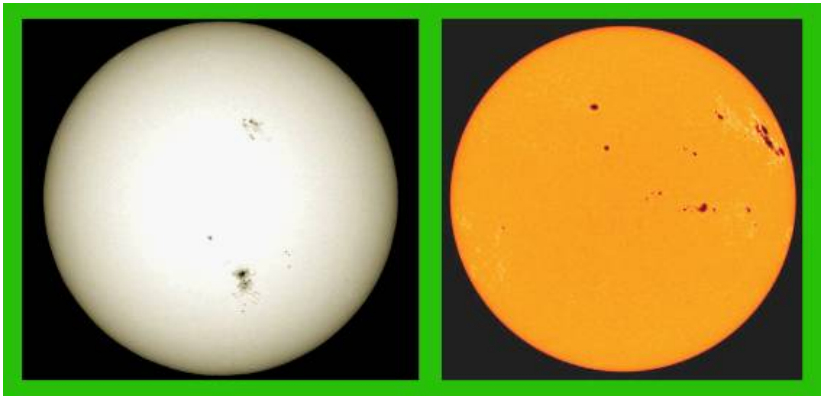


Picture 9.

In the photosphere there are independent faculas, as well, that are of a lesser brightness from those surrounding the spots. I especially enhance that there are no spots without

faculas. They have granulated structure which is 10% brighter than the surroundings. Inisde them, granule last longer (about an hour) compared to the granule from the rest of the photosphere. Dimension of the granule in faculas are about 1000 km, but they form groups 4-6 thousand km long. They connect in chains 5 to 10 thousand km wide and up to 50 thousand km long. Large faculas appear several hours or days before the spot, and they are visible long after the spot disappears. Often, they do not disappear even for a year. On average they 'live' twice as double of the spot they form around and occupy about four times larger surface than the spot.

Spots, therefore, always appear in faculas and as solitary or more often they appear in groups (picture 10).



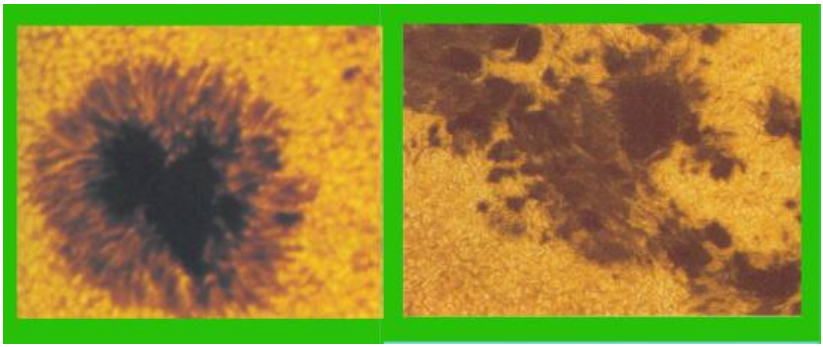
Picture 10.

Solitary spots are often the beginning or a remainder of a larger group. The number of spots in a group can be up to several hundreds. Large groups of spots reach their maximal development in two or three weeks, and then they slowly fall apart and

vanish during 1,5 up to 2 months. When a group reaches its maximum (according to the number of spots, surface it takes, etc.) it starts receding: spots fall apart and their number in group diminishes. The porcess of the spots' falling apart usually happens in such a manner that brighter spots appear over them.

On average groups of spots last 10 days (30% of them last more than 10 days; 0.4% more than 50 days; 0.3% more than 100 days, and only 0.01% last more than 150 days). The larger the surface a group of spots occupies, the longer its duration. For example, if a group od spots occupies the 10-thousand part of the visible semi-sphere of the Sun, then on average it lasts 10, and itf it occupies 4 times larger the surface, it lasts 40 days.

Spots and their groups can have different shapes; sometimes their shape is regular and oval, and very often it is irregular (picture 11).



Picture 11.

If is concernes a couple or a group of spots, then the west spot is the leader, and the other spots are followers. The leader spot is the one that appears first in the couple or a group of spots.

The leader is closer to the equator, on the average it is larger than its followers, and it lives longer. In the beginning the leader moves faster than the followers, and the formed spot group is dragging. When the farthering of the leader in the group stops, the process of the destruction and the diappearance of the group begins.

Spots can be without semi-shadows, and they can have smaller spots in their semi-shadows. By falling apart of the big spots, small and the middle-sized spots'groups occur.

When we have said and conjured up all this about spots, it is time for the revelation. Simplicity in all its perfection.

We have seen that the surface of the Sun consists of granule, supergranule and gigantic granule. Granulae are geysers of magma. Therefore, Sun's surface is all in geysers of magma; basically those are gigantic geysers of magma, and on the super-geysers of magma exist, and on all of them small geysers of magma are present. What is mutual for all these geysers is that they eject magma to the surface from a relatively thin and homogenous layer which is the outer layer of the Sun. That is a game of boiling of that outer layer, and that is what is normal state for the Sun's surface.

What is unusual, is the appearance of chormospheric faculas or torches. Faculas are actually Sun's volcanoes. Faculas are processes of ejecting magma from the larger depths, that is, from the Sun's deeper layers to the surface. That is why the faculas are brighter and warmer from the rest of the photosphere. We have seen that those volcanic eruptions can eject magma of

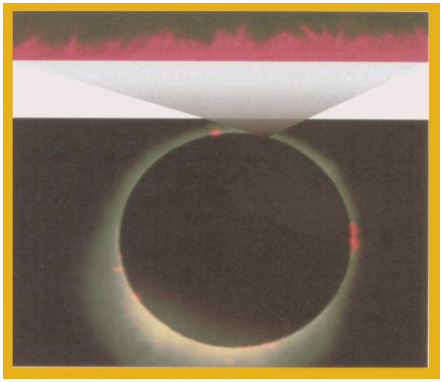
different temperatures, which means from different depths. Those volcanic solar eruptions can be realized from the beginning to the end in that manner.

But when a large solar eruption is in question, it not only ejects magma from the deepest surface layer of the Sun, but is starts ejecting qualitatively different magma that is located below that surface layer. That magma has different chemical composition compared to the sufrace magma, is consists of **heavier chemical elements**. When this magma is ejected to the surface it cools down quicker, get thick and starts floating along the Sun's surface made out of geysers. That heavy magma, from the great depth of the Sun, we see as a dark spot. Since it is heavier form the surface magma, it makes a cavity in the photosphere, and since on its brims it is thinner than in its central part, the ends are easier, and they form slopes to the level of the photosphere and that is how the funnel apeparance of the spot is achieved. Size of the spot, as well as it looks, is directly defined by the quantity of the heavy magma ejected in the eruption of the Sun's volcano (facula). The number of spots is a consequence of the intermittent ejecting of the heavy magma to the surface. The first amount of the heavy magma is actually the leader spot, and the remainder of the heavy magma form the follower spots. The first amount is largest because it is the greatest relaxatioon of the intensity that led to the eruption and that is why the leader spot lasts longest. If the ejecting of the heavy magma is continual, then we see the spot widening until there is a break in the eruption of the magma.

Differential rotation of the Sun carries the spot towards the west, and the continuance of the eruption creates the next spot and so on, until the eruption of the hot magma stops. That is how spots appear. Cooler heavy magma floats on the geysers of the warmer surface magma, that will slowly but certainly 'melt' it. Magma geyser pressure to the spot, that is, heavy magma, from above leads to the perforation or the breakage of the spot into parts, which accelerates the disintegration of the spot. It is a process of reducing, falling apart and disappearing of the spots. Sun's volcano (facula) will continue ejecting warmer easy lava, and then it will stop doing that, too. Then facula disappears from the photosphere, that is, the Sun's volcano is extinct.

When we have realised wha thappens on the Sun's surface, we can go farther into the height of the Sun's atmosphere. First, let's see what contemproary astrophysics has to say; what have we discovered and seen so far.

Above the photosphere there is the chromosphere (picture 12).



Picture 12.

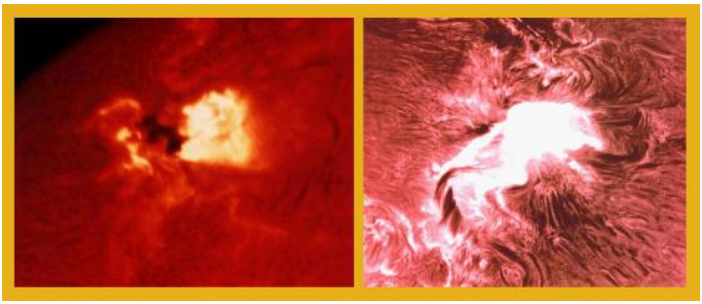
Radiation of this layer is the most intensive in the red part of the spectrum, so it got its name by its intensive colour. Chromosphere is not homogenous and it is quite roughly divided into the lower (1500 km above the photosphere), middle (between 1500 and 4000 km) and upper (from 4000 to 10,000 km). Lower choromosphere is relatively homogenous, and there, going from the photosphere the temperature continues falling to the values that are lowest on the Sun and which are about 4200 K on certain places. Below the lower photosphere, in the rotating layer, temperature starts rising, and by its peak it reaches 10.000K.

With its height the level of ionization grows. The upper chromosphere is very ionized, which is quite understandable when it is known that the temperature reaches values of 25.000 K there (in some places up to 300.000 K).

Chromosphere is characterised by the intensive turbulent movements, too. At the height of 500 km, the speed of the turbulent movement os about 5km/s, and the speed of the turbulent movement at 5000 km is about 20km/s.

Based on the monochromatic shots of the chromosphere, it is noted that it, similarly to the photosphere, has grain-like structure. Grains are in the shape of fibres, floculae. They are larger than the photospheric granule, and their lenght is up to several thousands of kilometres.

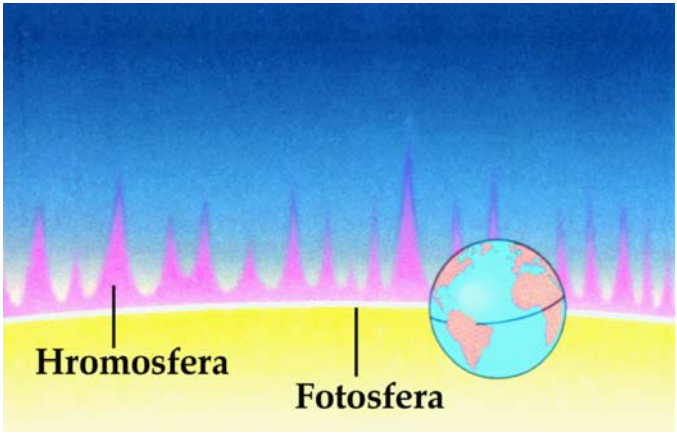
Floculae are well spotted on the large bright surfaces, chromospheric torches (chromospheric facula) (picture 13).



Picture 13.

When the photosphere is observed in white light, we spot that photospheric faculas are in the same places as the chromospheric torchers. The word is about the same objects, observed from different heights. Chromospheric faculas last long – 200 to 300 days and they are much brighter than the fon (in the X-ray area even up to 70 times).

One of the most important shapes that appear in chromosphere is the chromospheric network (picture 14).



Picture 14.

It is the result of the action of the supergranule, that are formed in the photosphere, but their influence is displayed in the chromosphere, too.

Chromospheric network spreads vertically along the whole chromosphere height. Dimensions of the network structures agree the supergranule's dimensions.

Along the birm of the supergranule from the lower layers of the chromosphere, like fire tongues, spiculae go up. Spiculae represent small eruptions of the hot gas, whose temperature is about 15.000 K. Particle concentration in them is 10^{18} m^{-3}, they appear on heights from 3000 to 4000 km, and they go up from 7000 to 12000 km. Their diameter is the size of the granule, about 1000 km, and they appear above the boundaries of the supergranule. It is them that represent the thin structure of the chromospheric network, which is noticed in the centre of the Sun's disc. It is estimated that at each moment there are about a million of spiculae in the chromosphere. They are not equally distributed. In the polar areas there are about 30% more than in the equatorial area. They take up only 1% of the total surface of the Sun. Gas in the spiculae rises from the lower layers of chromosphere with the speed of 20km/s.

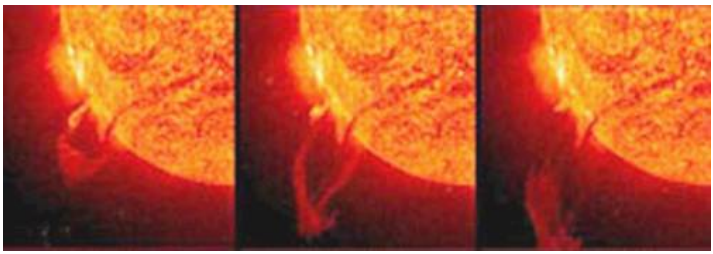
One of the more important manifestations of the Sun's activities are eruptions (explosions) in the chromosphere. They are sudden, short processes, in which comes to the large increae in the intensity of radiation in the limited areas of chromosphere.

Explosions appear in the areas of faculas, above the groups of spots. They are characterised by the rapid rise in glow, very short duration of their maximum and a relatively short extinction, which lasts aboout two times longer than the period of glow rise. In cases when the explosions are noted at the brim of the Sun's disc, we can see a cone of light, whose height is several thousands of kilometers.

Smaller explosions, that are encountered more often, have a circular form, while the larger are in the extended shape and of fibre sturcture. Such explosions occur rarely and only in the time of Sun's maximal activity.

At the time of Sun's maximal activity, energy freed on explosions in the higher layers of the Sun's atmosphere is comparable with the energy it ratiates in one second.

Many particles move by the speed of 1500 km/s (with very strong exlosions up to 2400km/s) through corona and the interplanetary space (picture 15).



Picture 15.

Some of the particles speed up to relativistic speed, so they get to Earth almost at the same time as the electromag-

netic radiation emitted in the explosion. Bunches of such particles are known as the Sun's cosmic rays.

Smaller explosions last from 5 to 40 minutes. On average, every seven hours (at the time of the maximal solar activity, every two hours), in the life of a group of spots there is one chromospheric explosion. During the transit of a spots group through the Sun's disc, 30 to 50, and at the time of the Sun's most intensive activities up to 300 chromospheric explosions appear above it. On the whole Sun daily about 100 explosions occur, but those considered as strong ones are very rare and they happen only a few times a year.

During the explosions local heating of the substance occurs up to temperatures from 10 to 1000 million K.

Explosions in the chromosphere are closely related to the averages in corona and its characteristics. This is confirmed by the facts that the so called corona's condensation appears on heights of 10 – 40 thousand km above the chromosperic explosions. Radio-flashes from the corona testify about that, and the radio-flashes are, from the other side, caused by the level of the activities in the photoshere,

And now, the real explanation of the occurencies in the chromosphere.

The red-hot magma erupts to the Sun's surface in geysers and is cooled down by intensive radiation and vaporisation. At the beginning, in the lower chromosphere the fall in the temperature occurs compared to the photosphere. But the

process of the gases cooling down is dominant only to up to 1500 km, while the speeds of the gasses' rising are small, about 5 km/s. That is, in fact, the very beginning of the anti-gravitation bouncing of mulecules of the vaporated and ejected gas from the red-hot magma.

As soon as the gas molecule's speed rises to 20 km/s, at the height of about 5000 km, a rise of the temperature occurs again. The rise in the gas molecule's temperature leads to the rise in their negative mass, that is leads to the rise in the anti-gravitation force by which the Sun bounces them off from itself. It normally leads to even larger speed of the molecules, even larger heating and thermic ionisation, which, as we have seen rises with the height.

Since granule, or grains, represent geysers of magma, where the evaporation is the most dominant, and that structure is transferred upward and that is why the chromosphere looks as it looks, in fibres or floculas.

Chromosphere torches occur above photospheric faculas, that is, Sun's volcanoes. Logically, the enhanced temperature of the photospheric magma geysers provokes enhanced eveporisation with higher gas molecule's start temperature, thus, the antigravitatonal bouncing is much stronger, which leads to much larger speeds and much higher tempereatures than in the surrounding chromosphere.

Reticular look of the chromosphere and spiculae is just a logical consequence of the look and the activities on Sun's surface.

Eruptions or explosions in chromosphere occur above groups of spots. Logically, groups of spots are created by the strongest Sun's volcanos and they, apart form ejecting flares of 'chemically heavy' magma, eject flares of hot gases, too. These flares of hot gases from the Sun's interior have a much higher themperature than the vaporised gases from the surface magma that is cooling down. That is why they are effected by much higher antigravitional Sun's force, but the antigravitional force of the mutual bouncing of the gas molecules, as well, so that thier much intensive speeding now looks as an explosion. Here, as we have seen, the particles move at the speed of 1500km/s up to 2400km/s. Some of the particles in that process accomplish speeds close to the speeds of light, the so called, relativistic speed. And that is logical when we can see that the local heatings go up to 10 or 1000 million ^{o}K.

Explosions in chromosphere are further reflected on the looks of the Sun's corona. So, everything begins with activities on the Sun's surface and it is only adequately speraded to the higher layers of the Sun.

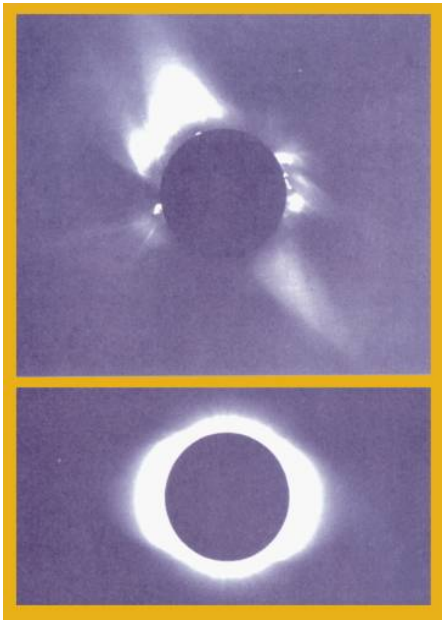
Picture 16.

Corona: above the chromosphere, above the thin transitional layer, there is corona (picture 16).

That is the hottest and the scantiest layer of the Sun's atmosphere. It is noticed as a pearly-

silverish light that encircles the dark Sun's disc at the time of the Sun's eclipse. It is much paler that the chromosphere, nonetheless, it is more visible than it, since it is the most spacious layer of the Sun's atmosphere.

Dimensions and the shape of the corona, as well as the processes taking place in it, on the larger scale depend on the activities on the Sun. At the time of the minimal activity, it is compresses above the poles, and with characteristic fan-like shapes, while along the equator, it is elongated. In the period of maximum of activities, corona takes the 'dishevelled' shape, and almost symetrically encircles the whole Sun (picture 17).



Picture 17.

Corona extends itself up to several Sun's radiuses, although the upper border can not exactly be determined regarding that, through the Sun's wind, it gradually crosses to the interplanetary space. Many authors treat the Sun's wind as the part of the Sun's corona.

Corona is separated from the chromosphere by the already mentioned transitory layer in which temperature sharply rises form the chomospehric ($\geq 10^4$K) to the coronal ($\geq 10^6$K) values.

Corona's temperature reaches the maxumum of about 2 millionK at the height of about 1/10 Sun's radius of the photosphere. After that it gradually falls. If the Sun's wind is treated like an extended part of the corona, than in the vicinity of the Earth's orbit, its temperature is of the measurement order of 10^5 K.

Physical state of the gas in the corona is defined by the surprisingly high temperatures and very low denwities of gas.

In the inner corona, r = (1,03 – 1,2) Rʘ, going towards the periphery, the gas density reduces, but the temperature rises and at the height of 50,000 km it is (1–1,5) million K. It is characteristical that the inner corona emission spectrum with highly atomised metal atoms appears. The highly atomised metal atoms are especially bright.

In the middle corona (r ~ 2Rʘ) T ~ 10^6 K gas density decreases even more and its radiation is with a high level of

In the outer corona, r ~ 3Rʘ, temperature and gas concentration values continue falling and the corona gradually starts sqanderring into the interplanetary space. Brightness of the outer corona is about billion times lower than the brightness of the Sun's disc. Continual spectrum of the outer corona is practically the repeated spectrum of the photosphere, but of a drastically lesser intensity. In it, we can also, see standard Fraunhofer's absorbtion lines which are characteristic for the photosphere. That point out that in the outer corona dispersal of the radiation of the photospere on the present dust particles happens.

Sun's corona is visible in the wide diapason of the spectrum of the electromagnetic radiation.

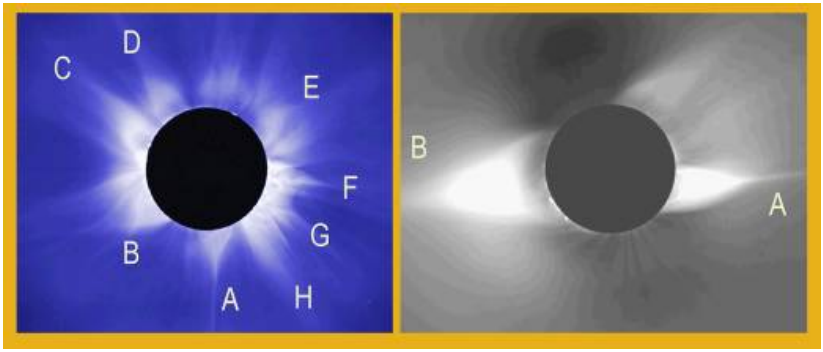
Light of the emision corona consists of about 100 bright lines for which it has been determined that they originate from the highly ionised atoms of iron, calcium, nickel, etc.

Corona's radiation arises in the conditions that are much different that the termodinamlically balancing ones. Owing to the high temperatures, corona is a strong source of radio- and far UV radiation. Newer researches denote that in the corona there are ocasional flares with intensive emissions of X-ray radiation, which precede ultraviolet emissions. Radiations originate from the area in the corona where temperatures reach **up to several million degrees.**

In the corona we can note different forms: flares, rays, arches, plumes, that in the shape of brushes appear above the poles, condensations and hollows, eruptions, etc. Some of them are visible in the integral light of the white corona, while the others are more visible in other areas of the electromagnetic radiation (radio or X-ray). Denominated shapes are most often encountered above the area of the enhanced Sun's activity in the so called, active areas.

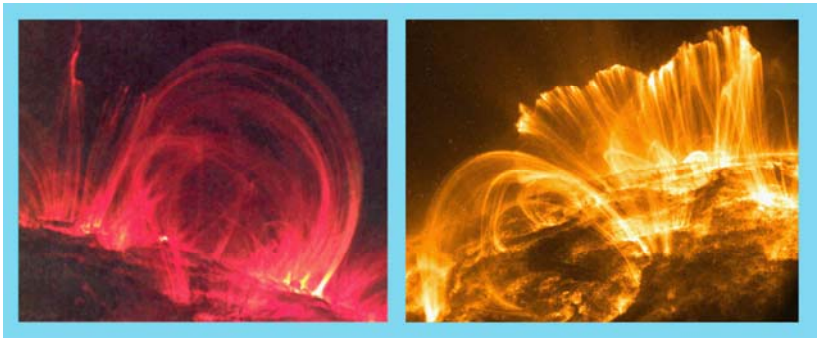
A flare is manifested in the abrupt enhancement of the glow of the localised areas on the Sun above a group of spots and torches. This occurrence happens in the areas of chromosphere and corona. In about ten minutes, glow of the flare overtaken area grows, and then, for about an hour, it reduces and goes back to the former level.

Corona's rays belong to the characteristic elements of the larger forms in the Sun's corona. They are noticed during the solar exlipse or with the help of a chronograph, as elongated condensations with different radial forms (picture 18).



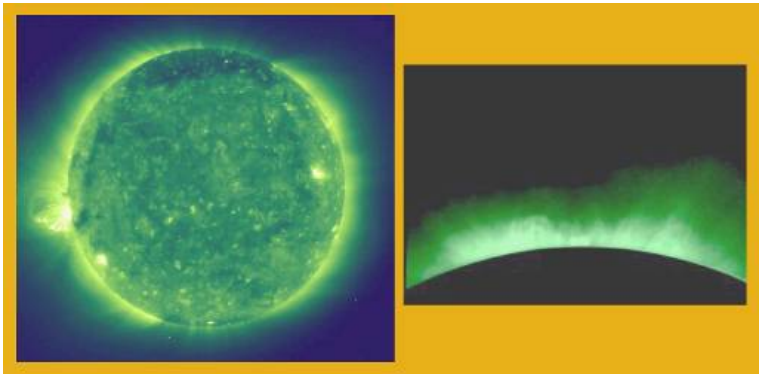
Picture 18.

They extend from 0,5 Rʘ to 10 Rʘ, and in some cases even more. On average, the duration of the ray shapes is about ten days. The main part of the ray, above the centre of the activity, emits a green line Fe^{13+}, so that, in that area, the temperature is over 2 million degrees.



Picture 19.

Corona's arches (picture 19) occur above the field of the active areas. They are composed of a number of thin threads.



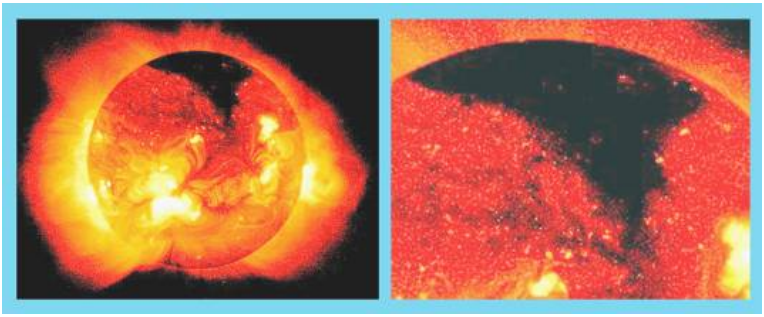
Picture 20.

Plumes or polar brushes (picture 20) most often occur above the Sun's poles. They greatly depend on the level of the

activities on the Sun, they connect to the present faculas, and they are the best observed during the time of the decreased activity, when the corona is compressed.

Analysis of the radio-waves from the Sun have displayed that above the central parts of the active areas there are corona's condensations. Temperature in them reaches values that are higher than three million degrees. They are several times thicker than the corona's surroundings. At the time of the most intensive creation of the spots, sporadic condensations occur.

In the Sun's corona areas with lower temperature were spotted (from 0,8 million K) and an anomalously low mass density and they were named corona's hollows (picture 21).



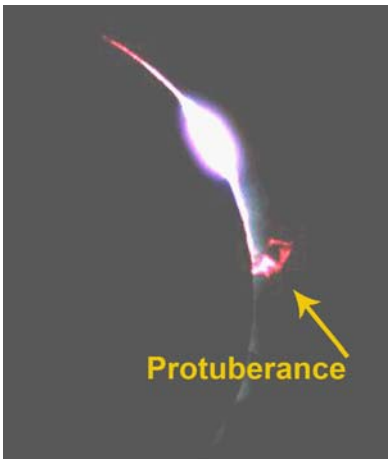
Picture 21.

The word is about spacious, stable formations, that sometimes take up to 20% of the corona. They last about several Sun's rotations. They are characterised by the reduced glow in the X-ray and the UV area of radiation. A noticeable decrease in the glow in the radio and the visible part of the

spectrum. Judging by everything, they permanently exist in the polar areas of the Sun, but they sometimes expand to the lesser helographic latitudes. There, isolated hollows can be fromed. Hollows like this are often longlasting, especially at the time of reduction of the Sun's activity. From the corona's hollows Sun's wind, whose particles leave the corona in speeds from 600 to 800 km/s, is continously emitted.

On the recordings from the corona in the X-ray light corona's bright spots are noted, unorderly distributed over the whole Sun's disc. Their dimensions are smaller than the dimensions of the spots, and on average they last for about 8h. During the 24 hours, on the Sun about 1500 corona's bright spots appear. Dynamics of their appearance and thier total number are in antiphase with spots, that is, they occur more often and in larger numbers when there are lesser spots in the photosphere.

Protuberances are the most spectacular form of the Sun's activity and the most grandious occurence in the Sun's atmosphere. During the solar eclipse they can be seen as red flames (picture 22).

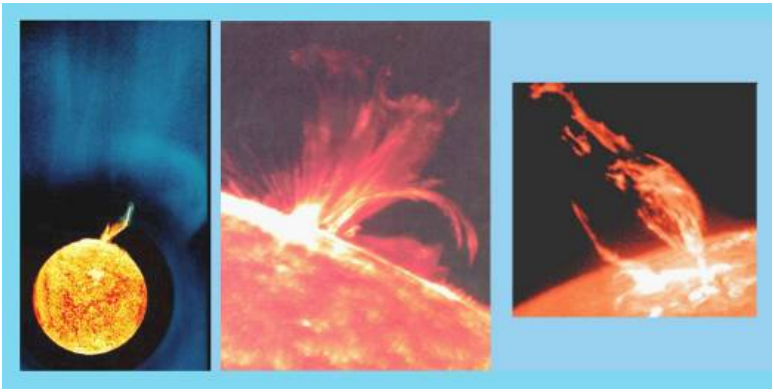


Picture 22.

Protuberances represent strap condensations in the corona. It is about cooler ($T \leq 10^4$ K), thicker formations inside the

diluted and warmer coronas ($T \geq 10^6$ K).

Above the Sun's limbo, protuberances can be seen in the shape of gigantic fire tongues, arches, fountains, knots, etc (picture 23)



Picture 23.

We can spot moving threads and condensations in protuberances. In the projection to the Sun's disc, they are dark, bended strips of complex structure that are called filaments. Their lenght is up to 200,000 km.

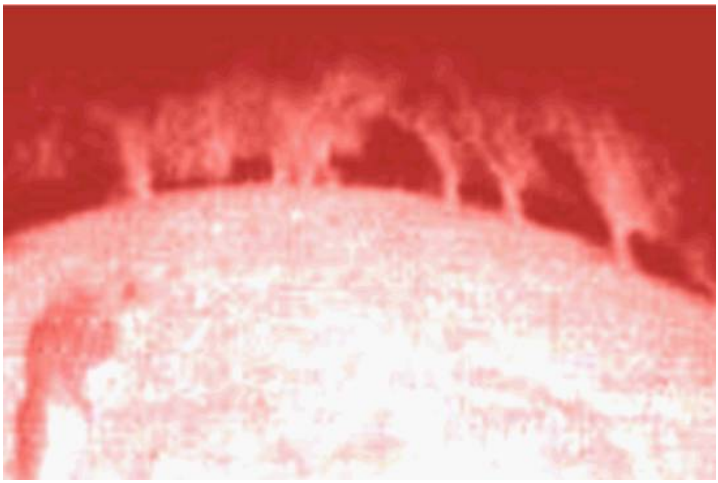
The best known distribution is to: quiet and active protuberances.

Majority of protuberances belong to the quiet protuberances. They are 'long-living' - they last more than one day (which is rare) to several months (which is more often). There were cases that they last for several years. They hover for a long time on all heliographic latitudes. Temperature of the quiet protuberances is usually up to 15000 K, and most usually

between 6000 and 8000 K, which is the reason why they are treated as cold ones.

A typical quiet protuberance is about 200.000 km long, even though in rare cases their lenght can reach the total of 1.900.000 km. The average height is 50,000 km, while the width is not more than 6000 km. They consist of threads whose diametres are about 1000 km. The lower ends of protuberances are in the areas between the supergranule, in the vicinity of the active areas.

Protuberances primarily occur in the zones of latitudes of 10^{o}–40^{o}, in which spots are concentrated, but they spread further. Quiet protuberances are divided into those below the 40^{o} – 45^{o} heliographic latitude and those above, known as the polar, that often make the so called wreaths of polar protuberances (picture 24).

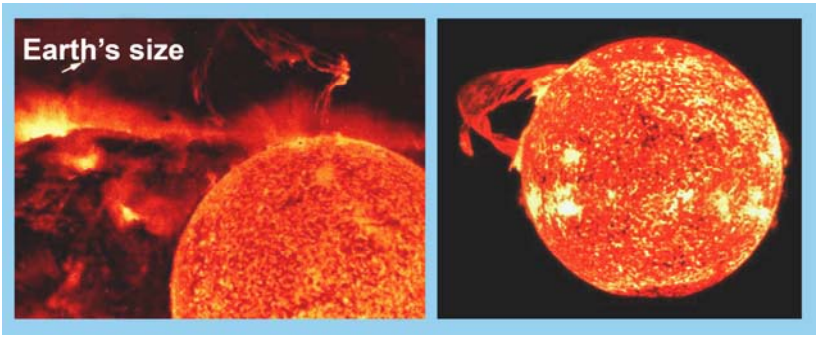


Picture 24.

At the beginning, quiet protuberances usually spread in the direction of the meridian and in such a manner that one foot of a protuberance is with 80% of its fibres directed towards the leader spot. In time, they slowly move towards the pole. Their lenght is growing and they are more and more oriented in the direction east-west. After ten or so Sun's rotation their threads reach the polar areas where they can survive about five more months.

Apart from the quiet ones, there are active protuberances, which distinguish themselves by very rapid development (from 10 minutes to several hours). They appear in the shape of clouds, system of knots, cyclons, sprays, etc. They are usually of smaller dimensions from the quiet protuberances. Some of them appear in areas above spots and slowly move towards the borders of the area. They are very often absorbed by the spots and they disappear there. They can be transfromed into quiet ones. Average temperature in active protuberances is about 25.000 K, which is why they are known as hot ones.

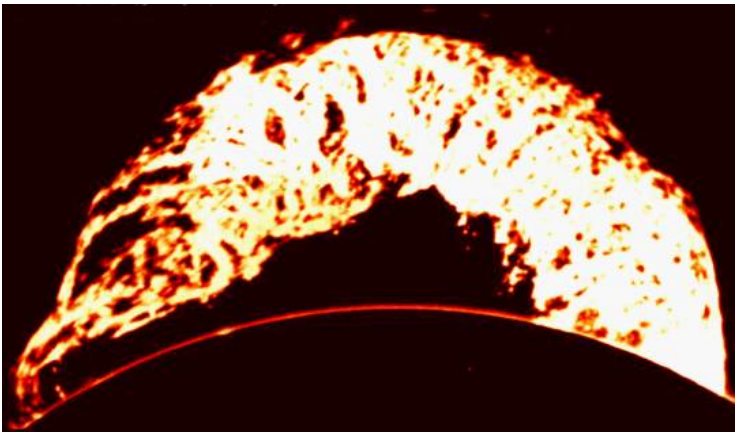
In the spots' zone eruptive (explosive) protuberances appear. They reach great heights – in some cases over a million of kilometres. There's a known case of a protuberance that 'rose' up to 1.700.000 km (picture 25).



Picture 25.

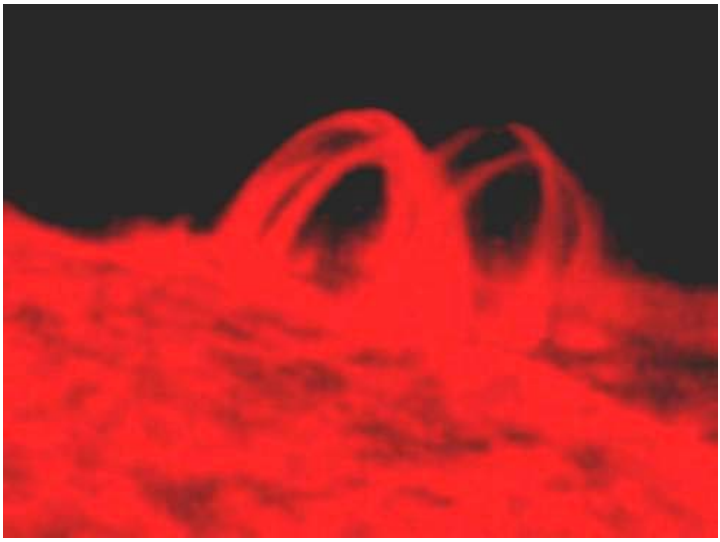
In the spectra with lines typical for quiet protuberances (hydrogenm, lines of calium, etc.) appear, but lines of metal, too.

At the beginning of the formation, for a while, eruptive protuberances can resemble regular ones, the quiet protuberances that contain in themselves elements with unorderred movements. Parts of the protuberance then begin to rise, at first slowly and then faster and faster. The rise in the speed can be abruptly and thus reach speeds up to several hundred km/s. The mutual feature of all eruptive protuberances is that they 'break' in the middle of the arches. During the arch eruptive protuberances (picture 26) it comes to a great enlarging of the size of the arch. After its breaking, the matter is returning back to the chromosphere down along the parts of the arch.



Picture 26.

There are the so called protuberances of the sunspots (picture 27) that appear in the centres of activities above the spots' groups in the shapes of knots, arches or funnels.

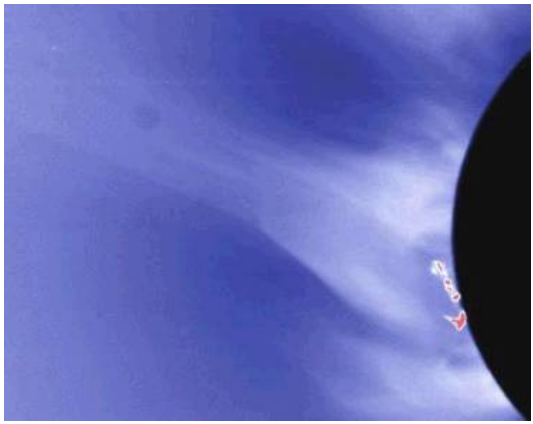


Picture 27.

There's also corona's rain – a form of protuberances that occur with the fall of the tufts from the corona to the chromosphere.

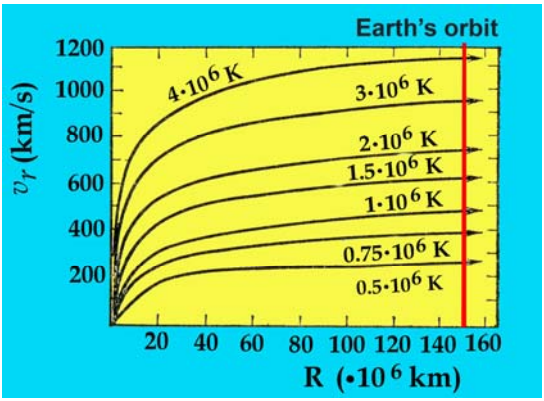
Because of the greater mass density, substances in the protuberance should 'sink' to the scantier environments. However, a certain force is enabling it to survive relatively long in the formed configuration.

Sun's wind occurs by the expansion of corona into the interplanetary space. It is a permanent 'circulation' of the Sun's substance, that is moving approximatelly radially from the Sun (picture 28) and pervades the Sun's system up to the reach of 100 AJ (AJ is the distance from the Sun to the Earth).



Picture 28.

Particles of the Sun's wind gradually speed up, for example, at the distance of several Sun's radiuses, the middle radial speed of the protone collective in the Sun's wind is (100–150) km/s, and at the distance of 1 AJ its value is (300-750) km/s (picture 29).



Picture 29.

Regarding the speed of movement, flows of the Sun's wind can be either slow (with speeds up to 300km/s) or fast (with which the speed have the value of 600-700 km/s).

In the vicinity of Earth's orbit, depending on the level of activities on the Sun, through the square meter of the transversal suface every second between $5 \cdot 10^{11}$ and $5 \cdot 10^{12}$ protons whose average speed is 400 km/s, and the average temperature is 50.000 K (in active periods is can be up to 400.000 K) 'flow'.

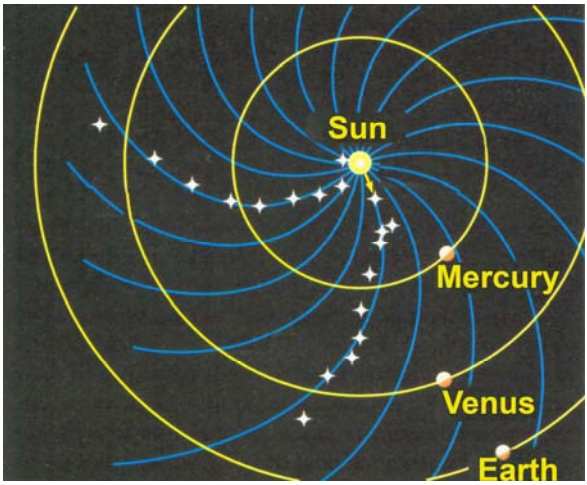
In a second, through the Sun's wind, into the interplanetary space, a mass of 10^8–10^9 kg flows out. If there weren't for spiculas, which are 'filling' in corona's mass, this layer of the Sun's atmosphere would be 'scattered' in 3 or 4 days because of the flow of the Sun's wind. Due to the solar wind, on the annual level, the mass loss of the Sun is 10^{15}–10^{14} Mʘ. Since, judging by all, the Sun's life span is about 10 billion years, it is clear that such a loss does not significantly influence its evolution.

Table 2. Relative content of atoms in the solar wind's chemical structure

Element	Relative content	Element	Rel. sadžaj
H	0,96	Ne	$7,5 \cdot 10^{-5}$
^{3}He	$1,7 \cdot 10^{-5}$	Si	$7,5 \cdot 10^{-5}$
^{4}He	0,04	Ar	$3,0 \cdot 10^{-6}$
O	$5 \cdot 10^{-4}$	Fe	$4,7 \cdot 10^{-5}$

Table 2 presents solar wind's chemical structure with the relative content of the certain atoms compared to the total number. The representation ratio of helium and hydrogen atoms in the Sun's wind is not the same as in the Sun's atmosphere (to the detriment of helium). However, in the quiet solar wind the representation ratio of ^{3}He : ^{4}He coincides with the same ratio in the remaining part of the solar atmosphere.

In the Sun related coordinates' system, Sun's wind particles trajectories (paths) are in the shape of the Archimedes' spirals, with the origin in the areas of the Sun's corona from which the mentioned particles originate (picture 30). The spiral line of the solar wind's 'blow' is determined by the radial speed of the particles flow out from the corona.



Picture 30.

Area of the Sun's wind and the interplanetary magnet field (that comes from the Sun) spreading is the forementioned heliosphere. Its border is determined by the balance between the Sun's wind dynamic pressure and interstars' gas pressure, galactic magnet field and the galactic cosmic rays. It is estimated that the heliosphere border is at (50–100) AJ from the Sun, which is far beyond the Pluto's orbit. It is estimated that its form is elongated.

And now the real picture of the corona and the happenings in it.

We can see that the antigravitational speed of the Sun's evaporated substance culminates between the heights of10,000 km and ~70.000 km. In that period the temperature rises from 10^4 K to almost 2 million K. Only after that it starts decreasing slowly.

The fact that the light of the emision corona consists of bright lines of the highly ionised atoms of iron, calcium, nickel and other heavy elements, confirms that those are magma vapour, both light – surface one, and heavy – sub-surface one.

In the proces of anti-gravitational acceleration, and thus heating, it comes to the breakdown of the molecules (gas) into atoms, but not all of the heavy elements break down to the level of α particles and protons. Existance of the areas in corona, where bursting into flames with intensive emission of X and UV radiation happens, and where the temperature rises up to several tens of million K, testifies about the proceses of heavy elements atom disintegration to the level of α particles and protons. There, we have fission reactions present.

Active areas on the photosphere cause further effects in chromosphere, and then they cause them in the corona. That is how flashes, rays, arches, plumes, condensations and bright spots occur.

Corona's hollows occur above the areas of photosphere that are not active, most often around the Sun's poles.

We have already learned how and why these things happen. However, protuberances deserve special attention and a detailed explanation.

Protuberances are gigantic eruptions of photosperic volcanos, when spirts of magma are ejected high into the Sun's atmosphere. Noted temperature of protuberances actu-

ally confirms that they are comprised of hot magma ejected from deeper layers of the Sun.

Protuberances' 'long life', that is their long hovering is a simple consequence of buoyancy from the Sun's substance accelerated by the anti-gravitation. That Sun's wind, at its origins, does not only compensate for the weight of magma that constitutes the protuberance, but it also heats it up, that is it prevents its quick cooling and becoming heavy and thus its quick falling back.

Magma is gravitationally attractive. It keeps itself in the state of a protuberance and it is also attracted by the Sun, and thus prevented from the Sun's wind to blow it into the interplanetary space.

With arch-like eruptive protuberances there is an abrupt rise in the arch size exactly because of the substance pressure (gas) that is anti-gravitationally accelerated upward up to the point when the arch's berakage occurs at its highest point. As magma has to return to the Sun's surface, it happens by its sliding down the parts of the arch.

Anti-gravitational dismissal of Sun's vapour and gases that begins right at their occurence, in time and height turns into Sun's wind. We have already seen up to which speed and which temperatures.

It is very improtant to note the fact that the Sun loses its substance through the Sun's wind. The loss of the sub-

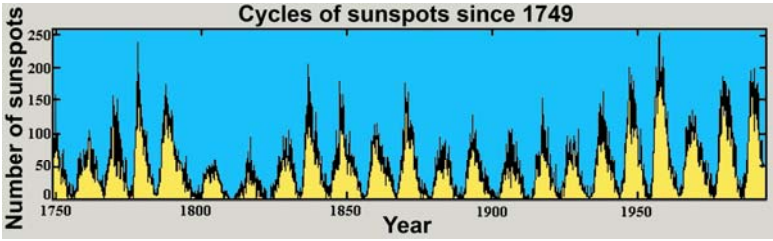
stance means the lowering in the gravitational force, and that means reduction of speed and temperatures of the particles in the Sun's atmosphere, and that means the extinctions of the Sun's glow, and that means doom for us, here on Earth. Nevertheless, there's no room for worrying, because the loss of the Sun's substance is so scant that the Sun will continue serving us for much longer than the 'fusionally' anticipated several ten billion years.

And now, let us pay attention to table 2 that shows us the chemical structure of the Sun's wind and the relative content of atoms in it. Sun's wind's key components are H whose relative content is 0.96 and ^{4}He whose relative content is 0.04. It was just these data that led the scientists conclude that the Sun is a gas ball composed of hydrogen that becomes ^{4}He by fusion. That is how from correct data, because of the imperfect theory and the ignorance of the true nature of the mass interactions (gravitation and anti-gravitation), wrong conclusions were made.

This chemical structure of the Sun's wind is the consequence of the disintegration of the molecules and heavier elements' atoms that constitute the gases made by cooling of magma or ejected in eruptions in the process of anti-gravitational dismissal and acceleration that is followed by enormous rise in their **temperature**.

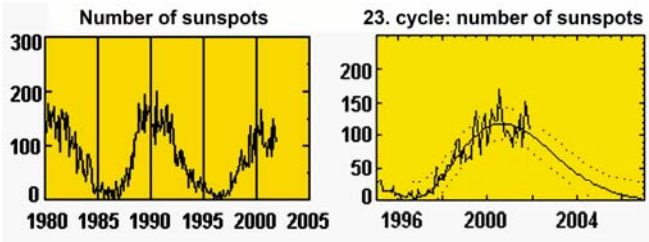
CYCLES OF THE SUN'S ACTIVITY

Observations of the occurences on the Sun have led to the discovery of the cyclic movement in all that. Cyclic movement of the spots' number in time is on average 11.2 years. Since the monitoring of the Sun's activity (half of the 18th contury) until today, 23 cycles have been noticed. Picture 31 represents results of the monitoring of the Sun's activities since 1749 until today.



Picture 31.

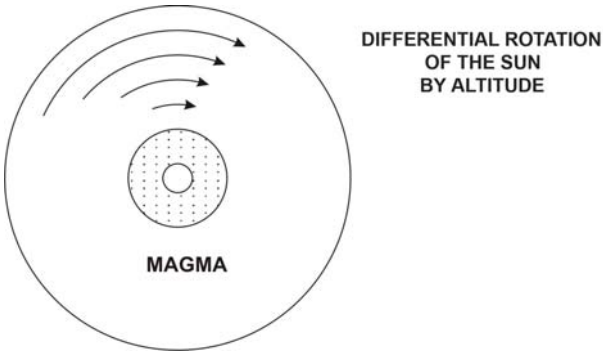
Minimums and maximus of the spots are clearly noted. Time interval between the two minimums in the spots' occurence defines the duration of the solar activity's cycle. Picture 32 represents the change in the number of spots during the 22nd and the 23rd cycles of the Sun's activity.



Picture 32.

It is important to mention that not all cycles last equally. For the period from 1755 until 1945 periods between two neighbouring minimums have varied from 9 to 13.6 years, and between the maximums from 7.3 to 17.1 years. The mentioned irregularities occur from cycle to cycle without any notable regurality. Based on the activities in the previous cycle, it makes all the prognoses about the coming cycle unreliable.

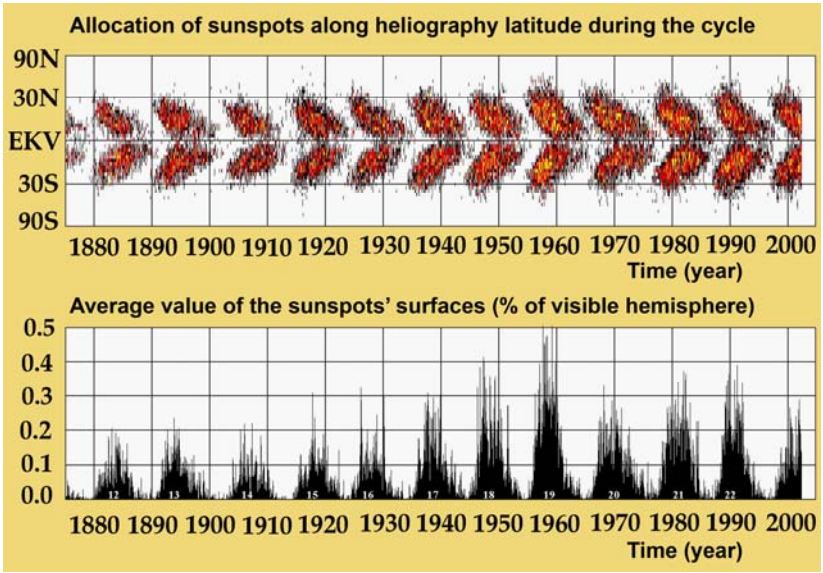
In the contemporary times, based on the doppler's progressions, it has been noted that in the time of the quiet Sun the rotation of the equatorial areas accelerates. It is obvious that in the time of the maximum solar activity rotation 'breaks' because of the volcano and magma eruption formation from the deeper layers of the Sun to its surface, which is, again, an indicator that the Sun's rotation is not differential only on the surface by the helographic latitudes, but that the Sun's rotation is differential by the altitude. It is obvious that the 'chemically heavier' magma is rotated slowlier than the surface layer which is comprised of 'chemically lighter' magma (picture 33).



Picture 33.

Apart from the number and the surface of the spots, their distribution along the helographic latitudes during the cycles changes. First spots in the cycle are formed around 30°N and 30°S, and then they start occuring closer and closer to the equator. In the time of the maximum, spots occur around 15°N and 15°S and the last spots in a cycle are at about 8°N and 8°S. Rarely can the spots be found at latitudes larger than 45° and lesser than 5 °.

On the 'butterfly diagram' (picture 34) it can be noted that the first spots belonging to this cycle appear at 30° before last spots from the previous period dissapear at 8°. Such overlaping of the cycles lasts about three years on average.

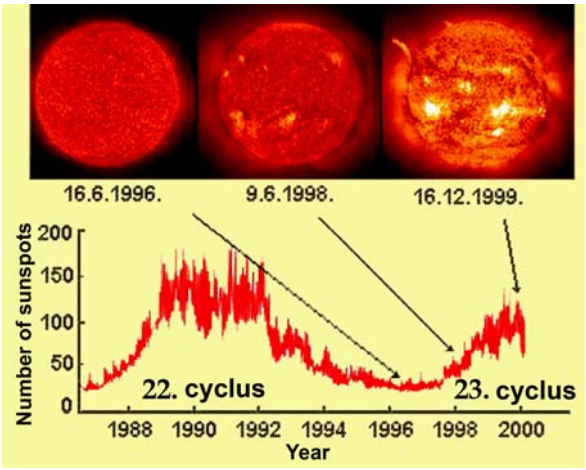


Picture 34.

This way of spots' appearance points to the difficulties that are encountered by the first eruptions of the hotter and 'chemically heavier' magma in the new cycle in order to break out through the quickest layer of the equatorial magma.

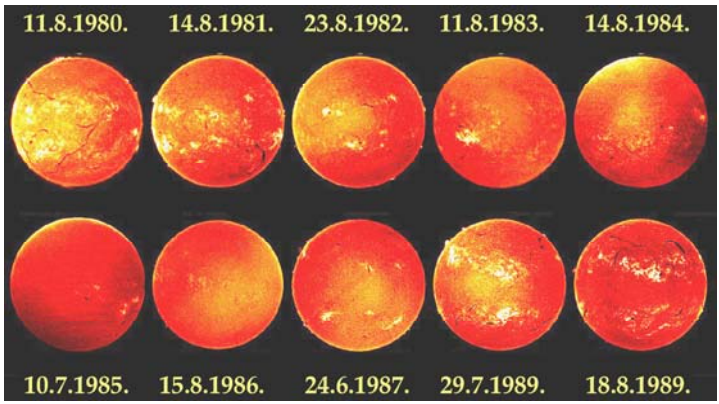
As the eruptions are getting stronger during one cycle, the spurts of magma from the depth manage to burst through the zones of surface magma that are closer to the equator, and by that breaking through, they slow them down because they act as 'cobs' that stick themselves into one layer after another. As those 'cobs' mostly occur at the time of maximum it is logical that the deceleration of the equatorial magma is then the highest.

Oscillation of the Sun's activity is obviously manifested not only through the appearance of the spots, but through other forms in the Sun's atmosphere. Growth in the activity is also manifested with the growth of the intensity and the frequency of the chromospheres explosions, with which the flashes, the UV and radio areas of the electro-magnetic radiation are connected. Intensifying of the activities also implies corpuscular emission in the form of the solar wind and the Sun's cosmic rays. During the cycle a change in the division and the number of protuberances occurs: main areas of protuberances' occurrence move to the equator (which is logical, because they follow the spots, that is, they occur in the same areas as the spots), while protuberances of greater heliographic latitudes migrate towards the poles and get there at the time of the maximum of the cycle.



Picture 35.

Picture 35 depicts the development of the 23rd solar activity cycle. Hα pictures show Sun's 'the quiet surface' in the time of the minimal activity. At the time of the maximum of the activity (second half of years 1999 and 2000) manifestations of the violent activities are clearly visible: we can se multiple explosions, protuberances and mass ejections .

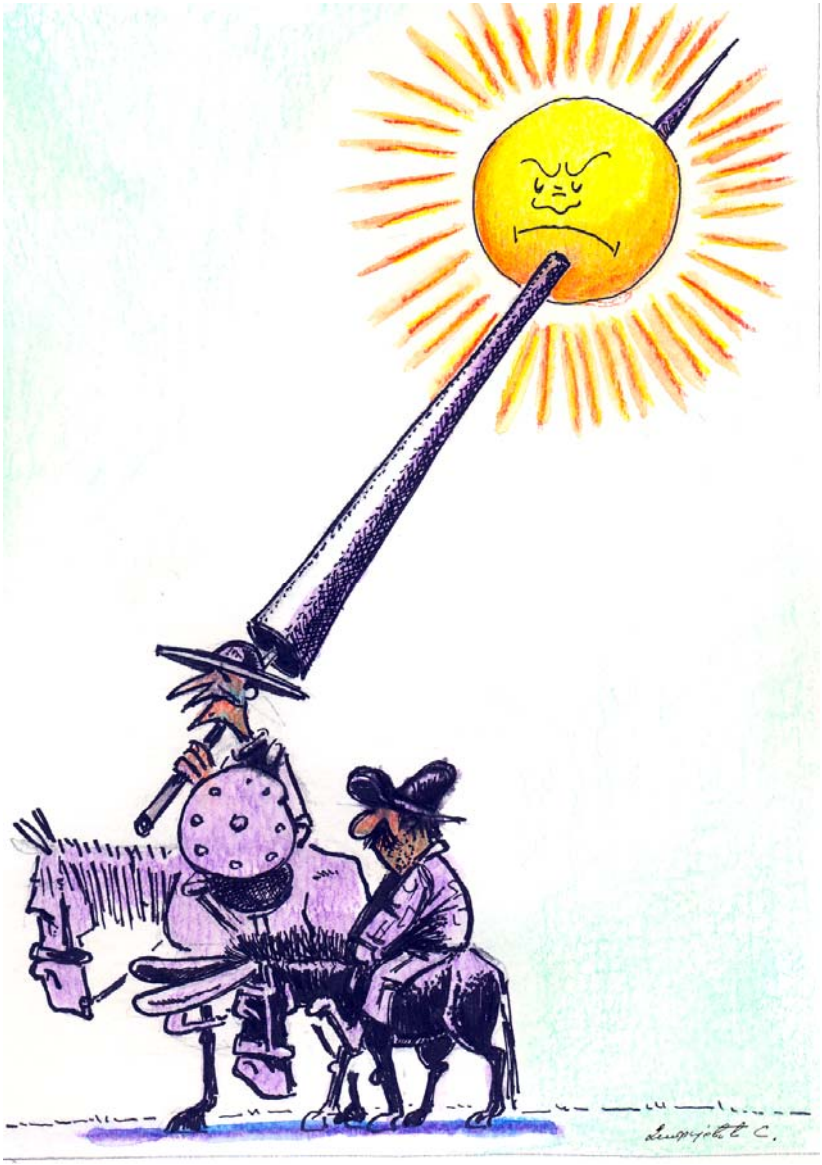


Picture 36.

Picture 36 shows the Sun's appearance between the maximums of the 21st and the 22nd cycles.

It is obvious that the temperature is changinig in the mentioned cycle. It is lowest during the minimum of the Sun's activity, and highest during the maximum of the Sun's activity. What kind of a process could cause such a cyclical temperature change of the whole Sun?

In order to understand that we have to observe the Sun's movement in our galaxy.



OUR SUN IN OUR GALAXY

(SUN AND THE MILKY WAY)

Sun, by its characteristics, represents an average, dwarf, yellow star. It is thought that 2% of stars belong to this type, which means – there are several billion of them.

Galaxies represent gravitationally limitted star system. They consist of a large number of stars and the interstar substance in the form of gas and dust. Depending on the type and the size of a galaxy, the number of stars in them can go from several million up to several billion. Till today several thousands of the brightest stars have been studied. They represent the basic structural element for even larger associations in the cosmos – clusters and superclusters of galaxies.

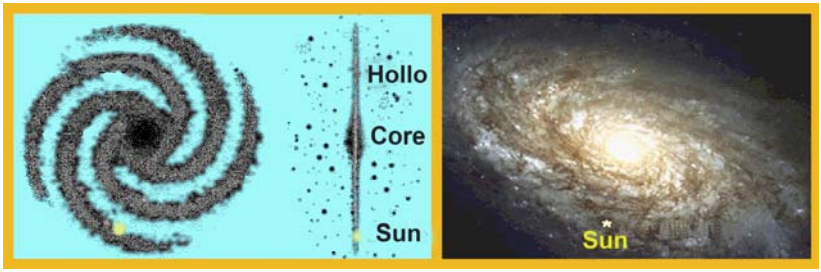
Our galaxy (the Milky way) belongs to the class of the spiral galaxies, that are distinguishable by their characteristic spiral arms (branches) that there is usually two, while the others can be developed at the ends of the spiral system.

Part of our galaxy in the night sky is distinguishable as a bright, pale lane of unequal width that divides the celestial sphere in to two parts (picture 37).

Picture 37.

All the stars we see in the night sky belong to our galaxy.

A schematic appearance of our galaxy is shown in picture 38.. Observed from both sides it has the shape of two collapsed plates whose diameter is about 30 KPC (100.000 LY).



Picture 38.

Thickness of the middle bulge (nucleus) is about 4 KPC (13.000 LY). The middle symmetry level (the galactical level), which lies in the Milky way and divides the galaxy symetrically, is easily observable.

Parsek (PC) is an astronomical unit for lenght and it represents the distance from which the big half-axis of the Earth's path, that is one astronomical unit, can be seen under

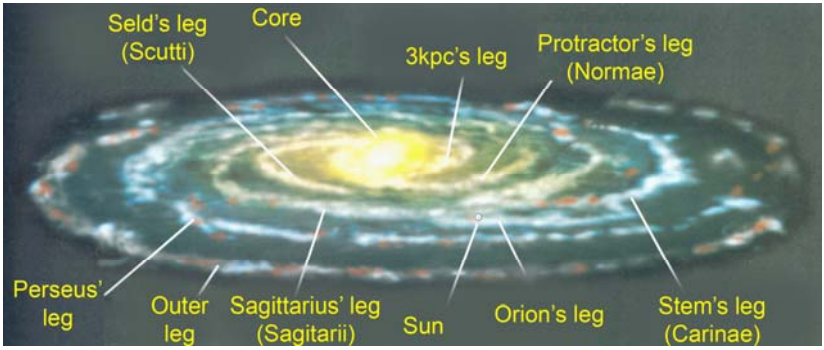
the angle of 1" (one angular second). Astronomical unit (AU) is a unit for measuring the lenght in astronomy and it is equal to the big alf-axis of the eliptical path of the earth around the Sun, that is, in accordance with the characteristics of the elipse, the average distance of the Earth from the Sun.

According to the contemporary measurings 1AU = 149.597.870,5 km, which represents the lenght of approximately 149.600.000 km.

The calculations show that it is valid:

1PC = 3.262 LY = 206.265 AU = $30,86x10^{12}$ km

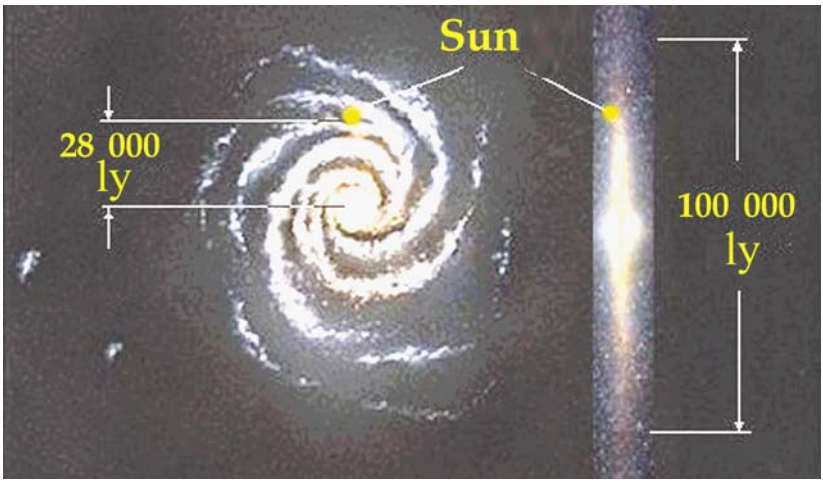
Where LY light year that is the way the light passes in a vacuum within a year (1LY = $9,46x10^{12}$ km).



Picture 39.

The Sun is almost in the galactical level from the inside of the so called Orion`s leg. The dark space of the night sky is what we see when we observe normally to the galactical level. Based on different measuring methods and the division of the galactic objects, it was established that the Sun is 8 to 10 KPC

from the centre of the galaxy. Based on the galactic objects' movement and the analysis of the radio-radiation that comes from various ways, it is thought that the most probable distance of the Sun from the galaxy's centre is about 8,5 KPC (28000 LY) (picture 40).



Picture 40.

These kinds of acknolwedgments finally contradicted the apprehensions that the Sun had the privileged position in the galaxy and in the cosmos. Distance from the Sun to the galaxy's nucleus has favorably affected the development of life on Earth. Namely, concentration of the stars in the galactic nucleus is huge, so that the lethal part of their electromagnetic radiation (UV, gama and X) there is multiply intensive from the radioation of the sole Sun or the radiation at the place where it is located.

It is estimated that there are between 100 and 300 billion stars present in the Galaxy. Almost 90% of the visible

mass is located in the Sun's orbit sphere of the radius, around the centre of the galaxy. Objects of the galactic discus rotate on almost circular paths around the galactic centre.

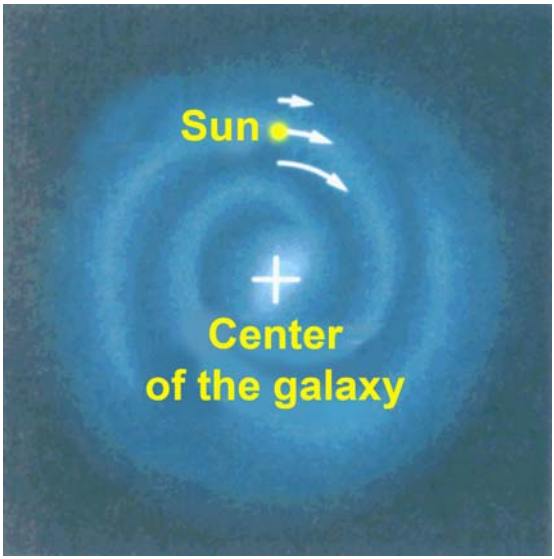
The largest concentration of the stars in the galactic discus is up to the distance of 10 KPC from the centre of the galaxy. With alienation from the centre, decrease of this concentration is noticed. We should bear in mind that stars usually appear in doubles, multiples or in clusters.

The disc is encircled by a speric halo in which stars with mostly mass of 0,85 Mʘ are located. In the chaotically positioned, very elongated eliptic paths they rotate, mainly around the centre of the galaxy in speeds (50–150 km/s).

The outer part of the galaxy is the corona that spreads itself up to 100 KPC from the galactic centre.

Our galaxy spins around the axis of symetry, which is normal to the galactical level, clockwise – observed from the north galactic pole.

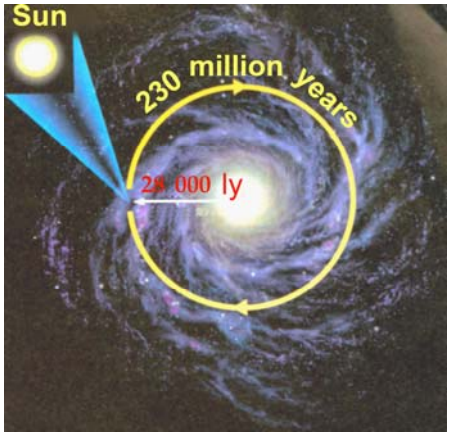
Analysis of Doppler's movements of the galaxy's spectral lines showed that the object of the spiral structure (stars, clouds of the interstars' gas) move around the centre along almost circular paths, but in various angular speeds (picture 41).



Picture 41.

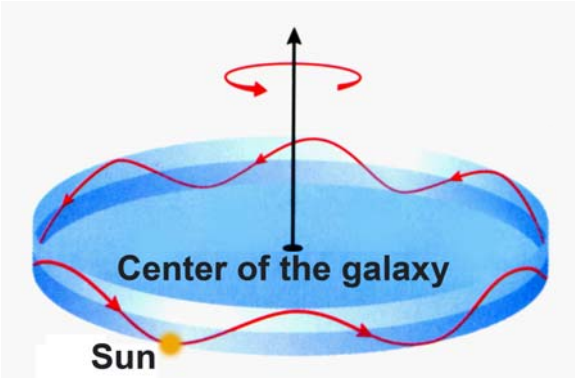
Angular speed in the central parts of the galaxy is constant, that is, galaxy rotates as a solid body there. With the alienation from the centre, the angular speed of the spiral structure rotation decreases.

Speed at which the Sun is moving around the galactic centre was determined based on the movement regarding the extra-galactic mist that do not participate in the movement around the galaxy. The Sun rotates around the galactic centre with the speed of about 230 km/s (828.000 km/h). Even though, from the point of the Earthly notions, the word is about a very high speed, it takes the Sun 230 million years to make a full circle around the centre of the galaxy. This time interval is known as the galactic year (picture 42).



Picture 42.

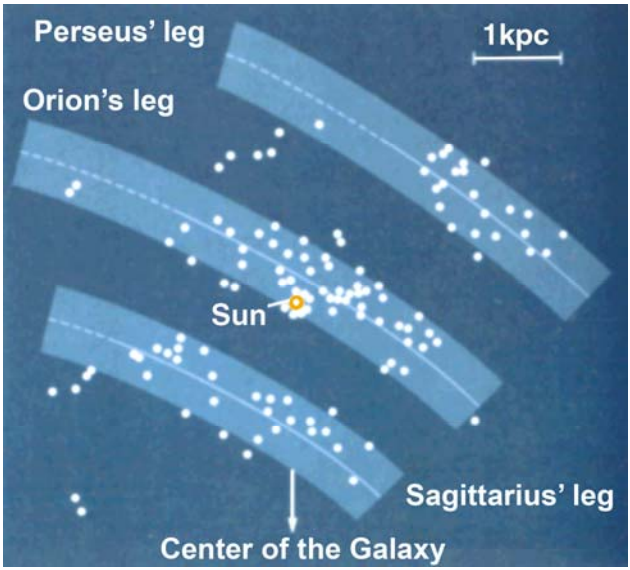
The Sun is not exactly positioned in the sole galactic level. Today, regarding the galactic level it has moved northwise for about 8PC (oko 26 LY). It is clear that this discrepancy on the galactic distance scale is negligibly small. However, it is because of that position, during its circular movement around the Galactic centre, it seems to swing up and down (picture 43).



Picture 43.

Researches showed that the Sun periodically passes through the galactic level. Otherwise, similar movements are typical for other stars that are in the vicinity of the galactic level. Cycle of this kind of the Sun's swinging on the orbit around the galactic centre is about 33 million years.

It seems logical to me that this kind of movement is the consequence of the Sun's rotation around the lenghtwise axis of the Orion`s leg in which the Sun is located (picture 44).



Picture 44.

It seems logical to me that this kind of movement is the consequence of the Sun's rotation around the lenghtwise axis of the Orion`s leg in which the Sun is located.

That would mean that the Sun moves around the centre of the galaxy along a spiral or a helicoide that is closed

within a circle. From the data provided it is noticeable that the Sun rotates around the lenghtwise axis of the Orion`s leg 3.5 times, that it passes through the galactic level 7 times until it makes a full turn around the galactic centre. While turning around the lenghtwise axis of the Orion arm, the Sun partially approaches the galactic nucleus, and in the other it moves off from the galactic nucleus, going through its closest and farthest position regarding the glactic nucleus. Since that movement of the Sun is happening along with the unavoidable galactic wind and radiation, at the same time it means that the Sun would change its temperature depending on its posistion and its movement. When it is cloxest to the galactic nucleus and when it is passing through one galactic level, its temperature will be much higher then when it is on the oposite side when it is farthest from the galactic nucleus.

When it is between the two positions, its temperature will vary as well; when it is moving away from the galactic nucleus and when it is 'running away' from the galactic wind its temperature will fall, and when on the oposite side it starts aproaching the galactic nucleus and 'running into' the galactic wind, its temperature will rise.

That automatically means that in accordance with that its activity will change. But those are very slow changes – as we have seen one cycle lasts about 66 million years.

But what could be the reason of the 11.2 year cycle?

The first reason could be that the intensity of the galactical radiation and the galactic wind is changing by the same cycle.

The second reason could be that the Sagittarius arm baffles or shields the Sun in such a cycle (take a look at picture 44). Those would be, let's say, partial eclipses of the galactic nucleus. If our, Orion arm rotates around its lenghtwise axis, then all the other arms do, too, as well as the Sagittarius arm, which is closer to the galactic nucleus and it can shield the galactic nucleus in different manners.

The third reason could be the Sun's movement along the spiral that goes around the big spiral, and which cause would be the existance of another star that makes a binar system along with the Sun.

Further close observations will surely lead us, one day, to the discovery of what exactly is the cause of the noticed cycles of the Sun's activities.

However, I would like to emphasize here that the movement of the stars significantly influences their life, and as we are about to see, their destiny.

A STAR'S MOVEMENT INFLUENCE ON ITS LIFE AND DESTINY

In order to correctly understand the influence of the movement of a star to its life, I will remind you of the phenomena of the star wind.

Star wind is, as we have already seen, a consequence of the star's anti-gravitational rebuffing of the evaporated photospheric substance. Temperature of those molecules rises with acceleration – that is what we already know from the molecule-kinetic gas theory, higher speed implies higher temperature. But, molecule-kinetic theory of gas has not explained the true reason for that. How can temperature cause speed? How can speed cause temperature?

Basic necessity is the existance of the gravitational field. Everything that the molecule-kinetic theory has described is happening in the gravitational field of the Earth. Star's wind is born and it exists in the gravitational field of a star.

Body temperature is the factor that changes – we have already seen how – the quantity and the quality of the body's mass.

Change in the speed of a body implies the existance of the acceleration. Acceleration implies action of a power.

In the gravitational field of a body, gravitational force attracts all the bodies with the attractive mass, and the anti-gravitational force rebuffs all the bodies with the negative mass.

Therefore, a temperature of a body, which is in a gravitational field of another body, decides on if that body will be gravitationally attracted or anti-gravitationally rebuffed.

Since the molecules of the eveporated photospheric substance have negative mass, they are rebuffed from the star by the anti-gravitational force and thus, their speec rises.

With the rise in the speed, their temperature rises, and thus, their mass negativity quantitatively rises, and an even larger anti-gravitational force of rebuffing affects them. That is how it comes to larger and larger speeds and higher and higher temperatures of the star wind with the alienation from the star's surface.

The reversed dependance of the anti-gravitational force of the square distance, of course, leads, at one point, in reaching the maximal speed and the maximal temperature, after which, a gradual fall of both the temperature and the speed follows.

Hence, temperature, through the anti-gravitational power, enhaces the speed in which the molecules of the photospheric vapour alienate themselves from the star. That is the answer to the question how the temperature enhances the speed.

Now, we have to, completely dismanlte the mechanism of how the speed encances the temperature.

In fact, the speed is not the factor that enhances the temperature, the factor is change in the speed or acceleration that is the consequence of the action of the anti-gravitational

power. What is really happening during the action of a power to a body?

This is an utterly fundamental question in physics and the answer to it must be compeltely understandable and logical.

When a power effects a body, it exerts activity opon it. Activity that a force exerts upon a body is divided in three parts. Second part is used for the change (enhancement) of the kinetical energy of the body, because its speed had changed (enhanced). Third part is used for the change of the potential energy, because its position in the power field is changed. First, and the most interesting part for us, is used for overpowering the body inertia.

What is inertia? Physics says that it is a feature of a body to resist the change in the state of its movement. It is logical that that feature of a body lies in a certain physical reason. If a force effects a body, and a body resists the effect of that force, it logically means that there is a force of an inverse action.

Since I am going to work upon this in detail later on, now, I will just say that inertia is a consequence of the interaction of the physical body with the physical space. To make myself completely clear, I will say that there is friction between the physical body and the physical space.

Where there is friction, there is heating, that is, the change in temperature.

Therefore, the first part of the action, that a power is exerting on a body, is spent on the overpowering the inertia, that is the friction between the body and the space, which causes the change of the inner energy of both the body and the space. Here we are interested in the change of the inner energy of the body, which means, in the final outcome, that the temperature of a body rises on the account of that part of the action of the power over the body that overpowers the energy.

The law of conservation of energy is now completely satisfied.

So, anti-gravitational power that exerts action over the molecules of the evaporated photospheric substance, uses one part of that action on the rising the temperature of those molecules due to the friction between the molecules and the space. And that is the esence of the answer how a change in speed causes the change in the temperature.

Let us remind ourselves of something else. When the speed of a body is unchangeable, both for its direction and its intensity, we say that that's inertial movement. For inertial movement there is a rule that the speed is constant, and then it means that the temperature is constant, too.

But... nowhere in space do we have intertial movement. Everything is spining around itself and something else.

The non-inertial movement implies rotation because the direction of speed is being changed there, although the

intensity remains the same. Rotation is a consequence of the existence of the centripetal force, and gravitation plays its role in the universe.

Therefore, all the bodies that spin around themselves or around another body are in permanent friction with the physical space and in permanent proces of heating.

All that we have just said applies to stars, as celestial bodies, too.

Spinning of a star around its axis, as well as the spinning of a star around the mass centre of a double or a multiple system, as well as the spinning around the centre of a galaxy, causes heating of the star.

The existing astrophysics does not know this!

New astrophysics has to include this mechanism of rise of the stars' temperature.

If we name the factors that determine the temperature of a star, then is looks like this:

1. Gravitational shrinkage of a star. It is determined by the amount of the substance and its temperature. That overall mass shrinks the star gravitationally until there is a balance with the force of the anti-gravitational rabuffing whose outcome is in the central hollow of the very star. The larger the attractive mass of a star is, the larger the shrinkage is, along with the pressure and the density and the temperature of a star. Then, that means that the 'vaporization' of a star through the

star wind is stronger, that is, the star loses its substance quicker. When a considerable substance loss leads to the weakening of the gravitational shrinkage, star's wind will die away and on the whole, the star will lose on its glow (luminosity). Hence, it is clear that the star's higher temperature means stronger glow (luminosity), but a shorter life span. Of course, the larger the starting amount of the star's substance, the longer its life and its glow.

2. Star's radius and the angular speed of the spinning around its own axis. The larger the amount of the substance a star contains, the longer its radius. That is, a larger radius causes greater gravitational shrinkage – higher temperature, and so on. The same angular rotation speed around its own axis for two stars of different radiuses will cause larger heating for the star with a longer radius. But that heating, due to the spinning around its axis, can provide greater glow (luminosity) to a star, if it spins faster, than another star that spins slowlier, while they are of the same size that is the same substamce amount. Along with that, the star's life span will be different, too. Differential rotation of the sole stars is also a consequence of that friction of the star and the space.

3. Distance from the mass centre system and the speed of spinning around it. Stars usually appear in binar or multiple systems. That means that a star that spins faster around the mass center of its system will have higher tem-

perature than the same star that spins slowlier around the mass center of a similar system. Lesser distance from the mass center means quicker rotation of the whole system, and larger heating of the star under the influence of the star wind of the other members of the system.

4. Distance from the galaxy centre. We have seen that the galactical nucleus rotates as a solid body, and at a larger speed than its arms, which leads to the spiral look of glaxies. The farther the star from the center of the galaxy is, the lower its rotation speed around it is, and its heating is therefore lower. Concentration of the stars rises with approacing to the galaxtic centre, which means that the galactic wind is getting stronger, that it heats the stars that are closer more that those that are farther.

Hence, a star closer to the galactic centre will have higher temperature and higher glow (luminosity) than the same star that is located farther than the galactic centre. Intensive galactic wind in its nucleus that originates from the star winds of the galactic nucleus, is a factor that with its anti-gravitational nature expands the galaxy and separates the stars between themselves.

5. Galaxy movement in a cluster and a supercluster of galaxies. A galaxy spins around the galactic axis, but it also moves at great speed around the centre of a cluster of galaxies, and a cluster of galaxies around the centre of a supercluster of galaxies. Supreposition of those movements with the forementioned star movement (around its axis, aroud the sys-

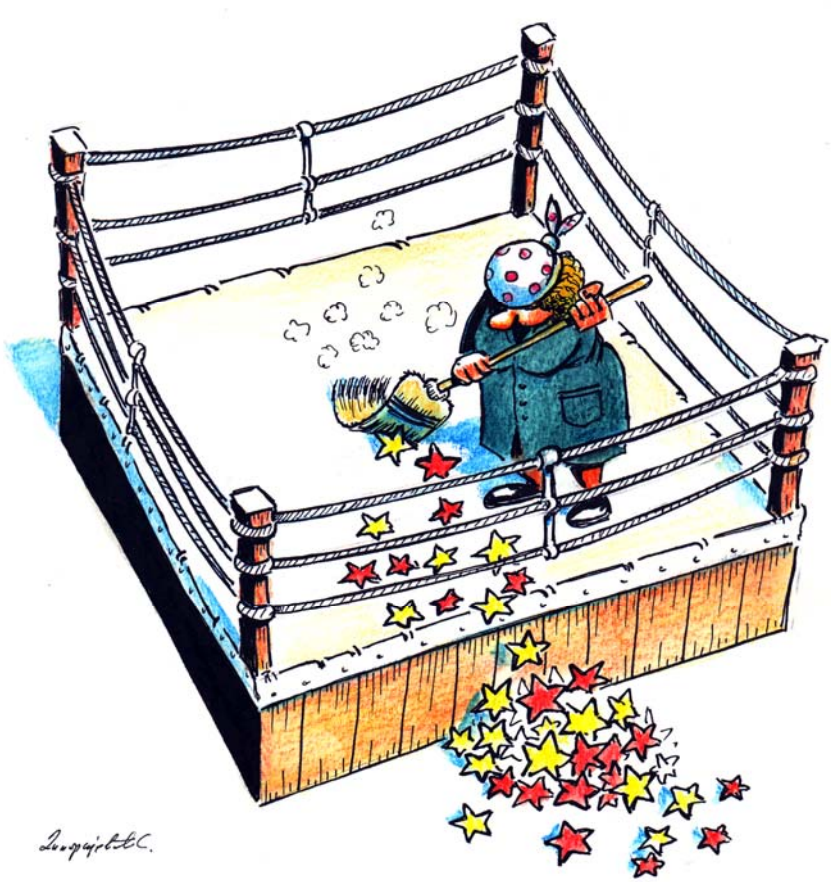
tem centre and the galaxy centre) heats the star additionally because of the great speeds the sole galaxies move at.

6. Star's chemical structure. Since not all the stars have the same chemical structure, that means that some of them are made of heavier and some of lighter substance. Heavier substance causes greater gravitational shrinkage and during its movement it accomplishes greater friction with the space, and it, logically, implies that heavier stars have higher temperature, higher luminosity and more intensive wind than the 'lighter' stars of the same size and the same conditions of movement.

Also, the substance of the 'heavier' stars is disintegrated in a different manner in the star wind than the substance of the 'lighter' stars, so according to the chemical structure of a star's wind we can conclude about the 'weight' of that star, that is about it chemical structure.

7. Intensity of the star's wind. When all the other factors do theirs and get a star to a certain temperature, then the arisen wind continues to additionally heat the star, because a part of the heat of the star atmosphere falls to its photosphere and heats it up even more.

So we see that numerous factors effect the maintaining a star's temperature, thus effecting the lenght of its life. Such mechanisms provide stars with a much, much longer lofe than that anticipated by the existing astrophysics.



ORIGIN OF STARS

The question of the origin of stars is a fundamental question in astrophysics. In order to find the answer, I will begin this investigation repeating a paragraph I had previously written. It is a paragraph on galaxies and it goes like this:

„Galaxies represent gravitationally limited star systems. They are compirsed of a large number of stars and interstar substance in the form of gas and dust. Depending on the type and the size of a galaxy, the number of stars in them can go from several millions to several thousand billions. Until today several thousands of the brightest galaxies have been studied. They represent the basic structural element for even larger associations is the space – clusters and superclusters of galaxies."

Hence, the place of the origin of stars is a galaxy. But a galaxy is a pretty big space. Where exactly the stars arise.

Obviously, it is there where the concentration of the stars is the largest and that is the galactic nucelus.

We have already seen that the galactic nucleus rotates faster than the outer part of a galaxy and that it acts compactly, as a solid body. Gravity and anti-gravity are the forces that make it so compact. Gravity prevents the dissipation of stars, and anti-gravitation prevents the colaps of the nucleus. We can see that anti-gravity is even more dominant because all stars move off from each other despite the gravitational at-

traction. Anti-gravitation, that is the source of the star winds, therefore the galactic wind, extands the galaxy, but the whole universe, too.

That means that both in a galaxy and in a galactic nucleus anti-gravity dominates. Hence, in the heart of the galactic nucleus there is a huge star. That star can be named 'galactic mother'. Galactic mother gives birth to the whole galaxy – it is the mother of all the stars in that galaxy. Of course, if a galactic mother creates stars that are too big, then those big stars create smaller stars. That is the mechanism of origination of binar and multiple star systems, as well as star clusters.

So, stars originate from larger stars, that is, larger stars create smaller stars. That is the way!

A question arises – how far can it go in both directions? In the direction of star shrinkage it goes until the stars are no longer able to create new stars. When that happens, then the stars create planets, comets, asteroids and all other that makes a system around a star. I will write about that later.

In the direction of star's growing there also must be a limit. If the galaxy stars were born by the galactic mother, then logic says that the numerous galactic mothers were created by the mother of the galaxy cluster. Numerous mothers of the galaxy cluster were created by the mother of the galaxy supercluster. The numerous mothers of the galaxy supercluster were created by the Cosmic Mother.

Cosmic Mother is the firstly-formed star that used to consolidate the whole matter of the cosmos. That huge ball (of the whole) matter was heated till the incadescence by the gravitational shrinkage and at one point it started the creation of the cosmos through the proces of creating stars smaller than itself.

A different scenario is possible. Not one, but a number of gigantic stars (MSSG) might have originated from the whole cosmic matter, which after their incadescence starting creating the cosmos as we see it today.

A great example for the origin of stars are the star clusters. They comprise a large number of stars that varies from several thousands, in the case of open, and several million iin cases of globurlar clusters. All those stars were born at approximately the same time; they are of the same age, the same chemical structure, that is metallicity.

A big star that is the mother of a star cluster was heated to the point of boiling. When it boiled – and boiling is vaporing of the value – due to the anti-gravity, an explosion occured.

From the scattered magma, gravity formed new, smaller stars that went on living in the gravitationally limitted system that we name a star cluster. Of course star winds of those stars cause expanding of the star cluster, in accordance with the general expansion of the cosmos.

„Dating of the globular clusters is very important in astronomy because it is the oldest objects in the universe. Their age is today estimated to 13 to 16 billion years, which confuses the contemporary cosmology: that number is larger than the generally accepted estimates of the universe age. Solution to this problem is in sight today, but it could seriously shatter the theory of the star evolution and the cosmological models."

This quatation is from a book „Birth, life and death of stars" whose authors are Nicolas Prancos and Tierry Montmerle.

It actually confirms what I am saying – that the universe is much older than we think because stars live longer than we think. The wrong idea of fusion as the source of the stars' energy, led us to the wrong determinants of the duration of the stars, therefore to the wrong estimate of the whole universe's age.

And now, I would like to work in more detail on the question of the stars' chemical structure, that is their metallicity. We can see that there are stars of different chemical structure, that is they are comprised of magma of different 'wieght'. What and why is happening there?

In order to understand that, we are going to analyze a big star that is gives birth to a generation of smaller stars. Whatever its chemical structure is, there is a universal validity. Since the star is incadescenced, but liquid magma, layering of

magma by chemical weight occurs in it. In the surface layer there is the lightest magma and, as we go depthward, layers are made of heavier and heavier magma.

The last layer or the layer around the central hollow in the star is made of the chemically heaviest magma. All layers are under pressure – the inner ones are under the pressure of the layers above them, and the surface layer is under pressure of the inner layers.

Chemical weight of each layer's magma, combined with the pressure under that layer is, determines the point of the boiling of that layer magma. Of course, the surface magma layer, which is the lightest and under the smallest amount of pressure, has the lowest point of boiling.

When the surface magma layer boils, it is ejected in the anti-gravitational explosion. Stars that are born from that layer's scattered magma will be in the class of the lightest off-springs. The explosion of the surface layer causes tightening, that is a rise in the pressure, and therefore in the temperature of the layers that were beneath the surface one.

Since now, around the bare star there is a whole class of the lightest stars, and there is a clash of the star winds of the mother star and the daughter stars. That is what causes farther alienation of the daughters, but the existance of the pressure on the mother star, as well. As the daughters are moving away from the mother, the pressure to the mother star

new surface layer will weaken. At one point new conditions for the existing mother star's surface magma layer will occur and that will cause its ejection in an anti-gravitational explosion. Stars that are created from the scattered magma of this layer will be in the class of a bit heavier star offsprings.

The proces is repeated again as after the explosion of the first layer, and when conditions for the new boiling of the newest magma layer are reached, it will explode and then a new class of even heavier star offsprings will be created.

In such a manner, after various periods of time, a layer after layer will explode, creating heavier and heavier classes of offspring stars until the rest of the mother star is not 'thin' enough that the boiling of the surface magma layer cannot be achieved. That is how, after a series of substance ejections, mother star will reach its stability and enter a relatively quiet period of its life.

Such a mechanism of origination of star offspring classes different in weight in approximately concentric spheres should be detectable by observing star clusters.

Of course, in all those explosions of the layers of star magma we should not expect mathematical precision and symetry. Physics is a science that describes reality that is around us, and there are always discrepancies with the ideal expectations and predictions.

A realistically possible scenario is the following: that, because of the differential rotation of the sole surface magma layer on the star, boiling of magma occurs, firstly in the equatorial zone that would lead to explosions only in that zone and the spreading of the star offsprings in the equatorial level of the mother star. Only after that would the boiling and exploding of the complete surface layer occur and that would spherely symetrically eject the star offsprings.

Such a form of spreading the offspring stars is just what we have with galaxies that are flat and they expand in the galactic level, which is the equatorial level of the galactic mother.

This logic leads us to the conclusion that the stars from the border of the galaxy should be made of the lightest substance and that, with the approaching to the galactic centre the weight of the substance is rising.

The same should apply in cases of star clusters, whereas with clusters we have symetrical and not level expansion.

CAUSE OF ROTATION OF CELESTIAL BODIES

For us, people, it wasn't difficult to note that the Sun and the Moon rotate around the Earth. And then we established the same for the stars. And then, the picture was spoiled by Copernicus with his book "New astronomy" in which he explained that the Earth spins both around its axis and the Sun. Only the Moon rotates around the Earth.

All other astronomical observations have shown that all celestial bodies spin around their axis and from a certain centre of rotation. Simply upward, rotation is a universal law in the universe. And that law has to rely on a certain cause.

If I was kidding, I could say, 'Rotation of the celestial bodies is a consequence of the feature of those who quench their curiosity by constantly wandering and looking what is going on around them.' Good one, isn't' it?

We have already seen that stars arise from larger stars. Rotation of the offspring stars is much easier to explain if the ancestor star is already rotating itself. But, how did it come, in the first place, for the stars to rotate?

Did the Cosmic Mother spin around its axis? Or: did the super cluster mothers spin around their own axes?

I can say the following: the inhomogeneous distribution of the matter in the space around the stars, during their forma-

tion from the cosmic matter available that they used to attract with powerful gravitation, led to that kind of falling of the matter on them that it led to the spinning moment. Thereby, we should suppose that the falling of the matter was in such a manner that it favorized the spinning moment in one direction. However, in my opinion explanations like this are not acceptable. I will begin with the assumption that the formation of either the cosmic Mother or the super cluster mother was such that is did not lead to spinning around its axis.

Therefore, this is the situation. A large amount of the piled matter is heated due to the gravitational shrinkage and leads to the forming of the layers of incandescent and liquid magma whose weight is raising going from the surface toward the centre. A star arisen in that way has no movement, neither around its axis nor anything else. When the gravitational shrinkage leads the surface magma layer to the point of boiling, the first anti-gravitational explosion will occur with the ejection of the first layer's magma into the surrounding space. All those parts of magma will be ejected in radial directions spherically symmetrically, that is in all possible directions in space.

All those parts of magma had been given linear acceleration (linear speed) by the explosion.

It is logical to assume that before forming the spherical shapes of the parts, which occurs due to the gravitation action,

their shape was arbitrarily irregular. The period, which a piece of ejected magma spends in the irregular shape, is of the essential importance for our analyzing. We have, therefore, irregular form magma that is alienating from the ancestor star, that it has linear speed. What is happening then there?

Multiple actions are taking place.

The first thing is that the ancestor star's wind exerts different pressure on different parts of the irregular magma. That cause forming of the coupling forces that start the spinning around the mass centre.

The second thing is that the star wind and the ancestor star radiation heat the parts of the irregular magma unevenly. The sunny parts more than those in the shade, as well as the thicker parts more than the thin ones, because of the difference in the size of the receiving surface.

The third thing is that the thicker and the thinner parts of the magma cool down differently – thicker slower than the thinner. The fall in the temperature causes the rise in the mass. Rise in the mass means rise of the inertia, and the inertia rise implies larger friction with the space. That various friction with the space of the different parts of the irregular magma forms the cooling of forces that start spinning around the axis through the mass centre. Because of the different mass of the different irregular magma parts, acceleration that is the consequence of the explosion provides different speeds to different

parts (to the smaller parts greater speeds than to the larger parts). That also creates coupling of forces for the spinning around the mass centre.

All other actions are superposed and the irregular shaped magma starts spinning around its axis that goes through its mass centre.

Of course, this situation lasts only for a certain period of time because gravitation acts, and the irregular magma shape is turned into a ball. Now we have the effect that is known to us from ice-skating. An ice-skater starts spinning around him or herself with his or her arms and one leg spread (the other leg is the axis of the spinning). There the angular speed is not large. But, when he or she puts the arms next to the body, a rise in the angular speed arises. That is the consequence of the maintenance law of the impulse moment.

The same thing is happening on the occasion when magma is changing from the irregular into the shape of a ball. That transformation is causing the rise in the angular speed.

That is how, from an ancestor star that was without linear movement and spinning around its axis, we got offspring stars with linear movement and spinning around its axis.

The newly created situation looks like this. The ancestor star that was never moving and it did not rotate around its axis is now spherically symmetrically encircled with its offspring stars that move radially linearly in their alienation from

the ancestor star and at the same time they rotate around their axes. At that, the smaller offspring stars will have greater both the linear and the angular speed of rotating around their axes from the larger offspring stars. Let's notice that the offspring stars do not rotate around their ancestor star. When will that occur and how?

Rotation of the offspring stars around their ancestor star will occur when the stars with rotation around their axes start creating their offsprings.

What does it look like?

Let's observe one star that moves linearly and spins around its axis. Its linear movement was at the beginning accelerated, and then it turned into movement with constant speed. That means that linear movement was only at the beginning a factor of its additional heating. After the beginning of the rotational movement around its axis, it becomes a constant factor of the additional heating of the star because that is a non-inertial movement (direction and way of the speed continually change).

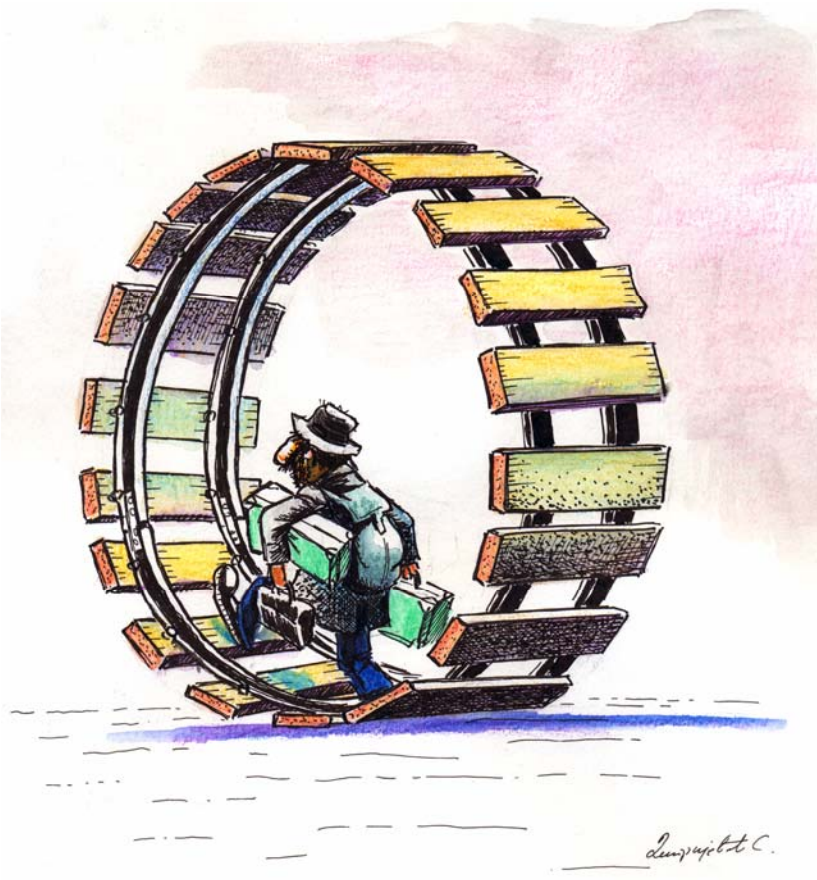
During the rotation around its axis a star has the highest peripheral speed on each equator, and the lowest on its poles. That means that the surface layer will be mostly heated in the equatorial zone and that magma boiling will easiest and quickest occur there. Explosion of the equatorial zone leads to the ejection of the magma parts in the star's equatorial zone.

Therefore, a star that spins around its axis will create its offspring's mainly in its equatorial zone. Expanding of the offspring stars will occur in that zone. But if during the ejection of the equatorial zone magma, each part of that magma has an already existing peripheral speed that is normal to the direction of the alienation speed from the ancestor star. Super position of the two speeds leads to the star's movement along a spiral path in the equatorial zone around the ancestor star. Distance between the arms of the spiral shrinks in time and turns into an ellipse along which an offspring rotates around an offspring. Of course, this offspring will spin around its axis, too.

And so, from an ancestor star that had motion in a straight line and rotation around its axis, we came to offspring stars that spin around the ancestor star along elliptic paths in its equatorial zone and also spin around their own axes.

Elliptical paths of the offspring stars, while rotating around the ancestor star, are consequence of the ancestor star's movement, either linear or elliptic (around its ancestor). An ideal circle, as a curve, along which an offspring rotates around its ancestor, would be possible only in the case when the ancestor does not have any other movement except the spinning around its axis. Of course, the higher the ancestors speed, the flatter the ellipse along which the offspring rotates will be flatter, that is, the difference between the ellipse's half-axis will be longer.

I am emphasizing once more that a star that does not rotate around its axis does not create its offsprings spherically symmetrically around it, and the star that spins around its axis creates its offsprings mainly evenly symmetrically in its equatorial level and that they rotate around it. If we apply this logic to what we see in the universe, we can conclude that galactic mothers are stars that rotate around their own axes. We can also, maybe, conclude that globular clusters, as the oldest and the farthest known objects in the cosmos, came into being from stars that did not rotate around their own axes. And those stars that did not rotate around their own axes are the firstly-formed stars and they started forming the cosmos as we can see it today.



CELESTIAL BODIES ROTATION PRESERVATION

We have seen how it came to the complete rotation of the celestial bodies, both around their axes and around their ancestors. The question that logically imposes is how those rotations are preserved.

Rotation is, by its nature, a non-inertial movement and it is the source of the additional heating because of the friction with the space. That continual friction with the space should, in time, lead to stopping of the rotation, but we can see that that has not happened. Despite the great age of all celestial bodies, they still spin both around their axes and around their ancestors. What is that mechanism and how does it work when it provides the preservation of the once started rotation?

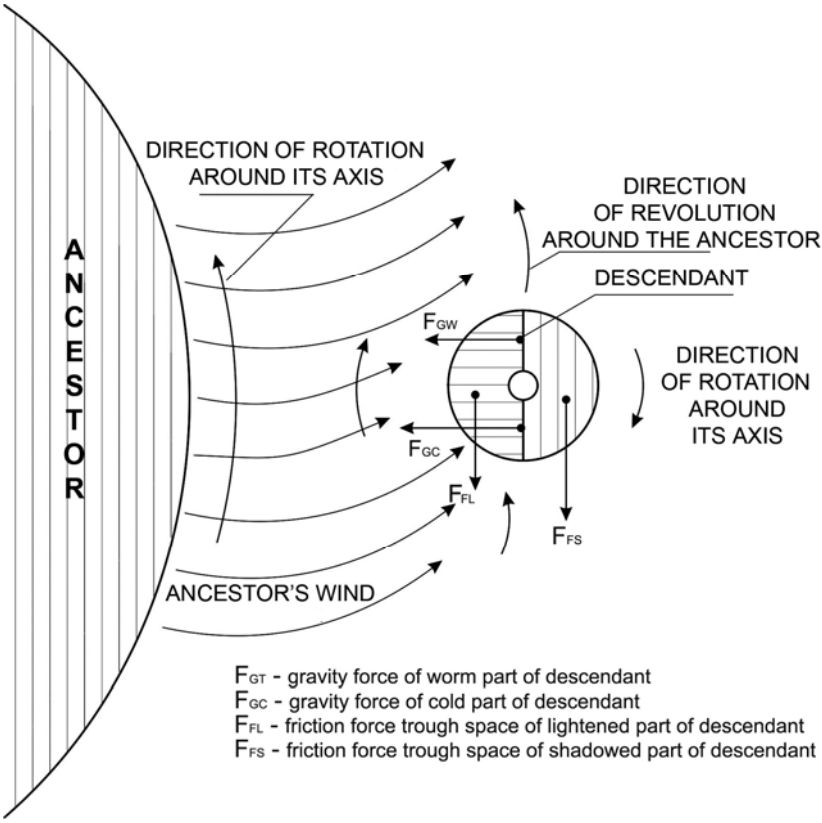
At the basis of everything lies the process of the universe heating. Since the first star's ignition, the process of heating started. With the multiplication of the stars' number the heating process had been intensifying, and with it a process of the universe's expansion had begun. All bodies expand in heat and so does the universe as a whole.

Heating, through the anti-gravitation action, alienates the first generation offsprings from the ancestor, but it also alienates them from each others. Then, new generations of off-springs are created and the pattern repeats itself – alienation from both the ancestor and from each others. With the

first generation of offsprings, rotation around their axes occurred, and with the second offspring generation, the spinning around the ancestor occurred.

The ancestor that is moving, linearly along a curve, drags its off-springs (that rotate around it) with itself, accelerates them and turns their paths into ellipses. That is how the very ancestor movement preserves or even accelerates the rotation of its off-springs around itself.

When we observe the offspring that spins around the ancestor, to whose radiation and wind it is exposed, we can logically conclude that its radiated side is a bit warmer than the one that was in the shade. Difference in the temperature means a difference in the mass. Cooler side is heavier, that is, more inert, and it has greater friction with the space than the warmer side. That inequality of friction with the space of the cooler and the warmer sides of the offsprings always creates an additional spinning moment that preserves the offsprings rotation around their axes. Continual additional spinning moment creates an additional gravitational action of the ancestor to the offspring's sides in a way that it is more drawn to the offspring's side that moves from the shade to the radiated part, from the side where the radiated side moves into shade. The cause is the difference in the sides' temperature and along with it the mass difference (see picture 45).



Picture 45.

In the picture we see that the ancestor's 'wind-blowing' effect is such that it contributes to the offspring's rotation around the ancestor preservation and the offspring's rotation around its axis preservation.

The logic of the events tells us that the privileged direction of the ancestor's rotation around the off-springs is identical to the direction of the ancestor's rotation around its

axis. The privileged offspring's rotation around its axis direction is the one that is opposite to the ancestor's rotation around its axis. Whichever the case, from the knowledge about the rotation directions of the ancestor around its axis and the offspring around its ancestor and around their respective axes, we can draw conclusions about the ancestor's movement through space.

The very process of the universe's heating leads to the heating of all the celestial bodies, and by that to the fall of their attractive mass. The law of the impulse and impulse momentum preservation provides that the mass reduction is compensated with adequate rise in the speed, both linear and angular.

That is how the stated mechanisms provide the celestial bodies' rotation preservation from their arousal till today, and they will continue preserving it in the future.

BEGINNING OF THE UNIVERSE

We have seen how the cosmic mothers began creating the first generations of stars. We have seen how and why it came to the whole celestial bodies' rotation. We have also seen how the whole rotation is being preserved.

Let's now try and realize how it came to the formation of the cosmic mothers. Where from and how did they come into existence?

Firstly, the necessary prerequisite for the origination of the whole material universe is the existence of the physical space.

Secondly, the necessary prerequisite for the origination of the material universe is the presence of the energy with which the physical space is charged.

The energy charged physical space, at one point started generating the elemental matter particles. When their density became significant, they started interacting mutually and creating hydrogen atoms, the simplest atom in the universe.

That was the time when the universe was extremely cold and dark. The universe was much colder than the present 3°K and therefore the hydrogen atom's attractive mass was much larger than its today's attractive mass. That was the time when an extremely strong gravitation was reigning. The uni-

verse was dark because at such low temperature hydrogen atoms do not radiate any electromagnetic radiation.

Logic tells us the following facts.

The incessant creation of the hydrogen atoms requires incessant creation of elemental particles. Incessant creation of elemental particles that is done by the physical space requires incessant recharging of the physical space with energy. The question of the energy's origin, which constantly fills up the physical space, is the question that is out of the scope of physics and belongs to the scope of metaphysics.

Let's go back to physics of the extremely cold and dark universe in which hydrogen atoms were created. The extremely huge attractive mass of the cold hydrogen atoms generates very strong gravitational force amongst them and they begin merging. The sole merging into molecules releases energy. In such temperature conditions, merging of the hydrogen atoms is done by creating crystal structures, that is, hydrogen in the solid state of aggregation.

That is the period of the universe's crystallization. Small crystals forcefully attract the nearby hydrogen atoms and grow very quickly. Crystals are mutually gravitationally attracted and by merging they build larger crystals. That is the period of the beginning of slow heating, because the crystal's kinetic energy, after their merging by a clash, turns into inner energy of the newly-formed crystal. That process of crystal

merging goes towards creation of larger and larger crystals, whose number is reducing.

Huge hydrogen crystals arisen in such a manner, in the continual rise of their size and mass, to which incessantly falls the rain of smaller crystals, in their heart begin the process of cold fusion. That means that at the low temperature and under the influence of the extremely strong gravitational force, in their heart they transform the hydrogen crystal into the helium crystal. As at the outside the whole hydrogen crystal grows, in its heart grows the helium crystal. Further growth of the whole crystal's mass will lead to new cold fusion when in the heart of the helium crystal lithium (Li) crystal will be created. And that is the process that will create heavier and heavier elements in the heart of the growing crystal. The crystal will look like an onion with layers of different elements, whose weight grows from the surface towards the centre.

Of course, gravitational shrinkage heats the whole crystal all the time, and mostly its heart. It is logical that heating if the crystal's heart at one point will lead to the breakage of the cold fusion process. Forming of the even heavier elements will be disrupted, but until then heavier elements than those we know will already have been created. That heat made by gravitational shrinkages transferred to higher layers and the whole crystal begins heating. It is being heated by the incessant rain of smaller crystals that fall on it. The crystal be-

gins heating the space around it and the universe begins heating, but it is still under 0K.

Incessant heating will, at one point, lead the temperature of the surface layer (from the hydrogen crystals) to the temperature of melting and 'soon' after that its melting will begin.

Occurrence of hydrogen in liquid state means occurrence of convection, too, that is, the inner movement and a far better transfer of the heat towards the surface.

Solid hydrogen crystal core will get thinner and thinner and at one point will completely melt. There will come a period when the 'warm' inside of the crystal is encircled by a gigantic ocean of liquid hydrogen. Gravitational shrinkage continues; the ocean of the liquid hydrogen heats and evaporates more and more. Forming of the gas hydrogen atmosphere, whose height is growing, occurs. The heat that it radiates into the surrounding space and the friction through the atmosphere start melting the crystals that keep falling into this ocean, until the 'hail' turns into 'snow', and then 'sleet', and in the end into 'rain'. Depth of the hydrogen ocean will continue growing due to the 'rain' of the liquid hydrogen, and therefore the whole mass of the future Cosmic Mother.

Depth of the atmosphere incessantly becomes larger with the growth of the gas hydrogen temperature. Convection, in the hydrogen atmosphere, is getting stronger and stronger and the top of the atmosphere is farther and farther from the

liquid surface. Powerful gravitation of the Cosmic Mother still manages to preserve the liquid hydrogen gathered. Temperature of the atmosphere and the friction through it manage to turn the ‘rain’ into ‘vapor’ and thus stop the growth of the surface hydrogen ocean. Further the only thing that will grow is the thickness of the atmosphere. Depth of the ocean will begin to reduce because of the larger and larger vaporization.

Convection of the gas hydrogen in the atmosphere is the consequence of the anti-gravitation action between the Cosmic Mother and the hydrogen molecules with negative mass. Temperature of those gas molecules is not high enough, and the negative mass, relatively quickly, turns into attractive by cooling down, so that leaving of the atmosphere cannot yet happen.

But, at one point all the prerequisites for that will be met. The growing vaporization of the liquid hydrogen ocean and the stronger and stronger convection in the hydrogen atmosphere will heat and scant it that much that some gas hydrogen molecules will manage to leave the atmosphere. They will be warm and quick enough and at the top of the atmosphere, and anti-gravity will ‘blow them off’ into the surrounding space.

That is a very important moment, because it came to the appearance of the Cosmic Mother’s wind, however cold it is. Now, this wind starts preventing the hydrogen flow into the atmosphere. There will come a moment when the hydrogen in-

flow will be equal to out-flow, which happens through the wind, and then the wind will overbear and Cosmic Mother will begin losing its substance for the first time.

In time the wind becomes warmer and quicker. That means that now the cosmic matter heats the universe more intensively, changes the hydrogen in its surroundings into the liquid and then the gas state.

Wind's heat heats the sole cosmic matter. Anti-gravitational production of energy is growing because of the gravitational shrinkage and outer heating due to the wind's existence lead to higher and higher heating of the whole cosmic matter on all layers.

When the ocean of the liquid hydrogen boils, a first explosion of the cosmic matter will occur and it will reject a layer of the liquid hydrogen as well as the hydrogen atmosphere.

Now it's helium layer's turn. Getting to the surface of the cosmic matter where the pressure is lower, helium layer begins melting and evaporating creating He atmosphere. Now, Cosmic Mother starts blowing a wind made out of helium atoms.

Further heating will melt the Cosmic Mother completely, that is, turn it into liquid state. This state will enable mixing of the layers and chemical elements, which will lead to chemical reactions among the elements and creation of various compounds. Elemental chemical reactions will heat the Cosmic Mother even more.

Cosmic Mother will, through a series of explosions eject the light layers that constituted its surface and lead to the formation of a surface made out of liquid magma. Such a surface of the cosmic Mother and its temperature will create conditions of the cosmic wind and radiation that will light the universe of that time as the stars light it today.

When the layers of the liquid, red-hot magma begin exploding, creation of the first stars' generation will start.

I have explained all that in order to explain that the universe did not arise in the Big Bang.

There were many explosions, big ones of course, but I want to say that the idea of one Big bang from which the universe originates is wrong.

The idea of the Big Bang is a consequence of a physical theory in which there was no anti-gravity and therefore the physicists imagined the whole universe packed into almost one point. That is simply not possible.

Big Bang was an attempt to explain the discovery that the universe is expanding. Today we know that the universe is expanding quicker and quicker which we simply cannot get from a Big Bang. Expansion of the universe is the consequence of the incessant strengthening of anti-gravitation, and not Big bang. Incessant strengthening of anti-gravitation is the consequence of the incessant heating of the universe.

MASS TEMPERATURE RELATIVITY AND NEWTON

It is said that Newton, comparing the falling of an apple from a tree and the movement of the Moon around the Earth concluded that the centripetal acceleration of the Moon and the acceleration of the free fall to the Earth's surface, the same type of force, gravitational two masses.

Free fall is caused by the gravitational attraction of a body's mass and the Earth's mass, and also the centripetal force, needed for the movement of the Moon around the Earth, causes the gravitational force between the Moon and the Earth.

Newton, based on Kepler's and his own laws of mechanics, in 1686 produced a mathematical expression for the force that causes the planets' movement around the Sun. Then he generalized this law as an interaction of all bodies in the universe and named it the law of the universal gravitation: two bodies are mutually attracted by the force that is proportional to the product of their masses, and inversely proportional to the square of their mutual distance. According to the Newton's law of gravitation, the force of the mutual attraction of bodies does not depend on their relative speeds, but only on their mutual positions. Gravitational force between two bodies does neither depend on the nature or the space between the two bodies.

Gravity force occurs between all bodies independently of their mass or dimensions and there are no obstacles that can prevent/stop its action.

It was established that gravitational forces are of very weak intensity when it comes to everyday bodies. We can see their full power only with the cosmic bodies or if at least one of them is cosmic.

For Newton the gravitational constant remained unknown because it was experimentally determined by Cavendish in 1798. Gravitational constant has a very low value, which shows that gravitational forces are very weak. However, knowing of its numeral value was used to determine the Earth's, the Sun's and the planets' mass, so it is often said that Cavendish weighed the Earth by using the torsion scales.

In agreement with the development of the science then and the level of the knowledge abilities of the 17 century people, the law of the universal gravity was a very big and a very important discovery. However, it was just a part of the truth about mass interactions between bodies.

Comparing burning of a fire, glowing of the Sun and the expansion of the universe, I have concluded that the word is about one and the same force – anti-gravity. Anti-gravity ascends the fire blazes upward, anti-gravity is the source of the Sun's glow, anti-gravity is the cause of the cosmos expansion.

Universal law of the interactions that includes the factor of time, sounds >>All bodies are at a certain point mutually attracted only if they are both cold enough and if they have enough attractive mass; between them there is no mass interaction if at least one of them, or both of them, reach the state without mass at a certain temperature; they bounce off mutually if either or both of them are hot enough, that is, at a temperature when their mass is negative. <<

It is easy to conclude that Newton's law of universal gravity refers to a situation when both bodies are cold enough and they have attractive mass, therefore he presents a special case of his universal law of mass interactions.

Newton himself explored cooling of the bodies and gave a law on that, known by the name Newton's law of cooling. Each body is at one of the following possible states, concerning heating and cooling:

1) A body is in the process of constant cooling.
2) A body is in the periodical process of occasional cooling and occasional heating.
3) A body is in the process of constant heating.
4) A body maintains its constant temperature.

When we observe mass interactions of two bodies in a longer period of time, it becomes clear that a mutual interaction will surely change quantitatively, and in certain situations qualitatively, in accordance with the mass changes of both

bodies (quantitatively and qualitatively) from the beginning state onward.

The option where bodies maintain their constant temperature is only possible in thermo-isolated systems we can artificially create. In nature we always encounter bodies that change their temperatures in time.

The whole universe is in the process of heating, and in the accelerated heating, and in accordance with it the attractiveness of such masses is reduced and the negativity of such masses rises, which in the final result leads to the quicker and quicker expansion of the Universe.

Alas, Newton introduced the notion of mass into physics and he considered it a measure for the amount of substance and most certainly the constant size. Physicists further defined mass as the measure for the body inertia, but it was still considered a constant size. At the end of XIX century, experiments with particles acceleration pointed out that mass does change, that is, that it is not constant size. In 1905, Einstein, in his special theory of relativity gave relations of how a body's mass quantitatively changes with the change of its speed. Now, in 2007, I am talking about quantitative and qualitative body mass change with the change of its temperature. Therefore, it is a new step in the evolution of the notion of mass; most certainly not the lasting a row.

I would also like to say that statements as following

1) Force of the mutual action does not depend on the relative speed of those bodies;
2) Force between two bodies does not depend on the natural space between the two bodies;
3) There is no obstacle that can prevent, that is, stop interaction between bodies;

were, after all, stated too quickly and unmeasuredly.

So many times until now have we seen that something that used to be considered impossible in the previous times proves to be possible later.

Let us learn to be wise and moderate in our statements and speak, for example, like this:

>>All our efforts and wisdom of this time have not been able to prove or accomplish that and that, but maybe the accomplishments and the wisdom of the future times will be able to discover and overcome the shortcomings and the mistakes we haven't been aware of. <<

Surely, there is no end to our progress, and because of that we should give up the attitude to, when we discover something big and important, pronounce it for an eternal, final and unchangeable truth. Sooner or later, always, there comes the time for reexamination of our acquired knowledge and that is when new revelations (of the world around us and the world within us) in our acquisitions happen.

When we mention Newton, we surely must not forget his laws of mechanics. Newton set three basic laws of dynamics and thus set the basis of the classic mechanics, that is, classic physics. These laws introduce force and mass into physics and enable their quantitative measuring. Newton's laws define force that is each of them provides one of the following data about it: first – existence of the force; second – size of the force (intensity, direction and way), and third – force's source.

Now I will analyze one by one Newton's law from the point of view of MTR. First I will quote and then I will analyze.

Newton's first law of mechanics. It defines the source of the change of a body's movement state (that is, inaction) and it sound like this: each body remains in the state of inaction or the uniformed linear movement until it is not forced to change its state by the action of outer forces. This means that a body on its own does not change its speed neither by its size, nor its direction, nor its way, that is, the gained speed is maintained as a vector size. That is why we say that a body moves by inertia. That is why this law was named the LAW OF INERTIA and it should be interpreted in the following way:

a) That inertia is a feature of each body, which means that is tends for the maintaining of the state of relative inaction or the uniformed linear movement,
b) That the force is not a necessary cause of a body's movement, because even without the force, bodies can move and

c) The change in body's movement is caused by force, that is, if only one force effects a body, it cannot be found in the state of inactivity.

Analysis: It is clear right away that this law can be applied only in a thermo-isolated system, where the temperature is constant and only in a system which is dimensionally limited. It was created as a consequence of experiment analysis that was performed right in such conditions. In realistic conditions we actually do not have linear movement and we do not have a constant temperature.

But if we approximate a curve, along which a body is moving, as a straight line we cannot avoid the fact that in time the body's temperature will change. As soon as its temperature changes, its mass will change. The change in its mass causes the change in the inertia, that is, the change of the friction force intensity between the body and the space. If mass quantitatively grows, then the body's speed will reduce, without the action of an outer force. If mass quantitatively falls than the body's speed will again increase without the action of an outer force. This is also in accordance with the law of the impulse maintenance and the energy maintenance law. Here we have inner force in action between the body and the space, because its change causes the change of the body's speed.

Force is the necessary cause of body movement, because, although we see a body move without a force's presence, we have to be aware that that movement had to be initiated by a force that affected the body in its closer or further past.

Also, state of inaction about we are talking actually does not exist; it is just that the body we are observing has the same intensity, direction and way of speed as the whole system in which we are observing it. The whole truth is that everything in universe is moving - as we have already seen in the previous presentation. If we wisely and in detail think of experiments, then we will manage to move a body from the so called state of 'inaction' without the action of an outer force. Of course, the temperature change and the body's mass change will cause a change in the action of the inner force of a body against the space and that will move it from the so called 'inaction'. So much about the first Newton's law.

Newton's second law of mechanics. It determines the characteristics of body movement under the action of a force. As the main feature of the mechanical movement, Newton introduced the physical notion named impulse or the amount of movement that is defined by the product of the mass and the body speed.

Second Newton's law defined how a force influences the impulse change and it sounds: a body's impulse change in

time is proportional to the force that affects it and it is exerted in the force's direction.

Mathematical interpretation of this law, along with the fact that in the Newton's classical physics mass is considered a constant size that does not depend on the speed in which the body is moving, lead to the form which says that: the force is equal to the body's mass times the acceleration that the force is causing. Acceleration is of the same direction and way as the force causing it, furthermore, the constant force causes uniform accelerated movement.

Based on the experimental studying of a body, which is being effected by a larger number of forces, under the effect of each force and their overall action, it came to the law of the independence of forces' action: action of each force on a given body does not depend on whether it is inactive or moving (except the Lawrence's force), and neither on the number of forces effecting the body. In other words, a body under the action of several forces acts as if it is only affected by the resultant of those forces.

The principle of the independent action of forces enabled that a force and the acceleration expound to their components and that the particular components of these notions are observed independently from each others, which makes solving of certain problems a bit easier (for example, we can make an analysis of movement in the direction of an axis of the

coordinate system independently from the movement under the influence of the other components of the same force).

Analysis:

Newton acted brilliantly when he introduced the notion of the amount of movement or impulse, expressed as body's mass multiplied with its speed, as the basic characteristic of the mechanical movement.

Newton's definition of the second law that: "the change of body's impulse in time is proportional to the force that affects it and acts in the direction of the force's action", is basically good but is not precise enough. It is general.

Wrong mathematical interpretation of this law, as well as the wrong understanding of mass as the constant notion, led to the wrong form of this law: "force is equal to body's mass multiplied by acceleration that the force is causing."

Why do I say a wrong mathematical interpretation? Because it lacks the Newton's word 'proportional'. That word requires a coefficient or a factor of proportionality in the mathematical interpretation of his words, and it is not there. We cannot assume that proportionally means equally, - to put it simply, that is not correct.

When the body's speed changes in its intensity, either its direction or way, the conditions of the friction of the body against the space change and therefore the body's temperature changed, and accordingly its mass.

So, force does not equal body's mass times the acceleration it causes.

We can say that the force is proportional to the acceleration it causes times mass that the body had before the action of the force. But this is, again, too general and is not precise enough.

Also, the constant force does not cause uniform movement. If body's mass changes on accelerated movement, then it means that the constant force during time will cause different acceleration.

Those were just experiments with particles' acceleration that lead to the knowledge that something is happening with mass that the mass is changing.

I do not agree with the law of the independence of the forces' action either. Discrepancy of that law with the Lawrence's force is not an exception, but a rule. So, it is wrong to analyze movement in the direction of one axis of the coordinate system, independently of the movement in the direction of the other axis of that coordinate system.

This wrong attitude was introduced into physics by Galileo Galilei. His understanding that a cannonball fired from a completely horizontal cannon, and another that at the same time falls from the mouth of the cannon's pipe, also perfectly horizontal, will fall at the exact same moment, is wrong. By that the principle of the relativity is wrong.

Proof? Here's a simple proof. If a perfectly horizontal cannon fires a cannonball in first cosmic speed it will not only not fall to the ground at the same time with the cannonball that was falling from the mouth of the same cannon, but it will not fall at ground at all. That cannonball will become the Earth's satellite.

To put it simply, the greater the speed of the horizontally fired cannonball, the later it will fall to the ground compared to the not fired cannonball.

If the cannonball was a flying object in which passengers were seated, than they could by comparing times needed for a body to fall from a certain height to the floor of the flying object, before the firing and after the firing, determine the speed at which they were fired without looking out of the window.

Of course, every difference in times of the bodies' falls would clearly point that they are not inactive, but that they are moving.

I will use this later, and so far that much about the second Newton's law.

Third Newton's law of mechanics:

In his first and the second laws Newton spoke about the one-sided interaction of the body, that is, about the action of the force only to one body by the other. However, in interaction of two bodies there is always simultaneous action of the first body to the second.

The third Newton's law of mechanics exactly characterizes the mutual action of two bodies and it goes like this: mutual actions of two bodies are always equal and diametrically directed, or the action is always equal and diametrically directed towards reaction.

In the general case there are no criteria by which a force would be considered an action and another one by reaction, because they are both of the same nature. There is no difference between these forces in the means of the cause and the consequence, so each of them is both and action and reaction.

Under the action of the action and reaction force bodies can change their state of movement (pool), or get a deformity of their shape (two cars' crash).

Accordingly, the third Newton's law contributes to the force definition in that manner that it determines the source of the force (for example, the Earth is the source of the force that affects the Moon and makes it turn around it).

Analysis:

I agree that action is always opposite the reaction, but I cannot agree with the Newton's attitude that action and reaction are always equal. I agree that they are sometimes equal.

When a tennis beginner practices, and his opponent is a wall, then the action of the ball to the wall is equal to the reaction of the wall to the ball. In the same situation, when the tennis player hits the ball with a racquet, the force of the rac-

quet is much larger than the reaction force of that ball and that is why the ball goes where the racquet sends it.

If we exchanged the tennis ball with a basketball, which is bigger and more massive, we would have the following situation: the force of the basketball to the wall would be the same to the wall's reaction force to the basketball, and the force of the racquet action to the basketball would be a bit larger from the reaction of the basketball's reaction to the racquet. The basketball would still go to the wall and back.

And when we would exchange the basketball with a medicine ball, which is of similar size but much more massive, the action force of the racquet to it would be the same of the reaction force of that ball to the racquet, but that ball would not move at all.

So, the action force is the same as the reaction force only when the action body hits the reaction body with a smaller amount of movement, that is, inertia, or if the amounts of movement, that is, inertia, of both the action and reaction bodies are the same. What I have just said means that I do separate and make a difference between the action and the reaction.

When we observe deformities of bodies at their crashes, it is clear that bodies with larger inertia would suffer lesser deformities, and bodies with lesser inertia would suffer greater deformities. Let us not forget that the inertia of a body is proportional to the amount of its movement.

And for the end of this story, a treat.

American army was performing experiments how a certain speed of a bullet causes deformities on a metal panel of a certain thickness. As they increased the bullet's speed, the deformity size on the metal plate changed.

When they performed the experiment at a great speed (unfortunately not known to me), they gained a surprising result. The bullet went through the panel, but there was no deformity on the panel. The increase of quantity led to a new quality. What had actually happened there? Why was there neither action nor reaction? Why had the third Newton's law stopped working?

What is certain is that the metal panel had made a passage through itself for the bullet – it opened itself in front of the bullet and closed after it. We could say that it was not behaving as a solid body, but a liquid one.

It is not perfectly clear what was happening with and around the bullet when it caused such a behavior of a solid body.

One possibility is that the surface layer of the bullet gained anti-gravitational action and thus caused the separation of the panels' atoms. The other possibility is that the bullet created a 'space wedge' in front of it that separated the space within the metal panel, thus separating the panel's atoms.

Of course, something else is possible, too. Something we are not aware of. Nature is really inexhaustible with its surprises it shows us; let us always be prepared for the new ones.


E=Mc2

MASS TEMPERATURE RELATIVITY AND EINSTEIN

While speaking of the second Newton's law, I spoke of the Galileo's principle of relativity and proved it wrong.

About constants, I will speak later on, and now I would like to say only this: 1) the speed of light is not constant and 2) the speed of light is not the largest possible speed in nature.

I would like to say that Einstein was in the first place a victim of a wrong theory that had been developing several centuries before him, and that the good ideas about the space relativity he, unfortunately, described in a wrong mathematical way.

Space and time are relative, and that is Einstein's inerasable contribution to physics, but the mathematics of his theories is wrong. It is not only that Einstein, but absolutely no one understood what was happening there.

The whole story was about the relativity regarding the speed, but no one, not even Einstein, could understand that the key of the problem lies in the temperature, which is directly connected to the speed. A whole sequence of the misinterpreted experiment results, before Einstein, led to the mathematically wrong Einstain's theories of relativity.

Only now, using MTR, we should look back to all those experiments and try to understand them. There is work for the physicists, plenty of work.

A wrong mathematical formulation of the Einstein's STR gave wrong conclusions about reality at great speeds, and I do not wish to comment on each of them individually.

In his GTR, that includes gravity, Einstein says that, "mass tells the space how to bend, and the space tells the mass how to move." I do not agree with this Einstein's claim because it reduces the gravitational field to geometry, and that is simply not right. That way has led us to considerable delusions that are present in the physics today. Instead that physics lead mathematics forward, which is the natural cause of things, it has come to that mathematics leads physics, and that resulted in the connection loss with reality and logic.

I would change and elaborate on Einstein's words that mass tells space how to bend, and space tells mass how to move. I think this sounds better:

The allocation and the state of matter and energy determines the quality of the space around it, and that quality of space then determines matter movement and energy spreading through itself.

As far as the best known Einstein's formula that the energy is equal to mass times square the speed of light, I do not agree with that.

I agree that the whole body energy defines its mass, both qualitatively and quantitatively, I also agree that the body

mass, its quantity and quality, defines the whole body energy. But Einstein's formula is not good. Why?

Here is a simple reason why. Let us observe closed space, let's say a room, and the air in it. According to Einstein's formula, air molecules with greatest energy, that is the warmest molecules, have the greatest mass. Since they have the largest mass, they are the most attracted by the Earth's force of gravity and they should be closest to the Earth, that is, they should be down. Further, air molecules with lowest energy, that is, the coldest molecules, have the lightest mass. Since they have the lightest mass, they are the least attracted by the Earth's force of gravity and they should be the farthest from the Earth, that is, they should be up.

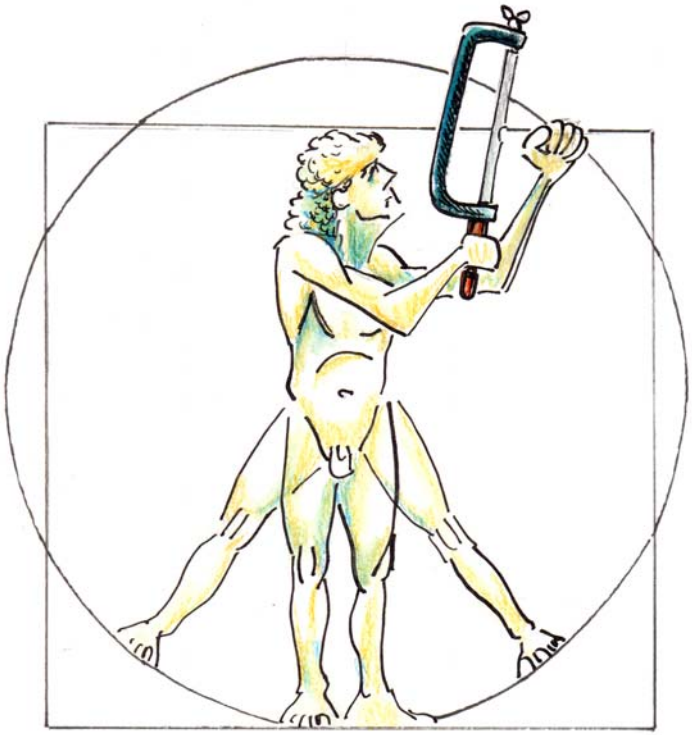
The real situation with the molecules' allocation by height in a room is exactly opposite. The warmest air is always just below the ceiling and the coolest just above the floor.

The very nature does not agree with this Einstein's formula, and neither am I. I am always, faithfully, on the Nature's side, regardless of the size I am about to conflict with.

MTR is in accordance with the natural processes and that is why we should follow that path.

I have already spoken about the acceleration effect on the body in the anti-gravitational model of the Sun. In the part about action and reaction, I have stated the example of a bullet, which at great speed, passes through a metal panel with-

out deforming it. We will have to think of more experiments on this subject and do a complete revision of the ones we have already done. Only then will we begin to understand what s happening with a body that is moving through the space at great speed.



DIMENSIONS AND "CONSTANTS"

The existing physics has made our lives complicated a lot by introducing new dimensions. Three dimensions were not enough, nor four, and it all went up to a number of dimensions a certain theory needed. That is how it goes in mathematics. Mathematics is dealing with n-dimensional spaces. In mathematics we can create whatever virtual world we like.

Physics aspires to explain the world around us, the real world. At least, that is how it was at the beginning, and I certainly hope that is how it is now.

On the topic of the space dimensions, I would like to say that for the quantitative space description we need three dimensions. Only three. Not more than three. Therefore, three.

For the qualitative description of the space, we can introduce as many dimensions that we need, or as many as we can differentiate.

Time is a qualitative dimension; it shows us a quality of the space around us, or of the space we want to explore. Introduction of the time as the fourth quantitative dimension was wrong – that was an expression of not understanding of what quantity and what qualities of the space are.

All 'constants' we have defined in physics are actually qualitative dimensions of the space. They tell us about the quality of the space we are in.

The most important I would like to state on ‘constants’ is that they are not constant. What we have been considering as ‘constants’ were not constants, they are changeable sizes. Indeed, their changes are very slow and very small.

The second important thing I would like to say about the ‘constants’ is that they are not universal. Values that we got by measurements are the indicator of a part of the space we are in and where the measuring took place. In some other part of the space, their values would be different.

Let me just explain that with specific examples.

Let us observe the gravitational ‘constant’ γ and the speed of light c. at this stage of universe development, when it is heating and expanding faster and faster, the γ is decreasing, which generally means that the intensity of the gravitational interaction is weakening.

At the same time, because of the heating, the value of the dielectric and magnetic vacuum permeability and than it means that the speed of light is increasing. If you think that our lives will become more complicated because of these statements, I will tell you that our life in physics is as complicated as it is that this can only lead to its simplifying.

But I do admit there will be turning over both in physics and astro-physics, and cosmology, too. So far, we have been determining and checking the ‘constants’ in order to come to the most accurate value possible. It is where we first encoun-

tered the fact that recent values are very little different than those previously determined, but that was all contributed to the increase in the measuring precision, that is, the reduction of the mistakes in measurements. The real truth is that the measuring precision is increasing, but, the 'constants' are changing a little and slowly.

I will go back to Einstein's STR. His postulate that the speed of light was a constant and that is was the greatest possible speed in nature, was wrong for several reasons:

1) we have seen why and how *c* is not a constant,

2) we have seen that there is an increase in the speed of light; therefore its numeric value exceeds itself in the course of time,

3) our knowledge of nature is very weak now and let alone a century ago, so, stating that the speed of light was the greatest speed in nature was not a reflexion of human wisdom, but a 'daily-scientific need'. Einstein needed that in order not to get a negative algebraic sign in the value under the square root. Then the mathematical apparatus of the STR would become completely absurd and as such completely unacceptable for the physicists. I will remind you that Einstein's theories of relativity had a number of opponents from the beginning, and there are many today, too. That is why, in 1921 Einstein won the Nobel Prize not for his theories of relativity (due to which

he became and remained famous), but for his explanation of the photo-effect.

I believe that the whole process of introducing the constants into physics came and developed because of the 'daily-scientific' needs. Here is a clarification of this statement.

When the physics were, in the past times, performing experiments to determine dependence of a value on several others, then they expressed that dependence mathematically, mainly by dividing some values' products by a product of some other values, and that, in order to be able to use those formulae in reality, introduces 'constants'. They were determining the 'constants' from measurements, and that was it. Introduction of the 'constants' satisfied the 'daily-scientific needs' to obtain applicable formulae, without complete understanding of what was examined and calculated by those formulae.

Logic tells us that the number of the introduced 'constants' always in accordance with the level of our not understanding the phenomena and the values we have been examining.

I agree that it might have been a necessary step in the development of physics. 'Let's use something, even though we do not understand the real nature of that', was the expression of the human pragmatism. However, the technologic 'advancement', without understanding the essence, has led us to the situation that we have jeopardized our own existence, be-

cause we have jeopardized the planet Earth's functioning. It is high time we begin realizing what is what, and, by exerting great efforts, we try to fix the damage we have caused so far.

And now more about the non-universality of the 'constants'.

When I say that the 'constants' are not universal, I would like to say that the values that we have measured here on Earth will not be identical with the values we would measure at another spot in the cosmos. Quality of the space changes from one place to another.

Generally speaking, the space is not homogenous. And when it is not homogenous, it is not isotropic. 'Isotropic' means that it is all the same for us in which direction we are moving or observing.

Proof? Well, look at the sky. Is the allocation of the celestial bodies homogenous? No. Is it all the same in which direction we are looking? No.

I agree that we can say that a certain part of the space, in a short time interval, is homogenous and isotropic. We have to be practical, when it is demanded.

FOR THE END OF THE FIRST PART

When I realized how huge the job I have started was, and how much time it can consume, I decided make partitions. So, this, what has been said so far, will be the first part. I don't know haw many parts there will be. The time will show.

I sincerely hope to get help in my work since the amount of work is enormous and long-lasting. I am but a pioneer, a starter, an initiator.

I also believe that in the era of the informatics technologies and the internet, spreading of my ideas will be adequately quick.

I expect a quick reaction to everything I have said, either positive or negative.

New ideas always have hard time getting through. I know that very well. But, I do hope that the XXI century will justify and prove that it's quick and uncompromising, in my case, too.

I do not expect mercy, or any kind of protection. I expect an argumented clash of opinions. I expect objectivity. I expect a true thirst for new knowledge and the real truth.

In knowledge, there is no democracy. The truth does not depend on the voters' number that will support it. There is only one voice needed. But it is certain that the time of the ac-

ceptance depends on the number of voters and of their quality, too, because not all votes count equally.

If the time is ready for changes, and I personally think it is, then, everything will be easier.

I am, personally, sure that the XXI century will be marked by the development of new physics, and when the physics develops rapturously, it affects all other natural sciences. New technologies that might come out of the general science development can and will change our future.

I hope we are conscious of the necessity of complete changes.

AUTHOR OF THE BOOK THE INTRODUCTION INTO NEW PHYSICS

My name is Goran Mitic.

I was born in Nis, Serbia in 1963.

I went to school in Nis, and here I live and work. After the 'specialized training' I gained the title of the laboratory technician for physics and I enrolled myself to the studies of physics at the Department for Physics at the Faculty of Sciences in Nis, the University of Nis where, after finishing it, I gained the title physicist

Even as a graduate I started discovering mistakes and drawbacks in the contemporary physics. My first autonomous scientific work named "Classical interpretation of the Michelson-Morley experiment" (70 A4 pages with a number of very detailed drawings and adequate accompanying mathematics) did not encounter understanding, not with my colleague students, nor with my professors. Not in the country, nor abroad (I sent the English version to a number of addresses all around the world) – nobody wanted to read it!

My second autonomous work "Mass temperature relativity – the secret of anti-gravity", written in 1999 on 7 pages was published in 2000 by the electronics magazine "Journal of Theoretics", and the same year I presented it on a congress in Sankt Petersburg. I entered the world of inventions in 2003, and in 2004 I won the bronze prize at the international fair "Palekspo" in Geneva for a "HSP motor". Since then I have been working on researching and developing of new technologies for gaining pure energy out of renewable sources.

Goran Mitić

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THE FIRST PART

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