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BREAKS SPEED OF LIGHT

Courtesy of

Dr. Mitchell Swartz, David Crockett Williams, and Remy Chevalier.
from Free Republic forum online

Eureka! Scientists Break Speed of Light

by Jonathan Leake, Science Editor, London

SCIENTISTS claim they have broken the ultimate speed barrier: the speed of light.

In research carried out in the United States, particle physicists have shown that light pulses can be accelerated to up to 300 times their normal velocity of 186,000 miles per second. The implications, like the speed, are mind-boggling. On one interpretation it means that light will arrive at its destination almost before it has started its journey. In effect, it is leaping forward in time.

Exact details of the findings remain confidential because they have been submitted to Nature, the international scientific journal, for review prior to possible publication.

The work was carried out by Dr Lijun Wang, of the NEC research institute in Princeton, who transmitted a pulse of light towards a chamber filled with specially treated caesium gas. Before the pulse had fully entered the chamber it had gone right through it and traveled a further 60ft across the laboratory. In effect it existed in two places at once, a phenomenon that Wang explains by saying it traveled 300 times faster than light.

The kind of chamber in Wang's experiment is normally used to amplify waves of laser light, not speed them up, said Aephraim Steinberg, a physicist at the University of Toronto. In the usual arrangement, one beam of light is shone on the chamber, exciting the caesium atoms, and then a second beam passing through the chamber soaks up some of that energy and gets amplified when it passes through the atoms.

The research is already causing controversy among physicists. What bothers them is that if light could travel forward in time it could carry information. This would breach one of the basic principles in physics - causality, which says that a cause must come before an effect. It would also shatter Einstein's theory of relativity since it depends in part on the speed of light being unbreachable.

This weekend Wang said he could not give details but confirmed: "Our light pulses did indeed travel faster than the accepted speed of light. I hope it will give us a much better understanding of the nature of light and how it behaves."

Dr Raymond Chiao, professor of physics at the University of California at Berkeley, who is familiar with Wang's work, said he was impressed by the findings. "This is a fascinating experiment," he said.

In Italy, another group of physicists has also succeeded in breaking the light speed barrier. In a newly published paper, physicists at the Italian National Research Council described how they propagated microwaves at 25% above normal light speed. The group speculates that it could be possible to transmit information faster than light.

Dr Guenter Nimtz, of Cologne University, an expert in the field, agrees. He believes that information can be sent faster than light and last week gave a paper describing how it could be done to a conference in Edinburgh. He believes, however, that this will not breach the principle of causality because the time taken to interpret the signal would fritter away all the savings. "The most likely application for this is not in time travel but in speeding up the way signals move through computer circuits," he said.

Wang's experiment is the latest and possibly the most important evidence that the physical world may not operate according to any of the accepted conventions. In the new world that modern science is beginning to perceive, sub-atomic particles can apparently exist in two places at the same time - making no distinction between space and time.

Separate experiments carried out by Chiao illustrate this. He showed that in certain circumstances photons - the particles of which light is made - could apparently jump between two points separated by a barrier in what appears to be zero time. The process, known as tunneling, has been used to make some of the most sensitive electron microscopes.

The implications of Wang's experiments will arouse fierce debate. Many will question whether his work can be interpreted as proving that light can exceed its normal speed - suggesting that another mechanism may be at work.

Neil Turok, professor of mathematical physics at Cambridge University, said he awaited the details with interest, but added: "I doubt this will change our view of the fundamental laws of physics."

Wang emphasizes that his experiments are relevant only to light and may not apply to other physical entities. But scientists are beginning to accept that man may eventually exploit some of these characteristics for inter-stellar space travel.

also see: <http://www.FreeRepublic.com/forum/a393c38551a20.htm>

EDITORIAL

WHAT IS SCIENCE?

By Hal Fox, editor, NEN

First science is not protection of the status quo nor the fervent belief that some particular model of nature is beyond reproach and not subject to change. Science is NOT just the replication of a new discovery, however, independent replication is one of the methods of science. No scientific model is completely correct. No scientific law is absolute and not subject to change. An excellent example is the postulate (upon which some of the Theory of Special Relativity is based) that nothing can travel faster than the measured speed of light in vacuum.

SCIENCE IS DISCOVERY

The essence of science is discovery: the finding of new, previously unknown, facts. (Definition: A scientific fact is the close agreement of a series of observations of the same phenomena.) In addition to discovery, science seeks to replicate, explain, model, and predict. Science is not long series of mathematical expressions. Mathematics is a tool to be used for modeling, explaining, and hopefully, predicting some new discoveries.

AGREEMENTS AMONG SCIENTISTS

A few centuries ago, it was popular to explain a variety of natural phenomena by using a variety of unexplored causes. For example, devils, witches, spirits, demons, elves, etc. were said to have caused some particular phenomena, such as the souring of milk, or the crash of lightning, etc. Some of the more astute philosophers decided that there were natural things and supernatural things. It was agreed that knowledge would advance faster if it was agreed that only the natural things (tested and known) were to be used to explain observed phenomena. This was the beginning of the scientific method. There was no agreement that there were no supernatural phenomena, just an agreement that for scientific knowledge it would be necessary for all scientific phenomena to be explained without using the supernatural.

Here is an example of a type of event that is not scientific: A person dies and a family member insists that he/she was visited by the spirit of the person after that person died. That event cannot, by definition, be a scientific fact because such an event is not subject to "the close agreement of a series of observations." True science does not deny that there can be spiritual events only that these "supernatural" events are not included in the current body of scientific knowledge.

This editor proclaims that almost all (but not all) fundamental scientific discoveries are made by experiments and often by the accidental observation of an unexpected event while pursuing some other phenomena. By contrast, many of the incremental advances in science, e.g., to extend a fundamental new discovery, are the result of the creation of models and the testing of predictions that are made by the model.

However, many scientific articles begin with the model (and usually with the mathematics that express the model). Then the article continues with data on the phenomena discovered, as though the model came first, and the discovery followed. In the field of new energy, what are examples of fundamental new discoveries? Here are three: (1) Professors Fleischmann and Pons (both electrochemists with many publications to their credit) discussed privately the possibility of the fusion of hydrogen if it were electrochemically packed into a hydrogen- absorbing metal. They knew that to publish such a speculation would lead to ridicule so they decided it was worth a private experiment. They discovered excess heat from the electrochemical loading of heavy hydrogen (deuterium) into a palladium electrode. This process became known as "cold fusion." (2) Medical doctor Randell Mills discovered that a certain type of electrochemical treatment of a mixture of water with specific chemicals produced as much as a thousand times more energy out than was input to the device. His explanation was that the hydrogen atom was being collapsed below its ground state and giving off radiation (in the so-called blacklight spectrum) which provided the observed excess thermal energy. The company that is commercializing this discovery has been named BlackLight Power, Inc. (3) Kenneth Shoulders was funded to develop some new physics and discovered that electrons could be produced into high-density charge clusters (HDCC). The first patent (U.S. 5,018,180) explained that, among many other applications, these HDCCs could be used to produce more thermal energy out than the electrical energy required to make the charge clusters. The patent suggested that the source of excess energy could be from tapping the vacuum energy of space.

All three new-energy discoveries are fundamental new science. Not one of the three have been supported by public funds. None of the three are, as yet, generally accepted by members of the academic community. Although over 200 cold fusion patents have issued in Japan, only two or three have been allowed to be patented in the U.S. Pons and Fleischmann have been ridiculed. It has taken ten years for Randell Mills to obtain a patent. The early work of Shoulders has been patented, however, later patent applications claiming nuclear reactions have been rejected. All three represent new physics. All three have had some degree of attack, especially cold fusion.

The essence of true science is discovery. Unfortunately, many in the academic community often ignore or attack the new, unexpected major discoveries if such discoveries are not consistent with currently-accepted models. Current scientific models include statements that the hydrogen atom cannot exist below its ground state and that nuclear reactions cannot be produced by low-energy means. Mills discovery is, therefore, denied by the first model and nuclear reactions by HDCC or by cold fusion are denied by the second model.

Here are some suggestions for new-energy experimenters. If you begin with a model (a working hypothesis to be accepted or rejected) don't ignore the data that is contrary to your model or your expectations. Follow the unexpected data, don't discard it. It is the unexpected that may lead to fundamental new discoveries. Become skilled in the use of measurement equipment so that you know the power and the limitations of each type of instrument. For example, if you are using an oscilloscope with a 100 megacycle bandwidth, don't expect to be able to view nanosecond phenomena. One of the most common faults in working with new types of motors is the delusion that comes from making measurements (especially input pulsed measurements) with equipment that works properly only on sinusoidal a.c. waveforms.

Also, do not ignore the proper use of mathematics. A good model expressed in mathematics can provide the insight for new experiments. An example: This editor hired a part-time graduate student to develop the mathematical description of gas flow through a nozzle. Later, when looking at the equations, it was obvious that there was a specific relationship between choked nozzle flow and the temperature. "You've just invented a new type of temperature sensor, but you don't know it," was the resulting comment to the mathematician. Thirty minutes later a new type of temperature measuring device was hooked up in the laboratory and tested. A patent application was later filed and named the mathematician as joint inventor.

In addition, find people that have a good engineering or scientific background that you can trust and that will serve as advisors to you. A little team work can work wonders.

CALIFORNIA AND SUMMER ENERGY

From WSJ, 26 June 2000, pg A2.

It is reported that Californians pay about \$850 million for electricity during this early June's hot spell. It appears that when you have a shortage of power then those who have electric power to sell can charge as much as \$750 per megawatt hour. That works out to be 75 cents per kilowatt hour. One would think that the power companies would be very interested in investing some of the \$850 million in new-energy developments which could produce electrical energy at an estimated cost of about two cents per kilowatt hour. Watch for more "rolling blackouts" this summer as the demand for electric power exceeds the supply.

INE members are asked to call their local power companies and ask if they would be interested in a source of information about the new-energy developments. Please tell them that the Journal of New Energy, one of the world's foremost new-energy journals, is publishing information about a variety of new-energy developments. The cost is only \$150 per year (four issues). Have them call EEMF at 801-466-8680 to order.

FROM THE ELECTROSTATICS SOCIETY OF AMERICA (ESA)

In the May/June 2000 issue of the ESA Newsletter we learn:

1. A well-educated fiber optic expert came up with a new (to him) idea: Why not use electrostatics to charge paint droplets to have them stick to the workpiece being painted? Great idea but has been used in industry for over 30 years. The point is that the use of electrostatics in its many forms is not well known. That is part of the goal of the ESA.
2. When you pull a tape off another tape you create a charge. You can increase this charge by putting several tapes together and pull them off one at a time. Try it. However after six or seven tapes the charge is high enough to start leaking off through ionizing the air.
3. Blunt lightning rods work better than sharp lightning rods (receive more lightning strikes). No one seems to know why. Thoughts from NEN editor: We know that if a voltage is applied to a

sharply pointed object the voltage gradient around the tip is increased. If you use a needle as a cathode about one centimeter away from a flat plate anode one expects to get a spark with less cathode voltage than if you use a blunt cathode. Has any of our readers tried that? See the next item.

Electrostatics Society of America
1525 E. 82nd St., Indianapolis, IN 46240

EXPERIMENTS AT EEMF

Ken Shoulders, in his paper presented at the Washington Conference sponsored by Tom Valone, showed how to make charge clusters by using a point cathode and a flat aluminum anode coated with silicon carbide (mixed with an epoxy). The standard physics is that in dry air it takes about 10,000 volts to make an arc or spark. We tried Shoulders experiment and it took about 2,000 to 3,000 volts to get an "arc" across a gap of about one centimeter.

HOW DO YOU EXPLAIN THAT?

Obtain access to a high voltage d.c. source. (You can easily make one from an old TV or computer monitor. There will be a power supply to provide several thousand volts to the CRT (picture tube). You can make a high voltage capacitor by using alternating sheets of aluminum foil and thin plastic sheets.) The classic physics explanation is that the increasing voltage will cause ions to form around the electrode (especially a pointed electrode - needle or razor blade). The ion cluster grows, then as soon as it reaches the other electrode there will be an ionized path and, OF COURSE, the spark immediately follows.

Using a razor blade about one centimeter from aluminum foil coated with silicon carbide powder mixed with epoxy in a layer about 0.006 inches thick. (Just place two parallel strips of plastic electricians tape and used a putty knife to spread the silicon carbide mixture onto the aluminum between the two tapes. Done properly, the layer will be the thickness of the tape.) Silicon carbide powder mixture provides a high-resistance layer that melts at about 3000 degrees. Silicon carbide powder is used as an abrasive for grinding or polishing.

Here is what we observed as we increase the voltage. With the lights out and a one cm gap at about 2,000 volts, there is a stream of purplish ions that stream from the cathode to the silicon carbide-coated anode. With a further increase in voltage there is a sudden crack of an electric spark -- highly visible. This spark discharges the capacitor and the d.c. power supply has to build up the voltage again until another spark occurs. The higher the voltage, the faster this arc repetition.

We noted three interesting effects. On the back side of the aluminum (silicon carbide surface faces the cathode) we saw that there were flashes or ejection of material. When we looked at the silicon carbide-coated aluminum foil there were holes punched through the layer of silicon carbide and the aluminum foil that were about 0.001 inch in diameter. When the cathode was moved away from

the silicon carbide over the bare aluminum the ensuing arc bent over and zapped through the silicon carbide, not to the closer aluminum foil!

According to more careful measurements done by Kenneth Shoulders, a high-density charge cluster (HDCC) is 20 microns in diameter. (25.4 microns to one-thousandth of an inch). Shoulders states, "Every arc is preceded by a charge cluster."

Here is this editor's explanation of the observations. The concept that the completion of an ion-trail is immediately followed by the ensuing spark is not correct (at least not in this experiment). The formation of an HDCC is aided by the formation of a high-voltage gradient. Note that between the needle cathode and the aluminum anode is a high-resistance dielectric (the silicon carbide). Therefore, most of the voltage drop between anode and cathode occurs across the silicon carbide layer. With the thickness of about six-thousandth of an inch, the voltage gradient is very high. The high voltage gradient supports the creation of a charge cluster. If one uses only the cathode and anode separated by one cm. in dry air it would take about 10,000 volts to get the "arc". In this experiment it is about 2,000 to 3,000 volts to get an "arc."

From EEMF, 3084 East 3300 So., Salt Lake City, UT 84109

GLOBAL ENERGY OUTLOOK

Copy of June 2000 editorial by permission (condensed version):

"It should come as no surprise that the U.S. suddenly finds itself in the throes of its Third Oil Shock. The lessons of the two earlier oil shocks of 1975 and 1979 have been discarded even though they nearly destroyed the U.S. economy. With the oil glut of the past decade, the government has been all too willing to let energy security shift to members of OPEC... Even now, rather than take corrective action for failing energy policies (or no energy policy), the Administration resorts to shifting the blame.... The solution, of course, is for government to get out of the way and let industry do its job which is to access America's abundant energy resources and produce them at a cost that benefits everyone. The fact that Governor Bush has previous experience in the finding, developing, and producing oil should be interpreted as saying that he understands the energy needs of the country and how to solve the crisis in taking back America's energy security."

Editor's note: With the oil depletion in the U.S. and our need to import more than half of our oil, it will take new-energy technology to "take back America's energy security."

Some other tidbits from Global Energy Outlook:

"Energy Crisis Due to Increased Demand for Oil, NOT OPEC Production Cutbacks. Political arguments about placing blame for the current U.S. energy crisis fail to acknowledge the impact of the balance between supply and demand in world oil markets."

"U.S. refineries are running at near 98 percent of capacity. We have had no new refineries built in nearly three decades, simply because of the added costs mandated by the government. The U.S. has had to turn to gasoline and other product imports, simply because we lack domestic

refining capability. ... If the government is looking for a scapegoat, it need look no further than itself."

"Worldwide Oil Demand to Reach as High as 90 Million Barrels per Day by 2010." ... 'Expected Supply Shortage of Crude Oil up to 2.5 Million Barrels per Day This Year.' ... "Only 3 of the 11 members of the oil cartel have excess capacity. The other 8 are producing at capacity. While Saudi Arabia could produce another 2.5 million barrels per day, it could precipitate another Middle East conflict by incurring the wrath of Iran, Iraq, Algeria, and other members of the cartel who would not benefit from lower revenues." ... "Natural Gas Shortages to Create Next U.S. Energy Crisis This Coming Winter." ... "November Presidential Election Campaign to be Driven by Gasoline Prices?"

Above items from Global Energy Outlook, published monthly by World Energy Group, Inc., P.O.Box 13830, Arlington, Texas 76013.

ULTRA-CAPACITORS FROM LOS ALAMOS

Researchers at the Department of Energy's Los Alamos National Laboratory have developed an ultracapacitor with the ability to deliver millions of discharge cycles. Building upon an existing research patent in conducting polymers, Los Alamos scientists have created a new single-cell ultracapacitor with high energy density -- meaning it can hold a lot of energy in a small volume. The prototype ultracapacitor is the size of a dime and contains microscopic carbon fibers specially coated with conducting polymer to act as charge-storage material.

According to Shimshon Gottesfeld, leader of the research team, "This is a very exciting advancement for us. Achieving 2.7 million charge/discharge cycles is a leap forward in the development of this new generation of ultracapacitors. I'd say we're well on our way to developing a product that has significant commercial value."

The new ultracapacitor was created at Los Alamos by electroplating a unique conducting polymer material onto the carbon fibers of a small, paper-thin disk, covering the active material with a porous separator and adding electrolytic solution before sealing the device.

From a Los Alamos Press Release.

FUSION POWER FROM SONOLUMINESCENCE

From the Sacramento Business Journal, June 23, 2000

A Grass Valley, California company is working on technology for generating nuclear-fusion energy using sonoluminescence. So far the group has funding commitments for \$825,000, despite the deep skepticism by some scientists.

Impulse Devices Inc., founded by mechanical engineer Ross Tessien, aims to produce power plants by converting the heat from sonoluminescence fusion to make electrical energy. The company plans to sell 1-megawatt power plants using this new technology. These units could be

shipped to small towns and industrial manufacturers throughout the world. The company estimates the cost of such power would be about one third the cost of current electrical power.

IS ANTI-GRAVITY FLYING YET?

Courtesy Matthew Malthouse

In an article in the British newspaper Guardian on March 27, science correspondent James Meek reported that a very hard look had been taken at the concept of anti-gravity as proposed by Podkletnov in 1966. High-tech conglomerate BAe Systems' military wing is still looking, and the anti-gravity research project is called Project Greenglow. "If the technology could be made to work it would make existing forms of transport obsolete.

The project is still around, although not much information is being given out. It is believed that project leader Ron Evans keeps a close lid on things for fear of ridicule as 'crank' science. Considering the reception of other new science fields, he can hardly be blamed. The Project is understood to be working with scientists at Lancaster University. You can visit their rather sparse website at <<http://www.greenglow.co.uk>>. They describe themselves as "a speculative research programme – the beginning of an adventure which other enthusiastic scientists from academia, government, and industry might like to join, particularly those who believe that the gravitational field is not restricted to passivity."

ABSTRACTS AROUND THE WORLD

LOW ENERGY NUCLEAR REACTIONS

George H. Miley, (Fusion Studies Laboratory, U. of Illinois, Urbana, IL, USA), **Characteristics of reaction product patterns in thin metallic films experiments**, *Conf. Proc. - Ital. Phys. Soc.*, vol 64, pp 77-87 (English) 1999.

A growing body of experimental evidence suggests that low-energy nuclear reactions (LENRs) can occur under select conditions in solid lattices loaded with hydrogenous atoms. There appear to be several different reaction regimes possible, but an important one involves reactions between the hydrogenic ions loaded into the lattice and the host metal itself. Recent experiments of this type at the U. of IL are discussed, where a large number of new elements are observed in thin films of various metals such as Ni or Pd following loading by electrolysis. A key characteristic identified is the grouping of higher yield isotopes in major mass bands lying at $A=22-23$, $50-80$, $108-120$ and $200-209$. Implications relative to possible theoretical models are discussed.

Mastromatteo, Ubaldo (STMicroelectronics, Cornaredo, Italy), **Hydrogen loaded thin nickel layers show high temperature hot spots**, *Conf. Proc. - Ital. Phys. Soc.*, vol 64, pp 63-69 (English) 1999.

In order to study the behavior of thin nickel layers in the presence of hydrogen, a prototype microcell has been constructed using a silicon chip of about 6 mm^2 size. On one side of the chip we have created a structure including a low electrical resistance polysilicon heater (anode), a high hydrogen content dielectric layer and a $0.1 \text{ }\mu\text{m}$ thick nickel resistor (cathode).

Focardi, S.; Gabbani, V.; Montalbano, V.; Piantelli, F.; Veronesi, S. (Dipt. di Fisica, Univ. di Bologna e INFN sezione di Bologna, Italy), **On the Ni-H system**, *Conf. Proc. - Ital. Phys. Soc.*, vol 64, pp 35-47 (English) 1999.

A discussion is presented on experiments performed on the Ni-H system in the last decade. Evidence for nuclear reactions is discussed.

Collis, W. J. M. F. (HEIDI Ltd., Boglietto, Italy), **Cold Fusion or Cold Fission?** *Conf. Proc. - Ital. Phys. Soc.*, vol 64, pp 17-22 (English) 1999.

Cold fusion model is discussed in terms of cold fission. This tries to explain the excess heat observed in many experiments.

Botta, E.; Bressani, T.; Calvo, D.; Fanara, C.; Iazzi, F. (INFN, Sezione di Torino, Turin, Italy), **On the neutron emission from the Ti/D system**, *Nuovo Cimento Soc. Ital. Fis., A*, vol 112A(6), pp 607-617 (English) 1999.

The results of a set of measurements of neutron emission from D₂ gas loaded Ti (metallic and sponge) at different initial values of the D/Ti ratio are reported. The D/Ti system was submitted to thermal cycles in order to pass through phase transitions. We observed no neutron emission with an upper limit of 0.05 neutrons s⁻¹g⁻¹ (1 σ level), in four series of measurements, whereas in two series we observed a neutron emission at a \sim 2 σ level.

Arata, Yoshiaki; Zhang, Yue-Chang (Osaka U., Japan), **Critical condition to induce "excess-energy" within [DS-H₂O] cell**, *Proc. Jpn. Acad., Ser. B*, vol 75B(4), pp 76-80 (English).

To examine whether possible conditions to induce excess-energy really exist or not in [DS-H₂O] cell with the DS-cathode (double structure cathode) in H₂O-electrolysis, both [DS-H₂O] cell and [DS-D₂O] cell having the same DS-cathodes, are electrical connected in series as a [Double-cell] and examined under identical experimental conditions. As a result, [DS-H₂O] cell also generates excess energy, but only under the extremely limited conditions when compared to the tremendous excess energy generated by [DS-D₂O] cell.

Arata, Yoshiaki; Zhang, Yue-Chang (Osaka U., Japan), **Definitive difference between [DS-D₂O] and [Bulk-D₂O] cells in "deuterium-reaction,"** *Proc. Jpn. Acad., Ser. B*, vol 75B(4), pp 71-75 (English).

To examine the necessary condition to induce an intense deuterium-reaction within solids under the same electrolyte (D₂O) and electrolytic current, both [DS-D₂O] cell and [Bulk-D₂O] cell having the same size cathode were electrical connected in series as a [Double-cell] to duplicate the experimental condition. The [DS-D₂O] cell was constructed with a DS-cathode (Double Structure Cathode with an inner cathode of fine powders) and the [Bulk-D₂O] cell with a Bulk-cathode made of bulk solid. Both intense excess energy and helium are induced as a reaction product in [DS-D₂O] cell, but it becomes very difficult in [Bulk-D₂O] cell.

Wang, Tie-shan; Ochiai, Kentaro; Maruta, Kathohiko; Takahashi, Akito (Inst. Modern Phys., Chinese Acad. of Sci., Lanzhou, Peop. Rep. China), **Clustereffects in deuterium cluster ion implantation on solids**, *Acta Phys. Sin.* (Overseas Ed.), vol 8(8), pp 565-570 (English).

Atomic and nuclear cluster effects of (D₃⁺) were studied by alternative implantation of deuterium cluster ion beam and isolated deuteron (D⁺) beam on metal targets. The beam energy was adjusted from 10 keV/d to 100 keV/d in experiment. The atomic cluster effect was shown by the enhancement of X-ray emission induced by cluster deuteron. The average ratio of X-ray intensity induced by each cluster deuteron to that induced by each isolated deuteron is about 2.6 in the experimental energy region. The nuclear cluster effect is shown by the difference of D-D fusion rates induced by two kinds of deuterons under the same experimental conditions. The ratio of the D-D fusion rates induced by the two kinds of deuterons is energy dependent.

Chernov, I. P.; Mel'nikova, T. N.; Cherdantsev, Yu. P.; Kreining, M.; Baumbakh, Kh. (Tomsk Polytechnical Univ., Russia), **Yield of nuclear reaction products from deuterium-saturated composite materials and layered structures**, *Russ. Phys. J.*, volume date 1998, vol 41(7), pp 642-646 (English) 1999.

We have studied the nuclear reaction products emitted from layered structures and composite materials saturated with deuterium. As a rule, the neutron output from our samples was at the background level. The γ -ray output from the Ti + Si, Ti + Pd, and Ti + ceramic samples was 1.5-2 times the background level. The excess output of γ -rays is accompanied by an increase in acoustic emissions (AE). We measured the energy spectrum of the γ -rays for the Ti + ceramic sample, and found that near-3.0 MeV γ -rays were emitted with the highest probability.

Miley, George H. (Fusion Studies Lab., Univ. of Illinois, Urbana, IL, USA), **Emerging physics for a breakthrough thin-film electrolytic cell power unit**, *AIP Conf. Proc.*, 458 (Space Technology and Applications International Forum--1999, Pt. 2), pp 1227-1231 (English) 1999.

Electrolytic cell experiments are described using cathodes coated with thin metallic films (order of 500 Å, using variously Ni, Pd and Ti) in a flowing packed-bed electrolytic cell producing ~1 W/cc excess power. Measurements of nuclear isotopes produced in the films suggest a nuclear reaction origin for the heat. The characteristic "signatures" of the isotope array observed in these experiments are discussed, along with speculations about the reaction physics involved.

Ohmori, T.; Mizuno, T. (Catalysis Research Center, Hokkaido Univ., Sapporo, Japan), **Nuclear transmutation occurring in the electrolysis on several metal electrodes**, *Curr. Top. Electrochem.*, vol 5, pp 37-70 (English) 1997.

A review with 49 refs. Strong evidences supporting the occurrence of the nuclear transmutation reactions were obtained by the electrolysis of light and heavy water mainly with gold and palladium electrodes. Steady excess energy evolution ranging from 0.2 to 1 W was observed during the electrolysis with gold electrode in neutral and alkaline light water solutions. At the same time, various unexpected elements, e.g. mercury, osmium, krypton, nickel, iron, silicon, magnesium, etc., are produced on/in the gold electrode after the electrolysis. The amount of iron reached some 10 µg. In the case of palladium electrode electrolyzed in heavy water solution, xenon, tin, cadmium, copper, iron, chromium, titanium etc. were detected. The isotopic distributions of the above elements were evidently deviated from their natural isotopic abundance. Some 100 µg of fine porous precipitates were obtained when electrolyzed at a current density > 0.2 A/cm². The major component was gold, however several percent of mercury, osmium, hafnium, iron and silicon with anomalous isotopic compounds were contained. The appearance of the gold electrode surface after the electrolysis was very anomalous on which a lot of volcano-like micro craters were created. The structure of the outside wall was very porous, very alike to the structure of the precipitates. In the inside wall, there lay layers of Au(111)-like crystals. This shows the occurrence of the recrystallization of gold substrate, suggesting an extraordinary elevated heat evolution. It is considered from these results that some nuclear transmutation reaction occurred in that craters and the precipitates containing the above elements were spewed out into the solution. In this review the details of these phenomena supporting the reality of the solid state nuclear transmutation will be described reinforcing several data of other authors.

Focardi, S.; Gabbani, V.; Montalbano, V.; Piantelli, F.; Veronesi, S. (Dipt. di Fisica, Univ. di Bologna e INFN Sezione di Bologna, Italy), **Large excess heat production in Ni-H systems**, *Nuovo Cimento Soc. Ital. Fis.*, A, vol 111A(11), pp 1233-1242 (English) 1998.

Evidence of a large heat excess produced in Ni-H systems and details of the calorimetric measurements are reported. Two cells which ran for long periods (about 300 days) produced an energy excess of 600 and 900 MJ, resp.

Yuki, H.; Kasagi, J.; Lipson, A. G.; Ohtsuki, T.; Baba, T.; Noda, T.; Lyakhov, B. F.; Asami, N. (Lab. Nucl. Sci., Tohoku Univ., Mikamine, Sendai, Japan), **Anomalous enhancement of DD reaction in Pd and Au/Pd/PdO heterostructure targets under a low energy deuteron bombardment**, *Pis'ma Zh. Eksp. Teor. Fiz.*, vol 68(11-12), pp 785-790 (English) 1998.

Yields of protons emitted in the D + D reaction in Pd, Au/Pd/PdO, Ti, and Au foils were measured by a dE - E counter telescope for bombarding energies 2.5-10 keV. The obtained experimental yields were compared with those predicted from a parameterization of the cross section and stopping power at higher energies. For Ti and Au target the enhancement of the D(d,p)T reaction was similar to that observed with a D gas target (several tens of eV). The bombarding-energy dependence of the yields corresponds well to the screening potential parameters $U_s = 250 \pm 15$ eV for Pd and 601 ± 23 eV for Au/Pd/PdO. Possible models of the enhancement obtained are discussed.

Chicea, D.; Lupu, D.; Cheregi, I. (Physics Dept., Univ. Lucian Blaga, Sibiu, Romania), **Experimental evidence of neutron emission from TiDx samples**, *Hadronic J.*, vol 21(5), pp 567-582 (English) 1998.

Experiments of loading Ti samples with deuterium from the gas phase and changing the temperature of the samples over a wide range were performed while monitoring neutron emission. Neutron emission in low intensity bursts, significantly over the background, were registered, proving that low energy nuclear reactions in condensed matter can occur with a low rate which can occasionally become detectable. A possible explanation is speculated (cold fusion).

Ravoo, Bart Jan; Kevelam, Jan; Weringa, Wilke D.; Engberts, Jan B. F. N. (Dept. Org. & Molecular Inorganic Chem., Univ. Groningen, Neth.), **Evidence for the "Cold Fusion" of Bilayer Membranes**, *J. Phys. Chem. B*, vol 102(52), pp 11001-11006 (English) 1998.

Polymerization of the lipid headgroups inhibits calcium-induced fusion of small unilamellar vesicles of the lipid di-n-dodecyloxypropyl beta-nitrostyryl phosphate but does not influence vesicle aggregation. Addition of a copolymer of lauryl methacrylate and acrylamide (LMPAM) provides the vesicles with a steric shield that prevents both fusion and aggregation. Accurate microcalorimetric detection of the enthalpies of vesicle aggregation and fusion was possible by comparison of titrations of vesicles into CaCl_2 in the absence and presence of LMPAM, both before and after polymerization of the lipids in the vesicles. Whereas the calcium-induced aggregation is associated with an enthalpy of $+2.6 \pm 0.1$ kJ/mol of lipid, fusion occurs with a minimal endothermic heat effect. We contend that the driving force of membrane fusion is of entropic origin.

Frisone, F. (Dipt. di Fisica, Univ. di Catania, Italy), **Can variations in temperature influence deuteron interaction within crystalline lattices?** *Nuovo Cimento, Soc. Ital. Fis., D*, vol 20D(10), pp 1567-1580 (English) 1998.

The influence of temperature on the phenomenon of deuteron fusion within metal lattices of FCC or BCC structure was studied. The hypothesis of a kind of chain reaction is proposed. Catalyzed by the microfractures arising in the structure as a result of variations in the thermodyn. conditions or for other reasons, this chain reaction could favor the process of fusion. The numerical calculations, performed for different metals (Pd, Pt and Ti) on varying the temperature, the total energy and the concentration of impurities, confirm that the probability of fusion is considerably greater when the values of these parameters are increased.

Garlaschelli, Luigi (Dip. di Chimica Org., Univ. di Pavia, Italy), **Cold fusion**, *Chim. Ind. (Milan)*, vol 80(8), pp 1073-1074 (Italian) 1998.

A brief review with 6 refs. The phenomenon of cold fusion is yet unproven.

Arata, Yoshiaki; Zhang, Yue-Chang (Osaka Univ., Ibaraki, Japan), **Anomalous difference between reaction energies generated within D₂O-cell and H₂O-cell**, *Jpn. J. Appl. Phys.*, Part 2, vol 37(11A), pp L 1274-L 1276 (English) 1998.

Both D₂O-cell and H₂O-cell are constructed with the same Double Structure Cathode (DS-cathode), and connected in series as a Double-cell to examine the energy generation under the same electrolytic current. D₂O-cell generates tremendously excess energy during a long period such as over several thousand hours, but any energy is never generated in H₂O-cell when the chemical energy is subtracted in both cells. Also, mixed-cell blended with D₂O and H₂O electrolytes (D₂O/H₂O = 2 in wt.) also generates an excess energy, but with the considerably different characteristics from D₂O-cell.

Kozima, H.; Yoshimoto, K.; Kudoh, H. (Dept. Phys., Shizuoka Univ., Japan). **Excess heat and nuclear transmutation data analyzed using the TNCF model**, *Elem. Energy (Cold Fusion)*, vol 28, pp 23-29 (English) 1998.

Experimental data of nuclear transmutation and the excess heat in electrolytic systems of Pd-Pt and H₂SO₄ in D₂O and H₂O generating Au and Ag supplied by Dash et al., were analyzed using the TNCF model with a parameter $n_n \sim 10^{12} \text{ cm}^{-3}$, which is in the range of values obtained in analyses of various experimental data by many other researchers.

Kozima, H.; Fujii, M.; Kaki, K.; Ohta, M. (Dept. Physics, Shizuoka University, Japan), **Precise neutron measurements reveal nuclear reactions in solids-an analysis using the TNCF model**, *Elem. Energy (Cold Fusion)*, vol 28, pp 4-15 (English) 1998.

The data showing the detection of neutrons during the cold fusion phenomenon in various background environments were analyzed successfully using our TNCF model. Another phase of the cold fusion phenomenon has been revealed by the precise measurements of the nuclear products which have sometimes been accepted as a neg. proof of the existence of the phenomenon itself. Two of experimental results by Jones et al. are taken up and interpreted consistently with the value of the adjustable parameter n_n in the model, the density of the trapped neutrons supplied from the ambient neutrons, of $\sim 10^{11} \text{ cm}^{-3}$ for the positive and less than $\sim 10^7 \text{ cm}^{-3}$ for the negative case. The value of n_n for the former is in the range of values determined hitherto in various materials used in the cold fusion research which have produced positive results.

Kozima, Hideo (Dept. Physics, Shizuoka University, Japan), **Evidences of neutron trapping in cold fusion materials**, *Elem. Energy (Cold Fusion)*, vol 28, pp 16-22 (English) 1998.

A review with 16 refs. New experimental data of neutron trapping by cold fusion materials have been reported which support a basic assumption of the TNCF model proposed by the author. Surveying the experimental data of neutron trapping in the cold fusion experiments, it is shown that they are evidence supporting the basic premises of the TNCF model.

Arata, Yoshiaki; Zhang, Yue-Chang (Osaka Univ., Japan), **Anomalous "deuterium-reaction energies" within solid**, *Proc. Jpn. Acad., Ser. B*, vol 74B(7), pp 155-158 (English) 1998.

Anomalous difference appears between the reaction energies generated within highly deuterated Pd-black and highly hydrogenated one under the chemical reaction energies are subtracted in both samples. Enormous excess energy generates within highly deuterated Pd-black through a long period such as over several thousands hours, on the contrary highly hydrogenated Pd-black never produces any excess energy. Furthermore, Pd-black including mixed gases of deuterium and hydrogen also generates an excess energy, but with the considerably different characteristics from deuterated Pd-black. These experimental results

clearly show that deuterium nuclear reaction is generated essentially within solid as the "solid-state plasma fusion."

Filimonov, Veniamin A.; Kobets, Vyacheslav A.; Skitovich, Alla V. (Inst. for Physical Chem. Problems, Belarus St. Univ., Minsk, Belarus), **Self-organization processes under metals loading by hydrogen isotopes - materials science basis for cold fusion and transmutation technologies**, Proc. Intersoc. Energy Convers. Eng. Conf., 33rd, (English) 1998.

Structure changes were studied in Nb and Pd cathodes under and after electrochemical loading by hydrogen isotopes as related to cold fusion and transmutation (CF and T) technologies. Previously deformed fine crystalline metal plates treated at the temperature close to the critical point of M-H (M-D) system phases separation by asymmetrical hydrogen (deuterium) loading recrystallize up to single crystals during some tens of hours. These plates when used as cathodes in CF and T experiments do not exhibit any dead time as related to both nuclear reaction accompanied by neutron emission and excess heat release. Metallurgical study showed that after prolonged electrolysis runs (up to 100 hours) at higher temperatures, recrystallization accompanied with grain growth up to single crystals with (111) orientation in parallel with face side of cathode plates takes place. This is also proved by x-ray studies. When used in D₂O pulsed electrolysis at 20°C (voltage up to 110 V, frequency up to 10 kHz, duration of pulses up to 10 ms) these cathodes provide reliable enhancing of neutron emission up to twice as much as background value in 8 h run; excess heat of ~300% as related to the same cell with untreated cathode was shown under steady current D₂O electrolysis at 90°C in 8 hour run.

Mcgraw, Thomas F.; Davis, Randolph R. (Indian Creek Imagineering, Little River, SC, USA), **Critical factors in transitioning from fuel cell to cold fusion technology**, Proc. Intersoc. Energy Conversion Engineering Conf., 33rd, (English) 1998.

The fuel cell industry possesses much of the required manufacturing equipment and knowledge-base (e.g., proton conduction and hydrogen safety) necessary to develop cold fusion systems. Key factors in making a transition to cold fusion technology are discussed. Loading of reaction material can be provided by electrolytic charging and high gas over-pressure. Effective pressures over 10,000 atm are required in cold fusion systems, giving a loading of H/M = 1; and a combination of loading methods is highly desirable. Systems must be designed to provide continuous flow of hydrogen ions ($\approx 10^{17}$ /s for ten kilowatts), with an input power source of 50 W (est.). Cold fusion experiments showed that helium is formed during the reaction, and physical changes occur in the reaction material. These revelations impact design and operation of cold fusion systems, as the reaction material must be replaced periodically, while the systems must maintain integrity during operation. Safety and cost are also highly important considerations.

Mizuno, Tadahiko; Ohmori, Tadayoshi; Akimoto, Tadashi (Dept. Quantu. Energy, Fac. of Engr., Hokkaido Univ., Sapporo, Japan), **Detection of radiation emission, heat generation and elements from a Pt electrode induced by electrolytic discharge in alkaline solutions**, Proc. Intersoc. Energy Convers. Engineering Conf., 33rd, (English) 1998.

Radiation emission, heat generation and detection of elements were confirmed during electrolytic discharge at high voltage in a light and D₂O solution containing an alkaline ion from the Pt electrode. The authors employed simple temperature measurement techniques, the He₃ n detection and a NE-213 scintillator to measure the emission and energy distribution, energy dispersive x-ray analysis (EDX) and secondary ion mass spectroscopic measurement (SIMS) for the elements isotopic distributions. The authors counted up to several million-radiation emissions per/s by the counter. High heat output of the order of several hundred watts was observed from input power of tens of watts. Also, many elements were detected on the after electrolytic discharge Pt electrode.

The detected counts by the He₃ detector increased with discharge time after an induction period, and showed radical fluctuations. The counting rate were decreased 1/10 by Cd shield, meanwhile the Cu and Fe shield

showed no count changes. The rate of emission increased with the input volt. Also, the rate was increased with the concentration of the ions and their mass number. Their rate was 10 times higher in D₂O than light H₂O solution. The emission rate corresponded linearly with the input current, except at the low input Coulomb range due to induction time. From this linear relation, the typical dependence of the count/current during 1 hour was 10^6 /s/A/cm² for a Pt electrode in 0.5M K carbonate of D₂O solution. A nuclear reaction is probably induced by the electrical discharge on the metal surface in the solution. The reaction probably took place in the thin layer between the electrolyte and electrode.

Kozima, Hideo; Arai, Kunihiro; Yoshimoto, Koki (Cold Fusion Research Lab., Shizuoka, Japan), **Tritium and ⁴He data by Chien et al. (1992) confirmed the cold fusion phenomenon**, *Int. J. Hydrogen Energy*, vol 25(6), pp 509-511 (English) 2000.

The simultaneous tritium and helium data obtained by Bockris' group in Texas A&M University are analyzed with the TNCF model. The adjustable parameter in the model is determined by the experimental data $n_n = 1.5 \times 10^6$ cm⁻³ consistent with values determined for other events in the cold fusion phenomenon. To reconcile the data of tritium and ⁴He, it is necessary to assume that only 1 ~ 10% of the generated ⁴He remains in the surface region of the cathode where it has been observed.

Dragic, A.; Maric, Z.; Vigier, J. P. (Inst. of Phys., Belgrade, Yugoslavia), **New quantum mechanical tight bound states and 'cold fusion' experiments**, *Phys. Lett. A*, vol 265(3), pp 163-167 (English) 2000.

Ever since establishment of the 'cold fusion' phenomenon, many attempts are made to explain its origin. Barut and Vigier [1] suggested that the observed 'excess heat' in cold fusion experiments could be related to the new tightly bound states of the hydrogen atom. These states are due to electromagnetic interactions at small distances. Another mechanism for the occurrence of deep energy levels could be a creation of the 'anti-Born-Oppenheimer' states, corresponding to rapid motion of the heavy particles around almost fixed electrons. Both possibilities are reviewed in this Letter.

Kojima, Hideo (Res. Inst. for Nuclear Fusion at Normal Temp., Japan), **Present status of cold fusion research. 2**, *Hoshasen Kagaku* (Tokyo), vol 42(11), pp 351-358 (Japanese) 1999.

A review with 9 refs. is given on physics of cold fusion and new science – solid nuclear physics and new technol.

Smolanczuk, Robert (Nuclear Theory Dept., Soltan Inst. for Nuclear Studies, Warsaw, Pol.), **Production of Even-Even Superheavy Nuclei in Cold Fusion Reactions**, *Phys. Rev. Lett.*, vol 83(23), pp 4705-4708 (English) 1999.

We investigate the possibilities of the formation of even-even superheavy nuclei in the cold fusion reactions ²⁰⁷Pb(HI,n). We reproduce the measured cross sections of the reactions ²⁰⁷Pb(50Ti,n), ²⁵⁶Rf₁₅₂, ²⁰⁷Pb(54Cr,n), ²⁶⁰Sg₁₅₄, and ²⁰⁷Pb(58Fe,n), ²⁶⁴Hs₁₅₆ within a factor of 2.9 on average. We predict the optimal bombarding energies and the formation cross sections of even-even superheavy nuclei with Z=110-120.

Kozima, Hideo; Yoshimoto, Koki; Arai, Kunihiro (Cold Fusion Research Lab., Shizuoka, Japan), **First reliable tritium data by Packham et al. (1989) analyzed by TNCF model**, *Int. J. Hydrogen Energy*, vol 25(6), pp 505-507 (English) 2000.

The first reliable tritium data obtained by Bockris' group in Texas A&M University is successfully analyzed with the TNCF model. The adjustable parameter in the model is determined by the experimental data as $n_n = 3.6 \times 10^7$ cm⁻³ consistent with values determined for other events in the cold fusion phenomenon.

Denisov, V. Yu.; Hofmann, S. (GSI-Darmstadt, Germany), **Formation of superheavy elements in cold fusion reactions**, *Phys. Rev. C: Nucl. Phys.*, vol 61(3), pp 034606/ 1-034606/15 (English) 2000.

The process of the synthesis of superheavy elements (SHEs) is not yet understood completely. In the presented work we make an attempt to describe the cold fusion reactions of the type $X+(Pb,Bi)$ SHE+1n at subbarrier energies. The process of the formation of SHEs is subdivided into three steps. (1) The capture of two spherical nuclei and the formation of a common shape of the two touching nuclei. Low-energy surface vibrations and transfer of few nucleons are taken into account in the first step of the reaction. (2) The formation of a spherical or near spherical compound nucleus. (3) The survival of the excited compound nucleus due to evaporation of neutrons and γ -ray emission in competition with fission. A lowering of the fission barrier was taken into account, which arises from a reduction of shell effects at increasing excitation energy of the compound nucleus. The following reactions were analyzed in detail: $(^{58}Fe, ^{64}Ni, ^{70}Zn, ^{78}Ge) + ^{207}Pb, (^{50}Ti, ^{54}Cr, ^{58}Fe, ^{59}Co, ^{62,64}Ni, ^{65}Cu, ^{66,68,70}Zn, ^{71}Ga, ^{74,76,78}Ge, ^{75}As, ^{80,82}Se) + ^{208}Pb, (^{58}Fe, ^{64}Ni, ^{70}Zn, ^{78}Ge) + ^{210}Pb$, and $(^{50}Ti, ^{54}Cr, ^{58}Fe, ^{64}Ni, ^{70}Zn, ^{78}Ge) + ^{209}Bi$. The presented model describes well the available experimental cross-section data and allows for predicting cross-section values for the synthesis of so-far unknown heavier elements.

Smolanczuk, Robert (Nuclear Theory Dept., Soltan Inst. for Nuclear Studies, Warsaw, Pol.), **Excitation functions for the production of superheavy nuclei in cold fusion reactions**, *Phys. Rev. C: Nucl. Phys.*, vol 61(1), pp 011601/1-011601/4 (English) 2000.

Excitation energy dependence of the cross sections of the reactions $^{208}Pb(^{50}Ti, 1n)^{257}Rf$ and $^{208}Pb(^{58}Fe, 1n)^{265}Hs$ is calculated and compared with the experimental data measured at GSI-Darmstadt. Such a dependence is also calculated for the reaction $^{208}Pb(^{86}Kr, 1n)^{293}118$ reported recently by the Berkeley group, and for reactions which may lead to the synthesis of element 119 and production of its odd-Z descendants. Recommendations for future experiments based on the present study are presented.

Kozima, Hideo (Research Inst. for Nuclear Fusion at normal Temp., Japan), **Present status of cold fusion research. 1**, *Hoshasen Kagaku* (Tokyo), vol 42(10), pp 310-315 (Japanese) 1999.

A review with 4 refs. on cold fusion is given.

Buchachenko, A. L.; Chaikovskii, V. V. (Inst. Probl. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia), **Contraction of electronic shells and a new strategy for cold fusion**, *Zh. Fiz. Khim.*, vol 73(10), pp 1796-1801 (Russian) 1999.

A review with 19 refs. concerning contraction of electronic shells and a new strategy for cold fusion is presented. Symptoms of the contraction of electronic shells are formulated and experimental data indicating on structural-chemical evidences of contraction are analyzed. It is shown that the contraction is accompanied with excitation of electron shells and the most actual are search of paths of excitation of deepest spaced electrons. A novel strategy of cold nuclear synthesis chemical stimulated is formulated.

Hessberger, F. P. (Gesellschaft für Schwerionenforschung mbH, Darmstadt, Germany), **Experiments on the synthesis of new superheavy elements**, *Dyn. Aspects Nucl. Fission, Int. Conf.*, 4th, meeting date 1998, pp 39-50. Edited by: Oganessian, Yu. Ts.; Kliman, J.; Gmuca, S. World Scientific Publishing Co. Pte. Ltd.: Singapore, Singapore. (English) 2000.

Evaporation residue production in cold fusion reactions of Pb- and Bi-target nuclei with projectiles of elements between Ti (Z = 22) and Zn (Z = 30) leading to compd. nuclei ZCN = 104 - 113 was investigated at SHIP. The result was the first unambiguous identification of isotopes of elements Z = 110, Z = 111 and Z = 112 in

bombardments of ^{208}Pb , ^{209}Bi with $^{62,64}\text{Ni}$, ^{70}Zn . We further report on the identification of ^{256}Db , ^{252}Lr and on new, improved decay data of ^{253}Lr , ^{255}Rf , ^{257}Db , allowing a first deeper insight into the nuclear structure of these isotopes. A review with 12 refs.

Kozima, Hideo; Arai, Kunihiro (Cold Fusion Research Lab., Shizuoka, Japan), **Localized nuclear transmutation in PdHx observed by Bockris and Minevski revealed a characteristic of CF phenomenon**, *Int. J. Hydrogen Energy*, vol 25(6), pp 513-516 (English) 2000.

In the Pd/H₂O electrolysis system, new elements, Mg, Cl, Fe, Al, Ca, K, and others, absent in the original system, have been observed by Bockris and Minevski in the surface region of the metal hydride PdHx cathode with a thickness of 2 mm up to 10% of the matrix element Pd. The data is analyzed using the TNCF model to give consistent explanation of these new elements by fission of nuclei formed from Pd isotopes in cathode by absorption of a thermal neutron. The parameter of the model, n_n is detected to be $n_n = 3.0 \times 10^{11} \text{ cm}^{-3}$ consistent with the values determined by other experimental data in various events of CF phenomenon.

Arata, Yoshiaki (Japan), **Developmental challenge in new energy source. "Solid-state plasma fusion,"** *Kotai Butsuri*, vol 35(1), pp 67-75 (Japanese) 2000.

A review with 18 refs. The author has demonstrated that highly deuterated material can be generated by the two different methods discussed here. In consequence, we have proven the possibility of inducing solid-state plasma fusion within extremely deuterated materials over 100 atomic % in spite of different methods.

Battaglia, A.; Daddi, L.; Focardi, S.; Gabbani, V.; Montalbano, V.; Plantelli, F.; Sona, P. G.; Veronesi, S. (CISE spa, Segrate (MI), Milan, Italy), **Neutron emission in Ni-H systems**, *Nuovo Cimento*, Soc. Ital. Fis., A, vol 112A(9), pp 921-931 (English) 1999.

In this paper evidence is reported for neutron emission during energy production in Ni-H systems at about 700 K. Neutrons were detected directly by He₃ counters and indirectly by gold activation.

Gupta, Raj K. (Physics Dept., Panjab Univ., Chandigarh, India), **Rare cold nuclear processes - a review and some new results**, *Pramana*, vol 53(3), pp 577-584 (English) 1999.

The rare nuclear processes of cluster radioactivity, cold fission and cold fusion, studied on the basis of the quantum mechanical fragmentation theory (QMFT), are reviewed. This theory was advanced as early as in 1974-75 by the author and collaborators, first at Frankfurt and then developed both at Frankfurt and Chandigarh. The QMFT predicted all the three phenomena to occur most probable as cold processes, prior to their experimental observations. The success of experiments with respect to the QMFT and some new results are presented as predictions of this theory for future experiments. 17 Refs.

ASTI Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals, held November 1997, Villa Riccardi, Rocca d'Arazzo. [In: Conf. Proc. - Ital. Phys. Soc., 1999; 64]. Collis, W. J. M. F., Editor (Italy). (Ed Com pos: Bologna, Italy), 97 pp. (English) 1999. Abstract Unavailable

Arata, Yoshiaki; Zhang, Yue-Chang (Coop. Research Ctr. for Adv. Sci. and Technol., Osaka U., Osaka, Japan), **Anomalous production of gaseous ^4He at the inside of "DS-cathode" during D_2O -electrolysis**, *Proc. Jpn. Acad., Ser. B*, vol 75B(10), pp 281-286 (English) 1999.

Observations were made of the abundant production of gaseous ^4He inside a double-structure Pd cathode (DS-cathode) which continuously had released excess heat of $\sim 5 \leq 10 \text{ W}$ over 2,000 h in the electrolysis of

D₂O. These 4He atoms were found from the inner atmosphere within the DS-cathode including the highly deuterated Pd fine powders.

TORSION FIELD RESEARCH

Boyadjiev, T.; Fiziev, P.; Yazadjiev, S. (Dept. of Analytical Mech., Fac. Math. and Comp. Sci., Sofia Univ., Bulg.), **Neutron star in the presence of a torsion-dilaton field**, *Classical Quantum Gravity*, vol 16(7), pp 2359-2380 (English) 1999.

We develop the general theory of stars in Saa's model of gravity with propagating torsion and study the basic stationary state of a neutron star. The torsion force decreases the role of the gravity in the star configuration, leading to significant changes in the neutron star masses depending on the equation of state of star matter. The inconsistency of Saa's model with Roll-Krotkov-Dicke and Braginsky-Panov experiments is discussed.

Lavrov, P. M.; Moshin, P. Yu (Tomsk State Pedagogical Univ., Tomsk, Russia), **Quantization of two-dimensional gravity with dynamical torsion**, *Classical Quantum Gravity*, vol 16(7), pp 2247-2258 (English) 1999 Institute of Physics Publishing.

We consider two-dimensional gravity with dynamical torsion in the BV (Batalin-Vilkovisky) and BLT (Batalin-Lavrov-Tyutin) formalisms of gauge theory quantization, as well as in the background field method.

Babourova, O. V.; Frolov, B. N.; Klimova, E. A. (Dept. Math., Moscow St. Pedagogical Univ., Moscow, Russia), **Plane torsion waves in quadratic gravitational theories in Riemann-Cartan space**, *Classical Quantum Gravity*, vol 16(4), pp 1149-1162 (English) 1999.

The definition of the Riemann-Cartan space of plane-wave type is given. The condition under which the torsion plane waves exist is found. It is expressed in the form of the restriction imposed on the coupling consists of the 10-parametric quadratic gravitational Lagrangian. In the mathematics appendix the master formula for the commutator of the variation operator and Hodge operator is proved. This formula is applied for the variational procedure when the gravitational field equations are obtained in terms of the exterior differential forms.

Belyaev, A. S.; Shapiro, I. L. (Inst. Fisica Teorica, Univ. Estadual Paulista, Sao Paulo, S.P., Brazil), **Torsion action and its possible observables**, *Nucl. Phys. B*, vol B543(1,2), pp 20-46 (English) 1999.

The methods of effective field theory were used to explore the theoretical and phenomenological aspects of the torsion field. The spinor action coupled to the electromagnetic field and torsion possesses an additional softly broken gauge symmetry. This symmetry enables one to derive the unique form of the torsion action compatible with unitarity and renormalizability. It turns out that the antisymmetrical torsion field is equivalent to a massive axial vector field. The introduction of scalars leads to serious problems which are revealed after the calculation of the leading two-loop divergences. Thus the phenomenological aspects of torsion may be studied only for the fermion-torsion systems. In this part of the paper, upper bounds were obtained for the torsion parameters by using present experimental data on forward-backward Z-pole asymmetries, data on the experimental limits on four-fermion contact interaction (LEP, HERA, SLAC, SLD, CCFR) and also TEVATRON limits on the cross section of a new gauge boson, which could be produced as a resonance in high energy pp collisions. The present experimental data enable one to put limits on the torsion parameters for the various ranges of the torsion mass. It is emphasized that for a torsion mass of the order of the Planck mass no independent theory for torsion is possible, and one must directly use string theory.

Kim, Sung-Won (Dept. Science Ed., Ewha Womans Univ., Seoul, S. Korea), **The gravitational wave of the scalar-tensor theory**, *J. Korean Phys. Soc.*, vol 33 (Suppl., Proc. 5th Korean-Italian Symposium on the Relativistic Astrophysics, 1997), pp S560-S564 (English) 1998.

The gravitational wave is discussed in the general space-time with torsion and scalar field. It is shown that there are three types of wave equation: spin-0, spin-1, and spin-2 wave equations. When the effective stress-energy tensors for this gravitational wave is calculated, it is found that the additional term due to the scalar field affects them. The existence of the gravitational dipole moment by the spin is tested in the spin-1 vector wave equation.

Konstantinov, M. Yu.; Melnikov, V. N. (Ctr. Gravitation and Fundamental Metrology, VNIIMS, Moscow, Russia), **Numerical investigation of 5-dimensional space-time models with torsion and a nonminimal scalar field** *Gravitation Cosmol.*, vol 4(1), pp 33-39 (English) 1998.

Dynamical evolution of 5-dimensional cosmological models with nonminimal scalar fields is investigated numerically in the framework of the Einstein-Cartan gravitation theory. Models with closed, flat and open 3-space are classified with respect to the properties of the Universe. Nonsingular models exist only for open 3-space.

Shapiro, Ilya L. (Dept. de Fisica, Univ. Federal de Juiz de Fora, Brazil), **Torsion: theory and possible observables**, Photon Poincare Group, pp 278-297. Edited by: Dvoeglazov, Valeri V., Nova Science Publishers, Inc.: Commack, N.Y. (English) 1999.

A review with 24 refs. The theoretical basis for the search for possible experimental manifestations of the torsion field at low energies is discussed. First, the quantum field theory in an external gravitational field with torsion is reviewed. The renormalizability requires the nonminimal interaction of torsion with spinor and scalar (Higgs) fields. The Pauli-like equation contains new torsion-dependent terms which have a different structure as compared with the standard electromagnetic ones. The same concerns the nonrelativistic equations for spin-1/2 particle in external torsion and electromagnetic fields. Second, propagating torsion is discussed. For the Dirac spinor coupled to the electromagnetic and torsion field there is some additional softly broken local symmetry associated with torsion. As a consequence of this symmetry, in the framework of effective field theory, the torsion action is fixed with accuracy to the values of the coupling construction of the torsion-spinor interaction, mass of the torsion and higher derived terms. The introduction of a Higgs field spoils the consistency of this scheme, and the effective quantum field theory for torsion embedded into the Standard Model is not possible. The phenomenological consequences of the torsion-fermion interaction and the case of a torsion mass of the Planck order are discussed.

Dobado, Antonio; Maroto, Antonio L. (Dept. Fisica Teorica, Univ. Complutense de Madrid, Spain). **Some aspects of the standard model in gravitational backgrounds with torsion**, Photon Poincare Group, pp 298-312. Edited by: Dvoeglazov, Valeri V. Nova Science Publishers, Inc.: Commack, N. Y. (English) 1999.

Torsion appears in a natural way in modern formulations of the gravitational theories. In this work the authors studied several aspects of the interplay between the standard model and a classical gravitational background with torsion. In particular, the problem of the gauge and gravitational anomalies, B and L anomalies, the effective action for the torsion and the propagation of electromagnetic radiation in the presence of torsion were considered.

Dobado, Antonio; Maroto, Antonio L. (Dept. Fisica Teorica, Univ. Complutense de Madrid, Spain), **Non-local low-energy effective action for gravity with torsion**, *Classical Quantum Gravity*, vol 16(12), pp 4057-4074 (English) 1999.

We calculate the low-energy effective action for gravity with torsion, obtained after the integration of scalar and fermionic matter fields, using the local momentum representation based on the Riemann normal coordinates expansion. By considering this expansion around different spacetime points, we also compute the non-local terms together with the more usual divergent ones. Finally, we discuss the applicability of our results to the calculation of particle production probabilities.

GRAVITY

Hu, B. L. (Dept. Phys., Univ. Maryland, College Park, MD, USA), **Stochastic gravity**, *Int. J. Theor. Phys.*, vol 38(11), pp 2987-3037 (English) 1999.

A review with 129 refs. A summary is given of the status of current research on stochastic semiclassical gravity and directions for further investigations are suggested. This theory generalizes the semiclassical Einstein equation to an Einstein-Langevin equation with a stochastic source term arising from the fluctuations of the energy-momentum tensor of quantum fields. Recent efforts in applying this theory include the study of black hole fluctuation and back-reaction problems, linear response of hot flat space and structure formation in inflationary cosmology. To explore the physics meaning and implications of this stochastic regime in relation to both classical and quantum gravity, it is useful to take the view that semiclassical gravity is mesoscopic physics and that general relativity is the hydrodynamic limit of certain spacetime quantum substructures. The classical spacetime depicted by general relativity is viewed as a collective state and the metric or connection functions are viewed as collective variables. Three basic issues - stochasticity, collectivity, correlations - and three processes - dissipation, fluctuations, decoherence - underscore the transformation from quantum microstructure and interaction to the emergence of classical macrostructure and dynamics. The authors discuss ways to probe the high-energy activity from below and make two suggestions: via effective field theory and the correlation hierarchy. They also discuss how stochastic behavior at low energy is an effective theory and how correlation noise associated with coarse-grained higher correlation functions in an interacting quantum field could carry nontrivial information about the high-energy sector. Finally, processes deemed important at the Planck scale are described, including tunneling and pair creation, wave scattering in random geometry, growth of fluctuations and forms, Planck-scale resonance states, and spacetime foams.

Mimoso, Jose P.; Nunes, Ana (Dep. Fisica, F. C. L., Lisbon, Port.), **The relaxation of generalized gravity theories**, *New Worlds Astropart. Phys., Proc. Int. Workshop, 2nd Meeting* 1998, pp 337-341. Edited by: Mourao, Ana M.; Pimenta, Mario; Sa, Paulo. World Scientific Publishing Co. Pte. Ltd.: Singapore. (English) 1999.

We discuss the conditions under which generalized gravity theories relax towards General Relativity. Both scalar-tensor theories and higher-order theories are particular cases of multiscalar-tensor gravity theories. These theories approach GR when the appropriate effective potential that combines the contributions of all the mass terms has a positive minimum and also when the function which controls the coupling between the mass terms evolves to zero. The former criterion yields a quasi-de Sitter late time inflationary expansion and dominates over the second.

Grant, James D. E. (Dept. Math., Univ. of Hull, UK), **A spinorial Hamiltonian approach to gravity**, *Classical Quantum Gravity*, vol 16(11), pp 3419-3437 (English) 1999.

A spinorial set of Hamiltonian variables is given for general relativity in any dimension greater than 2. This approach involves a study of the algebraic properties of spinors in higher dimensions, and of the elimination of second-class constraints from the Hamiltonian theory. In four dimensions, when restricted to the positive spin-bundle, these variables reduce to the standard Ashtekar variables. In higher dimensions, the theory can either be reduced to a spinorial version of the ADM formalism, or can be left in a more general form which seems useful for the investigation of some spinorial problems such as Riemannian manifolds with reduced holonomy group. In dimensions $0 \pmod{4}$, the theory may be recast solely in terms of structures on the pos.

spin-bundle V^+ , but such a reduction does not seem possible in dimensions $2(\bmod 4)$ due to algebraic properties of spinors in these dimensions.

Tamaki, Takashi; Maeda, Kei-ichi; Torii, Takashi (Dept. Phys., Waseda University, Shinjuku, Tokyo, Japan), **Gravitating monopole and its black hole solution in Brans-Dicke theory**, *Phys. Rev. D: Part. Fields*, vol 60(10), pp 104049/1-104049/14 (English) 1999.

We find a self-gravitating monopole and its black hole solution in Brans-Dicke (BD) theory. We mainly discuss the properties of these solutions in the Einstein frame and compare the solutions with those in general relativity (GR) on the following points. From the field distributions of the generic type of self-gravitating monopole solutions, we find that the Yang-Mills potential and the Higgs field hardly depend on the BD parameter for most of the solution. There is an upper limit of the vacuum expectation value of the Higgs field to which a solution exists, as in GR. Since the BD scalar field has the effect of lessening an effective gauge charge, the upper limit in BD theory (in the $w = 0$ case) becomes about 30% larger than in GR. In some parameter ranges, there are two nontrivial solutions with the same mass, one of which can be regarded as the excited state of the other. This is confirmed by the analysis by catastrophe theory, which states that the excited solution is unstable. We also find that the BD scalar field varies more for solutions of smaller horizon radii, which can be understood from the differences of the nontrivial structure outside the horizon. A scalar mass and the thermodynamical properties of new solutions are also examined. Our analysis may give insight into solutions in other theories of gravity; particularly, a theory with a dilaton field may show similar effects because of its coupling to a gauge field.

Horner, Margaret Lenore (State Univ. New York, Stony Brook, NY, USA), **Transmutation of electric into magnetic forces on a planar electron: impurity spacing and band structure in strong magnetic fields**, 67 pp. Avail. UMI, Order Number DA9942021. From: Diss. Abstr. Int., B 2000, vol 60(8), p 4021 (English) 1999. Abstract Unavailable

Book Reviews

Nick Begich and James Roderick, **Earth Rising, The Revolution - Toward a Thousand Years of Peace**, Earthpulse Press, 289 pages, contents, 660 footnote refs., PO Box 201393, Anchorage, AK 99520, ISBN1-890693-43-X. \$17.95.

This superbly referenced book divides some of the government activities and new technologies into eleven chapters that include such topics as HAARP (High Frequency Active Auroral Research Program); Beam Wars; Lies and Experimentation; Revolution in Military Affairs; Mind Control; and Strange Technologies.

The authors provide detailed accounts, with over six hundred references, from an impressive array of government letters, reports, books, news media, and other sources. The sense of the book is related to what the government does with, or intends to do, with a variety of new technologies. In most of the chapters the government's role is detailed or anticipated to be out of harmony with the type of actions that most of us would expect in moving our country into a wonderful age of peace, harmony, and enjoyment of fuller and richer life. Instead there are many examples of hidden technologies, cover ups, shredding of documents, building of war machines (as though we needed to be the aggressor), distortion of facts, etc.

This book cannot be faulted for failure to expose the negative aspects of big government. The authors do a remarkable job in documenting activities that should not occur in a free, democratic republic. No one can read this book without being concerned about the magnitude of our government's many programs that serve to increase our ability to make war (with the excuse of being prepared against a possible aggressor) and to increase the government's intrusion into our lives. If you are concerned about such governmental activities, this book is certainly a guidebook and reference book you should have.

Being a person with a great love for my country, I would like to see two topics expanded in the next edition of this book. The first is to write more about the advantages to society of some of the technologies discussed. The second is to devote more time and discussions as to what the voting and concerned citizen can do to build barriers against an intrusive big government. For example, page 244 describes the effect on some marine life of the new super-loud sonar that the Navy is placing in many of the world's oceans. These devices are now being tested and the result is the destruction of the sensitive hearing apparatus of dolphins and whales. The authors would be wise to include information about how a few concerned citizens can contact their representatives and make known the destruction to sea life. We know that even one dedicated person can do a lot to make this a better world to live in. We need more information to help such concerned persons direct their activities in the most constructive way to improve this, Our World. Before we can get to a thousand years of peace we will have to modify the excessive role that our government plays in directing our lives.

[Note: You may find this an unusual subject for review in an energy publication. However, there is some new science here to be further evaluated. Please read the following book review by Hal Fox, Editor.]

Bobbie Sandoz, **Listening to Wild Dolphins**, c1999, 263 pages, 16 chapters, appendix, notes, Beyond Words Publishing, Hillsboro, Oregon, \$14.95.

Assume that earth is invaded by an alien insect form that makes their homes in air-supported balloons. They communicate by use of torsion field fluctuations, which humans know nothing about. Their advanced technology creates elements out of the elements found in the air (nitrogen, oxygen, carbon dioxide, and water vapor). These balloon-dwelling insects do not understand earth life, except they like to eat humans. They catch, prepare, and eat human flesh, and fling all of the garbage, including their own excrement, out of the balloons to fall to earth.

If you recoil with horror at this alien activity, then you will get some idea of how dolphins and whales must feel. We humans do just what the assumed alien insect life does. Except we live on the land, eat the dolphins and whales, and pour our excrement into their habitat. Even worse, we are now killing all manner of underwater life, especially the cetacean life forms, by destroying their sensitive acoustic capability by blasting them with the U.S. Navy's underwater high-energy sonar devices.

But that is not the real message of this book. The real message is that the dolphins, both captured and wild, are highly intelligent persons (I use the term properly to imply personalities, and individual intelligences). These creative beings are increasingly contacting mankind to share with man the joy of existence. The learning of joy and self-fulfillment for each of us is the major message of this book.

If you know how, if you yearn to meet even the wild dolphins, and if you are gracious and considerate of their privacy, their yearnings, their nature, then you and dolphins can exchange love, joy, friendship, and amazement with each other. Bobbie Sandoz tells us in a highly readable manner what she has learned from the dolphins and what the dolphins have learned from her.

One of the important scientific disclosures in this excellent book is the nature of dolphin communication. We know that they can send sound waves, clicks, tones, and even copies of our voices or songs. What we didn't know and what took the author some time to learn is a marvelous discovery that science should study. That discovery is that dolphins and whales can and do communicate by telepathy. Too few scientific tests have been made of this incredible discovery, mainly because it is incredible to most scientists. If it can be scientifically demonstrated that these large-brained creatures communicate by telepathy, this discovery would be one of the most important scientific discoveries of this (or any) century.

This reviewer would find such telepathy incredible, except that the amount of evidence for the many instances of dolphin-man interaction has no better explanation. Therefore, it is proposed that we accept the evidence for the special means of communication between men and dolphins; begin with the hypothesis that this method involves the transfer of information by telepathy; and establish (by a courteous agreement among equals) a scientific study of this hypothesis.

You, the reader of this review, are highly encouraged to buy the book and read the book. The danger is: you will be forever changed in your attitude toward these noble creatures.

Meetings

Russian Academy of Sciences (RAS), St.-Petersburg State University, Russian Geographical Society, Russian Geological Society, International Academy of Informatization and Control Systems, International Scientists Club together are sponsoring

The International Congress-2000 Fundamental Problems of Natural Sciences and Engineering

July 3-8, 2000 St.-Petersburg, Russia

The Congress-2000 sets itself the task of summing up achievements and accomplishments the science can report to the world in the final year of the second millennium. The congress is dedicated to new ideas in natural sciences and engineering that would contribute to bringing together presently disconnected branches of science basing on a unified approach.

Problems to be discussed:

1. Fundamental problems of contemporary age - space-time, gravitation, electrodynamics, dynamics of ether, real processes.
2. Constitutive elements, structure and interactions in sciences on the Earth and Universe.
3. New approaches to the problems of energy, engineering and technology.

Plenary sessions, discussions in sections and posters exposition will be held in the main building of St.-Petersburg State University, at the University campus of Peterhof (a suburban town in the

vicinity of St.-Petersburg) where accommodation and meals will be provided for all participants of the congress.

Organizing Committee Contacts:

Mailing address: International Scientists Club, 36 Kazanskaya st., 190031 St.-Petersburg, Russia

Office fax: +7 (812) 312-8565 (24 hours)

E-mail: science@shaping.org Internet website: <http://www.physical-congress.spb.ru/>

THE 2000 INTERNATIONAL SYMPOSIUM ON NEW ENERGY

Salt Palace in beautiful downtown Salt Lake City, Utah

Friday and Saturday, September 8 and 9, 2000

Registration cost is \$100 until August 15, and \$150 if postmarked after August 15. This payment will include a published copy of the proceedings of the conference. It is expected that the proceedings will be published in the Journal of New Energy, as was done last year. Dr. Patrick Bailey, President of the INE, will be the Conference Chairman.

It is expected that most attendees will be arriving on Thursday afternoon and evening, and transportation arrangements may be able to be made for attendees who communicate such wishes in advance. Several hotels will be listed for low price accommodations (see website). Please be aware that downtown Salt Lake City is always a popular place for travel and business meetings, so make your travel reservations early!

CALL FOR PAPERS:

The INE is now soliciting papers for the ISNE 2000.

The deadline to submit abstracts is August 1, 2000. It is recommended that all abstracts be sent ASAP by email to BOTH:

Patrick Bailey, President, INE, at ine@padrak.com,
and to

Hal Fox, at the INE Office, at halfox@slkc.uswest.net.

The paper deadline date is August 15. Further details, such as format instructions will be forthcoming. Authors are expected to use either Word or WordPerfect on a PC based computer and to submit their final paper file in camera-ready format by either mailed disk, or email.

CONFERENCE UPDATES: will be posted on INE Website Page :

www.padrak.com/ine/INECONF00.html

CONFERENCE TOPICS:

At the present time, the topics area is open. However, the INE would like to see papers that include actual test data. Many authors like to present papers with their theory first, then perform an experiment, and then report their data. Many new energy researchers think this is backwards! To uncover new physics and to make new significant advances, the ordering of such research may better very well be: Experiment, Data, Wonder, Think of a mathematical analog.

The conference topics may be limited as the conference approaches, so get your abstracts in soon!
We are looking forward to a great conference!

American Institute for New Science presents a
Forum on Converting to a Hydrogen Economy
Fort Collins, Colorado 22-24 September, 2000

Because the technology now exists for the world to convert to a hydrogen economy, and completely stop using polluting forms of energy, it is time to initiate the hydrogen economy. This can be done in a very short period of time if the energy community and all the people in the world put their collective efforts into it and demand that it be done. The purpose of the Forum on Converting to a Hydrogen Economy is to bring together the collective efforts of the energy community and all the people of the world to demand that we convert now. The Forum will examine the processes needed to make this historical conversion. Topics to be discussed will include the establishment of the hydrogen infrastructure, hydrogen technology, and social and economic impacts. Finally, the Forum will set the stage for the World Congress on Converting to a Hydrogen Economy to be held in Denver, CO in September of 2001.

All interested people are invited to both meetings. The initial co-sponsors are: Colorado State University, the American Hydrogen Association, the International Association for Hydrogen Energy, the International Association for New Science, the Rocky Mountain Research Institute, and the Hydrogen Technologies Company.

For more information, visit our web site at www.hydrogennow.org. If you are interested in volunteering or supporting the event, e-mail: HydrogenNow@ians.org and specify "volunteer" or "supporter" in the subjectline. Or contact: Maurice L. Albertson, ERC, CSU, Fort Collins, CO, USA, 80523.

Tel: (970) 491-5753, Fax: (970) 491-2729

NEW ENERGY TECHNOLOGIES ON THE MILLENNIUM TRANSITION

Congress in Hotel "Moevenpick", Zuerich-Regensdorf
Friday, Sept. 15., to Sunday, Sept. 17., 2000

Organizers:

Jupiter-Edition/INET

International Tesla Institute (ITI)/Colorado Springs/CO, USA

German Association for Space Energy (GASE)

Contact Email: Adolf Schneider <adolf.schneider@datacomm.ch>

Friday, Sept. 15th

Welcome speech: Adolf and Inge Schneider (INET)

Chances of the "Space-Energy-Technology"

Report on different international conferences and other developments

Reproduction of Energy Systems by Students from TU Berlin

Experiments with Coler-Converter, Newman-Machine, Pantone-Aggregate

Intelligent Use of Inertial Forces

Decoding of the Crop Circle Picture "Triple Half-Moon"

Inertial Machines for Decentralized Power Plants Theory and Practice of coupled Rotational Systems with Mass Transfer

Practical Experiments with Miniatur Magnetic Motors

Transistorized Mini-Motors connected to Crystal Batteries
Generators with Supermagnets and Centrifugal Amplifier
Practical Tests and Demonstration Prototypes of "Free Energie Machines"

Saturday, Sept. 16th

Strange Flying Objects with Exotic Driving Systems
Generation of Antigravitation by Absorption of Gravitative Vortex
Energy Generation via nuclear Resonance Coupling
Concepts for a Radiation free Release of Vacuum Field Energy
Energy Release and Transmutation according to Ken Shoulders
Evidence of Radioactivity Reduction coupled with Energy Release
Energy Release with the Wolgodonsk-Reactor
60 kW-RET-Systems for Electrical and Thermal Energy
Optimal Energy Transfer with Neltron Technology
Conversion of Mechanical Energy with superefficient Use of Electrical
Independent Energy System of Don Martin
Theoretical Foundations, Practical Demonstration, Application
European Marketing of Decentral Energy Systems

Exposition and Demonstration of Models

Standard literature is available on book tables, inventors show their exposition models and products which are referred to their lectures, and they respond to the questions of the congress participants

Sunday, Sept. 17th

The roots of Disease: Becoming an Educated Dental Consumer
Suggestions on nutrition and supplementation for maintaining optimal health
An Energy Field with a Psychic Component
Mutual Influence of Energy and Humany Psyche
Novel Technologies of the International Tesla Institute ITI
Survey on Innovative Technologies of the ITI
Demo of an O/U-Efficient Production of Bio-Gas
Demo of a Device for Car Retrofitting with partial Implosion instead of Explosion and with Fuel Reduction up to 50%
Perspectives for a Changed World in the 21th Century
Requirements for a Conscious Change via New Energies

Congress fees:

Subscriber fee incl. congress papers,

Saturday- and Sunday-Lunch and Coffee Breaks:

Students with ID, Unemployed, Retired:

DM 570.- / SFr 470.- / OES 5'500.-

DM 470.- / SFr 390.- / OES 4'500.-

10% reduction when registered
until August 15th, 2000

Single day participation possible with following fees:

Friday: 40% of total congress fee

Saturday: 50% of total congress fee

Sunday: 30% of total congress fee

Hotel rooms:
Hotel "Moevenpick", Centre
CH 8105 Zuerich-Regensdorf

Congress Registration:
TransAltec AG, P.O. Box, CH 4622 Egerkingen
Phone: +41 62 388 98 53 Fax +41 62 388 98 51
Arrangements via Organizer
email: adolfschneider@datacomm.ch

ANS/ENS 2000 INTERNATIONAL WINTER MEETING

The American Nuclear Society has announced their ANS/ENS 2000 International Winter Meeting and Embedded Topical Meetings, scheduled for November 12-16, 2000, in Washington DC at the Marriott Wardman Park Hotel. The Nuclear Technology Expo, and three embedded topical meetings: "Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies;" "Best Estimate Methods in Nuclear Installation Safety Analysis;" and "Nuclear Applications of Accelerator Technology (AccApp 00)" will be held in conjunction with the 2000 International Meeting.

Professional Development Workshops planned for Sunday are: 'Reducing Human Errors in Nuclear Environments' and 'Digital Instrumentation Upgrades.' Note: Registration for the workshops is separate from, and, in addition to, the meetings registration fee. Use the Advance Registration form included at website to register for the workshops.

A special Workshop for Science Educators will be held on Saturday, November 11, 2000, in conjunction with the 2000 International Meeting. The materials and information will help 7th through 12th grade educators incorporate nuclear science topics into classroom programs. Attendees will have a full day of hands-on activities and discussion with nuclear science educators and professionals.

Website at : <http://www.ans.org/meetings/text.html>
choose ANS National Meetings and Embedded Topicals, then look for the November date.

LETTERS

LETTER TO THE EDITOR

from George Galeczki

Subject: Collapse of physics??

Dear Editor,

Here are some comments on your enquiry about a possible "collapse of physics":

-Since more than twenty years I am critical with respect to the fundamental theories of present day "majority physics", or "establishment physics." I became suspicious during a cocktail party in 1979 celebrating Einstein's centenary and Rosen's (of EPR) 70-th birthday, when I first witnessed the

phenomenon of personality cult in science. A closer analysis has shown, indeed, that both "special" and general relativity theories, Copenhagen quantum mechanics and Big-bang cosmology suffer from internal contradictions and are falsified by many experimental facts.

During the years I succeeded to publish some forty critical articles and a book - with Peter Marquardt - "Requiem to Special Relativity" (in German), concerning the physical untenability of the pillars of "modern physics".

-For several reasons, which I am not going to discuss here, the camp of the critics of "establishment physics" is much less unified than that of the orthodoxy, the spectrum of criticism extending from total rejection of the scientific approach to apologetics. For example, Millennium Twain and Georges Bourbaki belong to the first group, while Mogens Wegener, Umberto Bartocci, the late Simon Prokhovnik the "neo-Lorentzians" and many others, are critical w.r.t. "special" relativity, but accept the transformations of Lorentz, or even claim that there were compatible with the transformations of Galilei.

-In my opinion, the fact that wrong theories can be developed and can survive a surprisingly long time, doesn't have to induce -like it happens in our days- a process of decay of the scientific method and a return to dogmatic beliefs, anti-science, numerology, astrology, belief in miracles and superstitions and like. To correct fundamental errors, one has to go back to the sources of errors, provided one has detected them. Most conceptual difficulties can be traced back to the unfortunate "special" relativity with its "Procrustean bed" represented by the transformations of Lorentz.

Passage of time doesn't mean necessarily progress! Of course, one has to distinguish between technological progress and the evolution of learning, thinking and behaving. -You are right while doubting "that there will come a time when there will be more persons skilled and interested in physics than in astrology, or numerology". The problems of our time, however, are not the laymen bombarded with huge amounts of incomprehensible, esoteric pseudoscience, but the hordes of poorly educated scientists, behaving like sheep controlled by science politicians with vested interests.

Best regards, George Galeczki

Editor's Reply,
Re: Your discussion on current physics

Dear Dr. Galeczki,

I thoroughly agree with you on the problems in physics. You have delved into it more than I have. My approach is that rather than fight the current academicians that we develop new devices and systems that "they" say will not work. When such devices are being sold to the public, then the academic physicists have to change their favorite belief structures.

If you would like to write an article with references and citations for the problems in any of the SR, GR, etc. areas, I would be pleased to publish such a professional article.

Best personal regards, Hal Fox, editor, Journal of New Energy

JUST FOR FUN, AND TO MAKE YOU THINK A BIT**MINIATURE SUNS**

by Chuck Bennett

One morning Associate Professor Maryanne Hansen came into the physics lab and was astonished to find a huge, jagged hole of about two feet in diameter right in the middle of the concrete floor. When Maryanne came closer, cautiously, she observed that the hole extended five feet down into the dirt under the building's foundation. There were traces of dark melted metal in the hole and all around the perimeter of the opening. Associate Professor Rita Mendoza came out of the back room looking nervous and disheveled.

"What in the hell happened here, Rita?" Maryanne asked.

Rita stared at the hole. "I don't know."

"There's a big hole in the middle of the floor of our lab, Rita, a hole that wasn't there when I left last night. I think you better get a grip on yourself and tell me what this is all about so we can do something about it before any students get in here and see this."

"We can't do anything about it," said Rita, desperately. "I've been here for hours trying to clean up this mess, but nothing helps. Facilities is going to call the fire department and they'll do an investigation," said Rita, through tears of frustration and fear. "They'll probably have OSHA in here, too."

"Just tell me what happened."

"I've hit on something but it ran out of control."

Out of control was putting it mildly. Maryanne was filled with wicked elation, a hundred times more exhilarating than what she experienced in high school when she convinced love-struck Pete Renkins to do an experiment that ultimately blew up the science lab. Dopey Pete had been expelled for his prank, but he never revealed her part in the proceedings. Her physics career had been boringly exemplary, until now. "You sure have hit on something," she said, winningly. "Just sit down here and tell me what happened."

Rita sat down and sobbed for a few moments, but eventually she regained her composure. "You remember that paper that just came out from the geology department?"

"Yes, I read it. It was about deep earth samples taken from a molten hole last year by their team."

"Well, I went over there a few months ago and borrowed some samples. I ran them through the electron scanning microscope and mapped out the atomic content of those solidified metallic pieces they found. There were iron and trace amounts of dissolved hydrogen in the parts that had not yet melted. Do you recall that paper on my gravitation mechanism that was rejected by the committee two years ago?"

"Yes, that was a pretty wild one, Rita. Something about the earth's core being composed of molten iron driven by some mitigated transmutation reaction."

"That's right! And they wrote back that my theory was preposterous. You remember the part where I postulated that large mass or interplanetary heat is so intense it actually causes matter contraction and thus gravitation? You know, a heat-driven gravitation engine," Rita blurted, excitedly. "Last week, I started to get an ignited burn in these iron samples. I put them in an intense microwave field after I impregnated them with hydrogen. Last night, I tried a large mass of a couple pounds rather than the gram samples I had been using just to see what it would do. But it went out of control and melted right through the floor." Rita started to sob again.

What did you do with the bulk of the iron?" asked Maryanne, alarmed. "Did you check it for radioactivity?"

"Yes, it's fine. There's no signature whatsoever. Whatever this reaction is, it's totally benign except for the intense heat. It's just that I calculated a critical mass of more than five pounds. I only used two last night and I put most of the molten ball out in the garbage bin." Rita was calmer now.

"No one needs to know about this, Rita. Not yet. Not until we're ready," said Maryanne, confidently. "We'll just get some excess dirt out from the flower beds in front of the building and get a bag of instant mix concrete over at the hardware store. We'll have this floor patched up before anyone notices. Then we'll run some bigger experiments. Something really, really exciting."

Rita looked at her, hopefully. "You don't think the fire department will find out? If this gets out, I'm finished. I'll never get tenure."

"They won't. I'll make sure of that."

A week later, they both were in the middle of the university football stadium late one night after 2:00 am in the morning. They had moved a makeshift apparatus through the chain link fence after cutting the lock with bolt cutters. A wheel barrel made the transport of the portable microwave fixture an easy task. They had procured a 25-pound dumbbell from the gym and it had soaked in a cryogenic bath of pure hydrogen for a week. It was fully saturated with hydrogen.

The electric control panel for the lights was easy to break into. After a few voltmeter readings, they put some heavy battery cable clamps on the 440-volt terminals to drive the homemade microwave device to maximum power. It hadn't been an easy task to get the department machinist to machine such a large magnetron without many questions. But Maryanne had concocted numerous margarites and referred to a "sex tricks that drive men crazy" article in Cosmo to answer all his concerns.

When it was all ready, Rita gave the signal and Maryanne threw the switch. A loud buzzing emanated from the crude-looking fixture in the middle of the field. Then the dumbbell started to glow white-hot. The fixture began to melt at the structural tie points holding the dumbbell, then gave way and the ball of white glow plunged to the ground. It kept right on going, downward into the earth. The dirt below sputtered and crackled. The hole that was left was now five feet in diameter. The hissing and cracking sound got fainter and fainter as the ball went deeper and deeper.

After a little more than an hour there was quiet. The women approached the hole, cautiously, and were soaked by a jet of steaming water that shot 100 feet up into the air. This was certain to attract attention. They both ran as fast as they could out the gate and jumped into a borrowed pickup

truck. Lights had started to come on in the dorm rooms adjacent to the stadium. By this time, the geyser was glowing red, with tiny red-hot rocks spewing upwards in the water stream.

The headlines for the city newspaper nation read, "SMALL VOLCANO ERUPTS AT UNIVERSITY STADIUM." The story went on to describe a mysterious bubbling hole that had been burping red-hot molten lava that flowed across the stadium field to the drainage canal just outside and down the canal for miles. There had been much speculation about aliens landing or an asteroid hitting the earth. The FBI had come to block off the area and shrouded the hole so observers and the press could not see all the detail. But crowds lined the banks of the drainage canal and the National Guard was called to control the masses of people so that no one would accidentally fall in the molten river. Rita and Maryanne had rushed back to the lab to gather all the equipment and take it to a remote farmhouse of the parents of a student. They didn't seem to mind but when they read the headlines, they called the local police as soon as they were sure the two young women had left.

Maryanne and Rita were cooperative and told everything. The police and the FBI had decided to charge them with a misdemeanor that carried a small fine and let them go provided they promised to stay quiet about it and not leave the city. But the student they had confided with was on the staff of the university newspaper. He had followed Rita's experiments out of curiosity and he pieced all that had happened together along with a rough attempt at the underlying theory. He met with the faculty liaison of the newspaper and got permission to publish everything he knew.

Two days after the eruption, the whole story had spread across the world. Nay Sayers cried another "cold fusion hoax" but when they came to witness the hole in the stadium with the continuous flow of lava coming from below the earth's crust, they said no more. The military had taken an interest but it was too late to put the clamps on secrecy. Due to the student's newspaper article, the entire protocol was well known within a week around the world.

At first, pranksters started punching holes in the earth's crust in many remote locations. But authorities had passed a martial law governing any activity of the hydrogen-iron reaction and due to possible severe penalties of environmental crimes, the miniature volcanoes due to vandalism all but ceased.

Scientists around the world started to experiment with the newly discovered process. There wasn't much value in weaponry because at worst, it would only cause disruption. Besides, TNT, RDX and homemade ANFO were much better weapons of choice for terrorists. There was no significant radiation either.

But what the scientists did find was that instant man-made geothermal energy sources could be planted anywhere in the world. Also, tunnels could be dug with great ease if the iron-hydrogen plasma ball were given lateral propulsion with a simple low-powered device that diverted the direction of the propagation of the plasma on a horizontal vector. Tunnels for subways and underground roadways became commonplace in many new locations thus sparing sprawl of new freeways that were sorely needed to meet the demand posed by an ever increasing world population. Large arrays and cavities were carved into remote mountains for small housing subdivisions and the rich no longer needed to build mansions on a hill, they built them inside the hill.

It was also discovered that when the reaction was initiated in certain types of soil and earth, an intense cloud seeding would occur thus allowing the artificial generation of rainstorms in drought-ridden areas. A metallurgist found that when certain combinations of metals and salts were combined in the reaction, the transmutations would result in by-products that consisted of precious metals. The discovery caused enormous ground shifts in world politics and economics.

Then a clever inventor discovered how to levitate the plasma balls with an electrically energized field due to the iron content. New steam powered electricity plants were built. Desalinization stations popped up in many coastal areas that had now power for bountiful fresh water thus spreading populations into previously uninhabitable areas taking the pressure off ever-crowding cities.

The same inventor found a way to miniaturize the plasma with nickel metal substitution into part of the iron so the critical mass was highly reduced. A new device sprung up that was safe and suitable for houses. The units not only produced heat but made absorption refrigeration practical (the type of refrigeration that has heat as the main power requirement instead of electric power for a compressor that is no longer needed). The General Motors Corporation bought up the rights for the steam turbine driven modern Lear steam car and installed the FeNiH plasma units in the cars. Once started the plasma units ran for a year before recharging was required and could run continuously even while in the garage with no adverse effects.

Two years later, the modern world had been changed forever. Rita and Maryanne had become environmental heroes. Rita won the Nobel prize three years later.

Commercial Column

The following companies (listed alphabetically) are commercializing cold fusion or other enhanced energy devices: [Listings with your additional copy, or boxed, for small annual service fee.]

COMPANY: PRODUCT

American Pure Fusion Engineering and Supply: Warren Cooley, 1-800-789-7109 or 503-585-6746. Email to: Coolwar@aol.com

Clustron Sciences Corp.: Contact: Ron Brightsen, 703-845-8531.

ENECO is in the business of commercializing the exciting new field of low energy induced nuclear reactions in solids via patent licensing, joint-ventures, and co-operative research. ENECO, University of Utah Research Park, 391-B Chipeta Way, Salt Lake City, Utah 84108 USA. Contact Fred Jaeger, Voice 801-583-2000, Fax 801-583-6245. Email: jaeger@ENECO-USA.com

Fusion Information Center (FIC): Research and development of new energy systems. The world's most complete resource depository for cold fusion research information, as well as other new energy research including zero-point energy; space energy research; electronic, electromagnetic, and mechanical over-unity devices and transmutation. We are the publishers for **New Energy News**, and **the Journal of New Energy**. Voice 801-466-8680, Fax 801-466-8668. Contact Hal Fox.

E-Quest Sciences: Contact Russ George,
FAX 415-851-8489.

German Association for Vacuum Field Energy: DVS-Secretariat, Feyermuehler Str. 12, D-53894 Merchernich, Germany. Tel: 011-49/(0)2443-8246 Fax: 011-49/(0) 2443-901880 E-mail: dvs@gptec.com Internet: www.gptec.com/dvs.

Holotec AG: Clean Energy Technology, contact André Waser, Gen. Mgr., Bireggstrasse 14, CH-6003, Luzern, Switzerland. Phone 011 41-41 360 4485, or Fax 011 41-41 360 4486.

Hydro Dynamics, Inc.: Rome, Georgia. Contact James Griggs, Voice 706-234-4111 Fax 706-234-0702.

JET Energy Technology, Inc.: Energy Production and Utilization and Control. Wellesley Hills, MA. Contact Dr. Mitchell Swartz, Voice 781-237-3625. Fax 781-237-3625. <http://world.std.com/~mica/jet.html>

Labofex, Experimental and Applied Plasma Physics: Ontario, Canada. Contact Dr. Paulo N. Correa. Tel 905-660-1040 Fax 905-738-8427

Magnetic Power Inc.: Sebastopol, CA. Contact Mark Goldes, voice 707-829-9391, Fax 707-829-1002.

Nova Resources Group, Inc.: Denver, CO. Call Chip Ransford, Phone 303-433-5582.

Trenergy, Inc., is developing new technology to stabilize high-level radioactive wastes.
Contact at 3084 East 3300 South, Salt Lake City, UT 84109, Voice 801-466-8680, Fax 801-466-8668.

UV Enhanced Ultrasound: Hong Kong.
FAX 852-2338-3057.

"YUSMAR" Scientific-Commercial Company: President: Dr. Yuri S. Potapov, 277012 Kishinev, Moldova.
Phone and Fax 011-3732-233318.

Zenergy Corp.: Founded in 1996 to facilitate the introduction of commercially viable energy alternatives. 390 South Robins Way, Chandler, AZ 85225. Contact Reed Huish, 602-814-7865, Fax 602-821-0967, e-mail: info@zenergy.com

Note: The Fusion Information Center has been acting as an information source to many of these companies. We expect to augment our international service to provide contacts, information, and business opportunities to companies considering an entry into the enhanced energy market.

INFORMATION SOURCES

Advanced Energy Network Newsletter, quarterly. AdvancedEnergy Network, P.O. Box 691, Rondebosch 7700 Capetown, Rep. South Africa.

Antigravity News and Space Drive Technology, bimonthly newsletter, pub. J.E.Cox Enterprise, P.O. Box 655, Marietta, GA 30061-655 (Phone 770-218-9693). Per year \$36. U.S., \$48 foreign.

Cold Fusion Times, quarterly newsletter published by Dr. Mitchell Swartz, P.O. Box 81135, Wellesley Hills MA 02181. Home Page: <http://world.std.com/~mica/cft.html>

Cycles, an R&D newsletter, published by Dieter Soegemeier, Editor, GPO Box 269, Brisbane, QLD.4001, Australia. Phone/Fax: +61 (0)7 3809 3257

Electric Spacecraft Journal, quarterly, edited by Charles A. Yost, 73 Sunlight Drive, Leicester, NC 28748.

Electrifying Times, 3/year magazine. 63600 Deschutes Market Rd, Bend, OR 97701
541-388-1908, Fax 541-388-2750,
E-mail <etimes@teleport.com>
www.teleport.com/~etimes/

Elemental Energy, monthly newsletter, edited by Wayne Green, 70 Route 202N, Petersborough, NH 03458.
Email: <design37@aol.com>

Foundations of Science, free newsletter pub. 4-6/yr., ed. David L. Bergman. Common Sense Science, Inc., P.O. Box 1013, Kennesaw, GA 30144-8013. 770-565-5504 <Dbergman@CompuServe.com>
www.cormedia.com/css

Fusion Facts has become a section in the *Journal of New Energy*.

Fusion Technology, Journal of the American Nuclear Society, edited by Dr. George Miley, 555 N. Kensington Ave., La Grange Park, IL 60525.

Future Technology Intelligence Report (FTIR), monthly newsletter, making available technological information now omitted from establishment media. Back issues available at substantially lower cost on the InterNet at <www.tarapublishing.com>
FTIR, P.O. Box 2903, Sacramento, CA 95812
<ASu2431426@aol.com>

Institute for New Energy (INE), organization to promote and help find funding for new energy research.

Visit our **Home Page**: www.padrak.com/ine/ which contains many important scientific papers and current reports on all areas of research.

E-mail: halfox@slkc.uswest.net

or ine@padrak.com

Salt Lake City, Utah. Voice 801-466-8680,

Fax 801-466-8668.

New Energy News monthly newsletter for INE, highlighting the research and development in the worldwide new energy arena. Edited by Hal Fox.

Infinite Energy, bi-monthly magazine.
P.O. Box 2816, Concord, NH 03302-2816.
Voice: 603-228-4516. Fax: 603-224-5975
E-mail 76570.2270@compuserve.com

A.Keith Brewer International Science Library, a non-profit organization having a Tesla collection; new energy books, publications and videos; one of the German Association of Vacuum Field Energy archives. 325N. Central Ave., Richland Center, WI 53581; Phone: 608-647-6513; FAX: 608-647-6797; e-mail: drbrewer@mwt.net; web site: www.mwt.net/~drbrewer.

Journal of New Energy, quarterly, presenting papers representing the new areas of energy research, leading-edge ideas in the development of new energy technology, and the theories behind them. Published by the Fusion Information Center, Inc. Editor: Hal Fox. Address & phone above.

KeelyNet BBS - Jerry Decker, 214-324-3501
Internet: www.keelynet.com
E-mail: jdecker@keelynet.com

Planetary Association for Clean Energy Newsletter, quarterly, edited by Dr. Andrew Mich rowski. 100 Bronson Ave, # 1001, Ottawa, Ontario K1R 6G8, Canada. Web page: <http://energie.keng.de/~pace>

Positive News and Living Lightly, quarterly, edited by S. Crockett-Burrows. The Six Bells, Bishops Castle, Shropshire SY9 5AA UK. Tel: (01588) 630-121 / 122

Space Energy Journal, quarterly, edited by Jim Kettner & Don Kelly, P.O. Box 1136, Clearwater, FL 34617-1136.

The above list of commercial and information sources will be growing. New listings will be added as information is received. Send information to *NEN*, 3084 East 3300 South, Salt Lake City, UT 84109.