

Elastic String Theory for a 3-D World

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There is strong evidence that the forces of nature are caused by elastic strings. When nuclear physicists separate quarks, a strong force of attraction develops between them and the greater the separation the greater the force pulling them back together. The gluons that bind quarks behave like elastic strings. Stars in the Milky Way Galaxy appear to rotate far too fast for the stars to remain in orbit; however, their rotation can be explained if gravitons are elastic strings that gain greater potential energy when they act across great distances. Gravitons, like gluons, have the characteristics of elastic strings. This same finding explains why electrons remain in orbit about the nucleus of the atom even though their velocities appear far too fast for them to stay in orbit. Protons and electrons behave as though they are connected by elastic strings. This also explains rubber bands and steel springs that gain potential energy when stretched. Elastic strings can be used to explain all the forces of nature and a myriad of other conundrums of science.

1. Introduction

The evidence for the elastic properties of matter is all around us. When air molecules collide in an enclosed chamber, they bounce away from each other with perfect elasticity. This conserves the energy of these particles, which allows them to collide with each other and spread at random to fill the chamber. The motion is ceaseless. They never come to rest. They never fall to the bottom of the chamber even though they are under the influence of gravity. Because all atoms are composed of the same building blocks as found in air molecules, we know all matter has strong elastic properties.

When an atom is subjected to fusion on the Sun and fission during a nuclear explosion, it is exposed to extreme high temperatures and violent physical bombardment, yet the mass of the atom is not blasted asunder. It may redistribute itself to form other subatomic particles but the elastic mass remains intact. It cannot be destroyed. We might say it has perfect cohesion. I believe perfect elasticity and perfect cohesion stem from the same physical property of matter. No one can define the physiochemical makeup of a substance that has perfect elasticity. Yet it exists. In the same sense, no one can define what the physical properties are that confer mass with perfect cohesiveness. Yet it exists.

It is my thesis that the forces of nature are caused by physical strings with mass that have perfect elasticity and perfect cohesion. In this article, I will present some compelling evidence that the force fields for the strong nuclear force, gravitational force, and the electric force are composed of elastic strings.

2. Gluons Have Elastic Properties

As far as VES theory (Virtual Elastic String) is concerned, one of the most important observations made by nuclear physicists is the finding that the nuclear force of attraction between quarks increases as the distance between quarks increases. Quarks are small subatomic particles found within protons and neutrons. They make up less than two percent in weight of these structures, but they are responsible for creating the strong nuclear force that binds quarks, protons, and neutrons together within the nucleus of the atom. If it were not for this strong force of attraction between quarks, the positive (electric) repulsion forces

between quarks would cause the disintegration of the atom. Quarks are normally found as triads bound together by gluons. According to VES theory, gluons are virtual elastic strings.

Physicists R. Michael Barnett, Helen R. Quinn, and Henry Muhry [1] explain that when a high-energy collision takes place between elemental particles, it results in the formation of individual quarks that move away from the point of collision. The distance they move apart is much more than the diameter of a proton. In this process, a strong force of attraction develops between quarks. This slows down the motion of the quarks, and they eventually recombine to form a triad of quarks. For this reason, scientists have come to the conclusion that it is impossible to isolate free quarks. As the quarks move apart, the potential energy between quarks increases just as the potential energy of an elastic band increases as it is stretched. It does not take a great deal of imagination to believe that quarks are connected by virtual elastic strings.

3. Gravitons are Elastic Strings

Perfect elasticity and perfect cohesion explains why it is possible for a graviton to race across a galaxy at tremendous velocity, and still remain intact. No force, blade, or Thor's hammer can disconnect the graviton from its source because it has perfect elasticity and perfect cohesion. Perfect elasticity also explains why a graviton is able to retract back to its source at great velocity.

For more than 70 years, scientists have been accumulating evidence that the manner in which stars rotate within galaxies cannot be explained by Newtonian gravitational force fields. The outermost stars in a galaxy are rotating at velocities far too fast to allow them to remain in orbit. Scientists hypothesize that the additional gravitational force necessary to hold stars in orbit comes from additional objects yet to be discovered. For this reason, it is referred to as dark matter. This theoretical mass is hypothesized to be distributed throughout our own Milky Way Galaxy. In fact, 90 percent of our galaxy would have to be dark matter to account for the rotation of the stellar bodies in the Milky Way.

This subject was reviewed by the Tuckers [2] and the detection of dark matter has improved little since that time. In April

2011, a group of scientists headed by Elena Aprile [3] at Columbia University published their findings that show dark matter in the form of low mass particles does not exist. The negative results can be found online in an article describing their Xenon100 experiments. Thus to date, scientists have not been able to find significant hidden matter in our galaxy.

My hypothesis is that the force of attraction exerted by a graviton depends on its elasticity and the distance between objects. Thus, a graviton is much like a gluon. The potential energy of the string increases when it is stretched over a great distance. When a star is 300,000 light years from the galactic center, Kraus [4], gravitons develop almost 10 times greater force of attraction per graviton than expected according to the universal law of gravitation. Thus we see that gluons and gravitons have much in common.

The change in gravitational force per meter due to this type of elastic effect is actually very small for a graviton. We only see it in the Milky Way because of the great distances between bodies. It would be impossible to observe it in our solar system.

4. Electric Force Fields Behave as Though Composed of Elastic Strings

When we stretch a rubber band, it gains potential energy, and once released it returns to its original form. And just like gluons, the farther the rubber band is stretched, the greater the potential energy. It snaps back with even greater force. According to VES theory, the elastic strings holding atoms together are constantly being made and retracted. If the elastic band remains in a stretched position, its atoms are farther apart and the individual strings have to extend themselves over a greater distance before they bond and retract to cause a force of attraction. This increases the potential energy stored in the string just as found for gluons and gravitons, which causes the rubber band to retract with even greater force.

Even steel has elastic properties. We are all familiar with springs that are molded out of steel. When a force untwists the spring, it readily snaps back into its original shape when released from this force. The steel spring returns to its original shape for the same reason as the rubber band: Greater potential energy accumulates in the virtual elastic strings connecting the individual atoms because the strings are stretched across a greater distance after the spring is deformed. This is true because strings are renewed at the same frequency that electrons oscillate, which is in the realm of 10^{-15} seconds. Because atoms are connected by electrical forces, I assume rubber bands and steel springs owe their effect to the strings responsible for the electric forces.

Professor Marvin Johnson [5], a physicist at California State University, sums up his views as follows: "The bonds between atoms in a solid or liquid act like springs, when you compress or stretch them they store potential energy. The vibrations due to thermal motions stretch and compress these bonds producing potential energy. Therefore some of the energy associated with thermal motion is stored as potential energy." It sounds as if Johnson is describing atoms with perfect elasticity connected with strings that have perfect elasticity. When compressed, the atoms bound away from each other with perfect elasticity, and

when stretched apart, they retract with greater force because they are connected with strings that have perfect elasticity.

5. Electrons in Orbit are Connected by Elastic Strings

The electric force between electron and proton is insufficient to keep the electron in orbit unless the elastic strings that connect these two particles behave in the same manner as gluons and gravitons as just discussed. I will merely summarize this study here. I calculated the force necessary to hold the electron in orbit by using force = mass x acceleration. I also calculated the electric force between proton and electron by using Coulomb's Law. The data is shown in Table 1.

N*	Radius (meters)	Mass x acceleration	Coulomb's equation	Ratio A/B
1	5.30×10^{-11}	8.32×10^{-8}	8.20×10^{-8}	1.01
2	1.06×10^{-10}	4.16×10^{-8}	2.05×10^{-8}	2.03
3	1.59×10^{-10}	2.77×10^{-8}	9.11×10^{-9}	3.04
4	2.12×10^{-10}	2.08×10^{-8}	5.13×10^{-9}	4.06
5	2.65×10^{-10}	1.66×10^{-8}	3.28×10^{-9}	5.07
6	3.18×10^{-10}	1.39×10^{-8}	2.28×10^{-9}	6.09
7	3.71×10^{-10}	1.19×10^{-8}	1.67×10^{-9}	7.10

Table 1. Attraction Forces in Newtons for Electrons in Orbit

*N refers to n found in Neil Bohr's equation for the momentum of an electron in orbit $P = n\hbar$ where \hbar is Planck's constant. When n equals one, the electron is closest to the proton. The circumference of this circle is the same as one electron wavelength. It is said to be in its ground state. When n is two it is twice the distance from the proton, and the circumference of the circle fits two electron wavelengths, etc. This dictates that all the electrons irrespective of their distance from the proton are traveling at the same velocity. This is precisely what I expected from my VES ether theory.

Clearly, the elastic strings connecting electron and proton accumulate greater potential energy when stretched across a greater distance. This allows the strings to keep the electron in orbit; otherwise, they would fly off on a tangent. The orbital patterns of electrons can only be explained if they are held in place by elastic strings that gain greater potential energy when stretched over a greater distance. There is no dark matter to be considered here.

The increase in the elasticity of gluons act over distances compared to proton diameters (10^{-15} m), electrons at the orbital distances of the electron (10^{-10} m) and gravitons at the orbital distances for stars within galaxies (10^{21} m). These differences can be attributed to the differences in their masses.

6. Unexpected Elastic Properties of Matter

We are familiar with the observation that rubber bands become thinner and longer when stretched, but there are many other materials that stretch in an entirely different manner. For example, R. Baughman [6] reports that the cross section of very low-density crystals of trapped ions actually expand while stretching. Such unexpected, counterintuitive properties are found for other materials of both high and low density. For this

reason, it becomes more believable that a novel state of matter exists that has the properties of virtual elastic strings. Do gravitons expand as they stretch across the galaxy? The work of Baughman makes this seem entirely possible.

7. The Inconceivable Becomes More Rational

It is an incredible fact, almost too much for the mind to comprehend, but scientists believe that the planet Earth beneath our feet is essentially empty space. They believe our Milky Way Galaxy, and all the other galaxies that number in the billions would fit inside a small ball if all the empty space were removed. This means the whole universe and all its billions upon billions of tons of iron, quartz, hydrogen, and living creatures is almost nothing but empty space, and it means the elastic strings that connect electrons to protons and atoms to atoms must also be essentially empty space since they too are composed of mass.

If the elastic strings that bind our atoms together and create our world consist mostly of empty space, then it is not a great stretch of imagination to believe that gravitons could span some 10 to 20 million light years and remain intact; they would just be stretched over a little more empty space. And since they have perfect cohesion, they would remain coherent; and since they have perfect elasticity, they would retract back to their source with great velocity.

Thus, the inconceivable becomes more rational.

8. Fundamental Properties of Elastic Strings

Elastic strings have virtual properties; i.e. they are created and retracted in the twinkling of your eye. They are constantly being ejected into space as virtual particles that leave a portion of themselves in their wake as they streak through space. The strings remain bound to the particles that create them: electrons, quarks, or photons. When they retract, they are reincorporated into the particle, which allows the forces of nature to be self-inducing. It takes two degrees of specificity to explain all the forces of nature: their size and their composition. My model for the electron, photon, and quark shows these particles as divided into two spheres. There is direct evidence for this, such as the orientation of electrons in orbit.

One sphere of the electron consists of *n*-goo and the other as *s*-goo. Gravitons are ejected as virtual particles near the center between the two spheres. There is good evidence that gravitons, unlike the other strings, exist through many string cycles. Thus, when they retract, they wind up on the electron like a fishing line winds up on a reel because of the electron's spin angular momentum. This divides the electron into two spheres. It also allows each graviton to be unique, which means they never bind and cause a force of repulsion, and they never bind and cause a force of attraction. Graviton resistance during retraction is created when they become trapped by electrons, photons, and quarks as they go through their string cycles. Thus, gravitons depend upon the density and distance through an object, which means they depend upon a 3-dimensional world.

The strings that create the magnetic fields are called magnons; thus *n*-magnons arise at the north pole of the *n*-sphere and are composed of *n*-goo, and *s*-magnons arise at the south pole of the *s*-sphere and are composed of *s*-goo. The strings that create the

electric force are referred to as electons. *E*-electons are responsible for the electrons negative charge, and *p*-electons are responsible for the protons (quarks) positive charge. *E*-electons are ejected as virtual particles from the center portion of one sphere and *p*-electons from the center portion of the other sphere.

All virtual particles are ejected at right angles to the particles line of flight, and in the case of magnons and electons, they are ejected at right angles to each other. This is a very important concept, which explains an important aspect of relativity, as well as refraction, diffraction, reflection, and interference. Diffraction is a wonderful observation that demonstrates strings have mass, and therefore electrons and photons have mass. It also explains particle-wave duality.

Except for gravitons, the forces of retraction for all strings occur when two strings with the same mass but opposite composition bind like two snakes in a mating dance with their heads directed away from the particles that create them. Thus, when they retract, they meet resistance which allows a force of attraction to be created. The force of repulsion occurs when two identical strings meet. When two *e*-electons meet, the heads of the strings are directed against the opposing electrons, which mean they act as battering rams that force electrons apart.

Self induction occurs because *n*-magnons and *s*-magnons arising from the same electron become bound and press inward on the electron when they retract. Koltick and his colleagues [7] have shown that *p*-electons are also created by electrons. Thus, it is possible that two units of *e*-electons and one unit of *p*-electons are created in every electron string cycle. This allows one unit of each to become bound and press inward on the electron that created them, and it allows one unit of *e*-electons to become bound to the one unit of *p*-electons emanating from the proton. Tremendous pressure is created on the electron by the retracting strings that arise from opposite spheres and coat the electron like an orange peel. This eventually condenses the retracted strings into primordial goo for the next string cycle. Perhaps the electron at this stage becomes denser than a black hole. When sufficient pressure is achieved, the electron fires off a round of strings. Perhaps there are 100 rounds fired off during every string cycle.

Maxwell's equations that deal with the electric and magnetic properties of photons tell us that photons make 3×10^8 electons for every magnon, but the energy of the magnetic field is exactly equal to the energy of the electric field. Thus, one magnon is far more robust than one electon. In the case of photons, if 100 rounds are fired off, then 3×10^8 portals are required for electons and 1 portal is required for magnons. This results in 300×10^8 electons and 100 magnons.

The energy of the electron is constant because energy is conserved as potential energy in the string and potential energy in the compressed elastic goo. The energy that drives the string cycle comes from two sources: the potential energy of the elastic goo and the electron's angular momentum as it spins on its axis. Angular momentum is a vital part of the self induction process. It dictates the length of the string cycles for photons of different mass and energy.

My book, **VES Theory and the Forces of Nature** [8], consists of 350 pages wherein I go into detail on the subjects I have presented here as well as great detail analyzing relativity (including an ether theory that actually works), an explanation for the ener-

gy of photons from outer space, an explanation for the Michelson-Morley experiment and the invariant nature of the speed of light, an explanation for Maxwell's equations that show the speed of light can be calculated using its magnetic and electric properties, precession of Mercury's orbit (100% statistical correlation with theory), Venus' slow spin rate, transfer of angular momentum between central bodies and satellites, frame drag between central bodies and satellites, tilt of planets on their axes (100% statistical correlation with expected), polar wobble of Earth on its axis, my experiments that show magnetic fields deflect spinning table tennis balls, my experiments that show spinning table tennis balls curve even in a vacuum, etc. This is all possible using elastic string theory.

9. Conclusion

The observations discussed show that the force fields for the strong nuclear force, the electric force, and the gravitational force behave as though they are composed of elastic strings. I invite you to download my book [8] as a pdf file and examine it at your leisure.

References

- [1] R. Barnett, et al, **The Charm of Strange Quarks / Mysteries and Revolutions of Particle Physics**, pp. 67, 73 (Springer-Verlag, 2000).
- [2] W. Tucker, K. Tucker, **The Dark Matter** (William Morrow & Co., 1986).
- [3] Elena Aprile, et al, "First Dark Matter Results from the XENON100 Experiment" (2011) <http://arxiv.org/pdf/1005.0380.pdf>, and other XENON100 papers at <http://arxiv.org>.
- [4] L. Krauss, **Quintessence, the Mystery of Missing Mass in the Universe**, Ch. 3-4 (Basic Books, 2000).
- [5] M. Johnson, (2011), www.physics.csustan.edu/Marvin, chapter 14.
- [6] R. Baughman, et al, *Science* **288**: 2018 (2000).
- [7] D. Koltick, a physicist at Purdue University as interviewed on the internet at: <http://www.newswise.com/articles/research-sheds-light-on-electrons-structure> Also I. Levine, Koltick, D, et al. ((TOPAZ Collaboration)) *Phys. Rev. Lett.* **78**, 424 (1997)
- [8] K. Terry, **VES Theory and the Forces of Nature**, 4th Ed. extended (2012), www.vesttheory.com.