Zero Point Energy

Tapping Limitless Quantities of Energy Directly from the Fabric of Space

---

Tapping Zero-Point Energy

by Moray B. King
P.O. Box 859
Provo, UT 84603

ABSTRACT

The hypothesis for tapping the zero-point energy (ZPE) arises by combining the theories of the ZPE with the theories of system self-organization. The vacuum polarization of atomic nuclei might allow their synchronous motion to activate a ZPE coherence.

Experimentally observed plasma ion-acoustic anomalies as well as inventions utilizing cycloid ion motions may offer supporting evidence. The suggested experiment of rapidly circulating a charged plasma in a vortex ring might induce a sufficient zero-point energy interaction to manifest a gravitational anomaly. An invention utilizing abrupt E field rotation to create virtual charge exhibits excessive energy output.

INTRODUCTION

Today's physics might allow the possibility of tapping virtually limitless quantities of energy directly from the fabric of space.

Such a surprising conjecture arises by merging two separate theoretical areas of modern physics:

1) The theories of the zero-point energy (1-5) (ZPE) that model the vacuum as containing real, energetic fluctuations of electric field energy, and 2) the theories of system self-organization (6-13) which not only open the possibility of inducing coherence in this energy, but also provide the underlying principles on how this could be achieved (10).

At first this hpyothesis might seem to be a blatant violation of the conservation of energy. But the key question is:

Does the zero-point energy REALLY exist?

If so, a real energy is already present and its conservation would not be an issue.

The real issue centers on how random fluctuations could become coherent. Any spontaneous coherence seems to violate the second law of thermodynamics, which is generally understood to mean systems should evolve toward random behavior, not toward coherence.

This point is thoroughly discussed in the theories of system self-organization (11,12). Prigogine (13) won the 1977 Nobel prize in chemistry for defining the conditions under which a system could evolve from randomness toward coherence. The conditions are that the system must be far from equilibrium, nonlinear in its dynamics and have an energy flux through it. These conditions are expressed in general system theory terms, and it turns out that the already published theories of the ZPE can, under certain circumstances, fulfill these conditions.

Despite the intriguing possibility offered by system theory, no purely theoretical discussion could ever prove that the zero-point energy could be tapped as an energy source. Only an experiment coupled with the theory would be convincing. This article discusses how observed anomalies associated with the ion-acoustic oscillations in plasmas could be a manifestation of a coherent ZPE interaction and in particular, how the cycloid motion of a a plasma's nuclei might induce a sufficient ZPE coherence to manifest a gravitational anomaly.

This article also highlights an invention which utilizes the abrupt rotation of electric fields to cause an hypothesized

pair production of virtual charges from the vacuum energy across a macroscopic system. The invention reportedly outputs excessive power while free running. The invention reportedly outputs excessive power while free running, and its full disclosure may constitute an experiment which could be repeated by the scientific community.

THE FABRIC OF SPACE

Does the fabric of empty space really contain a plenum of energy? This question has been debated throughout the history of science.

The early scientists through the 19th century believed in the existence of an ether, which was modeled as a material substance that could support the wave propagation of light.

The famous Michelson-Morley experiment failed to detect the expected ether wind produced by the earth's motion through it. At the turn of the cnetury Einstein used this result to support the theory of special relativity. When this became accepted, the scientific community rejected the existence of the ether. Thus classical physicists came to consider the vacuum of space to be truly empty.

The classical model was only to last until the 1930's when quantum mechanics became accepted. From quantum mechanics arose a mathematical term in the description of the ground state of any oscillating system called the zero-point energy.

The term "zero-point" refers to zero degrees Kelvin which means this energy exists even in the absence of all heat. The energy was interpreted as being INHERENT TO THE FABRIC OF SPACE ITSELF.

Dirac (14) showed how electron-positron pair production could arise from the vacuum fluctuations and quantum electrodynamics was born.

The Heisenberg uncertaintly principle allowed quantum mechanical systems to "borrow" this energy for short periods of time. The ether came back into science not modeled as a material substance but rather as a randomly fluctuating energy. Could a space filled with fluctuations of electric flux be consistent with special relativity? Boyer (15) showed that, by invoking the postulate of Lorentz invariance, the spectral energy density p of the zero-point fluctuations must have the particular form as a function of frequency w : $p(w) = kw3$ where the constant k is related to Planck's constant. This result gives a quantitative basis to the theory of random electrodynamics which strives to show that quantum mechanical effects arise FROM MATTER'S INTERACTION WITH THE ZERO-POINT ENERGY.

This cubic frequency relation implies an absurd result: the energy density of the ZPE AT EACH POINT IN SPACE is INFINITE!

A similar problem plagues quantum electrodynamics where infinities are renormalized away. Some type of frequency cutoff is required to create a finite, quantitative theory.

Wheeler (16) applied the theory of general relativity to the ZPE to create a natural cutoff in his theory of geometrodynamics. In general relativity the fabric of space curves as a function of energy density.

When the density becomes sufficiently great, space pinches like it's forming a black hole. This gives rise to the formation of hyperspace structures that Wheeler called "wormholes."

His calculation yielded microscopic channels on the order of 10-33 (to the -33rd) cm having a (mass equivalent) energy density of 10+94 (to the 94th) grams/cm3 (cubed).

The resulting view is that the fabric of space consists of constantly forming and annihilating pairs of microscopic "mini" blackholes and whiteholes which channel electric flux into and out of our three dimensional space.

These mini holes manifest dynamics which could be modeled as a turbulent, virtual plasma that Wheeler calls the "quantum foam." In this view the elementary particles are like bubbles or vortices arising from the dynamics of the vacuum energy.

Is it possible to tap this energy? At first the answer seems to be no since it is extermely difficult experimentally to observe its existence; the energy is ubiquitous and a detector REQUIRES AN ENERGY DIFFERENCE to measure field strength. However, the theories of quantum electrodynamics indicate that all the elementary particles are dynamically interacting with the ZPE resulting in vacuum polarization. In particular, quantum electrodynamics shows that the different elementary particles polarize the vacuum differently (17-19).

In a first order model, electrons, especially conduction band electrons, exhibit an ethereal cloud-like random interaction with the zero-point fluctuations and are effectively in thermodynamic equilibrium with it. No net energy would be absorbed by this type of system.

However, an atomic nucleus exhibits a pattern of quasi-stable vacuum polarization channels converging toward it. This may allow the possibility of driving the nucleus-ZPE system off of equilibrium by abrupt motion. This fulfills the first condition for system self-organization.

How the other conditions could be fulfilled as well can be understood by modeling the ZPE as a virtual plasma. Like a plasma, it is nonlinear in its dynamical behavior, it may be driven off of equilibrium by the abrupt motion of nuclei, and it might well be sustained by an energy flux intersecting our three dimensional space from a higher dimensional superspace (20-22).

This last point is clearly the most speculative. If true, it offers VIRTUALLY LIMITLESS ENERGY.

It can best be supported by noting that there are interpretations of quantum mechanics and relativity theory which imply the existence of a physically real, higher dimensional space, and the notion of superspace is well discussed in the physics literature (23-25).

It is interesting to note that some authors (26,27) recognized that the mathematical analysis of a nonlinear system interacting with the ZPE shows that energy could be extracted, but they are skeptical due to the lack of experimental evidence.

ION-ACOUSTIC OSCILLATIONS

The real proof that the zero-point energy could become an energy source can only come from a repeatable experiment. The above discussion suggests that the motion of a plasma's nuclei might be an effective transducer for interacting with the ZPE.

The coherent oscillations of nuclei in a plasma is known as the ion-acoustic mode, and it has been associated with anomalous plasma behavior including run-away electrons (28), anomalous heating (29-31), anomalous resistance (32), and high frequency voltage spikes (33-35). Could these anomalies be associated with a direct ZPE interaction manifesting a macroscopic vacuum polarization (36)?

The inventor T. Henry Moray (37) stressed the importance of ion oscillations in the plasma tubes of his invention that produced 50 kilowatts of anomalous electrical power in the 1930's. His well-witnessed invention could not be explained with the physics of that time, and puzzled all the scientists who investigated his device.

Another experiment where coherent oscillations of nuclei could be the source of anomalous heat is the electrolytic "cold fusion" experiment of Pons and Fleischmann (38).

In this experiment deuterium nuclei occupy shallow potential wells in the crystal lattice sites of the palladium. Here the nuclei are free to oscillate (39), but they generally diffuse to adjacent, vacant lattice sites (40).

However, under the conditions of deuterium supersaturation all the lattice sites are occupied, and the deuterons within a crystal grain of palladium could then undergo synchronous oscillations similar to ion-acoustic heat (41). This hypothesis predicts the effect would be greatly enhanced by supersaturating a pure single crystal of palladium and that an electrical pulse could trigger the oscillation.

It might also be possible to generate anomalous heat with experiments using ordinary water (although it is more difficult to constrain protons to the lattice sites than deuterons). The difficulty in repeating the heat anomaly of the

Pons/Fleischmann experiment is probably the first repeatable experiment in which at least some other scientists are able to produce an energy anomaly (42).

PLASMA SPIRALS

Other investigators have claimed energy anomalies associated with plasma behavior. The Russian plasma physicist, Chernetskii, from his observations of anomalous energetic plasma activity explains that under appropriate conditions a plasma interacts directly with the ZPE (43).

He has recently claimed to have created a plasma device that absorbs energy from the vacuum fluctuations when the plasma's particles undergo cycloid motion (43).

Likewise the inventions of Searle (44), Spence (45), and Papp (46) also have cycloid particle motion in the plasmas within their energy producing devices.

Ball lighting (47) is a possible candidate for a ZPE interaction since it has been modeled as a vortex ring plasmoid (48). The energy source needed to maintain its persistence must be localized within the ball since it has been observed inside of shielded environments such as aircraft and submarines.

In a submarine a particular type of circuit breaker has launched it on multiple occasions (49). The vortex ring model for ball lightning has its plasma particles undergoing precessional cycloid motion, and it might therefore be an example of a zero-point energy coherence occurring in nature.

It may also be possible to induce the cycloid motion of nuclei within solid state magnetic materials such as ferrites. When a ferrite's magnetic domain wall moves, the microscopic magnetic dipoles rotate (50). This supports the propagation of nonlinear spinor waves through the ferrite (51). This wave directly couples to the ferrite lattice causing an elastic, acoustical spinor wave (52). This results in the helical motion of the ferrite's nuclei.

If such motion induces a zero-point energy coherence, then nearby pickup coils might detect anomalous energy. Such a hypothesis may help explain the "free energy" inventions of Coler (53) and Sweet (54).

The plasma vortex-ZPE hypothesis could also be applied to the water vortex studies of Schauberger (55). He claimed that water forced to precess through specially shaped spiralling tubes induced an energy anomaly causing a peculiar bluish glow to appear at the center of the vortex.

Also the gyroscope studies by Laithwaite (56) may fit the vortex hypothesis. Laithwaite observed that a precessing gyroscope that was displaced along a particular cycloid path would exhibit an inertial/gravitational anomaly.

GRAVITATIONAL ANOMALIES

The expectation of gravitational anomalies associated with coherence of the zero-point energy arises directly from general relativity.

Gravity is described as curvature of the space-time metric induced by the stress-energy tensor (57). If the zero-point energy has the enormous density as predicted by Wheeler, then even a slight coherence in its activity could curve the local space-time metric producing measurable gravitational or time anomalies.

An experiment which altered the pace of time near the apparatus would suggest the ZPE's involvement (58). Puthoff (59) has recently quantitatively explored Sakarov's suggestion that gravity is intimately coupled to the behavior of the ZPE by proposing a model in which gravity directly arises from the action of the zero-point fluctuations.

An experiment which produced a gravitational or time anomaly would yield evidence that the ZPE is being cohered because the ZPE is the only energy appreciable enough to induce a space-time metric curvature by technological means.

How could such an anomaly be demonstrated experimentally? The ideas presented in this paper suggest the following preliminary experiment:

A piping system is shaped into a vortex ring (Figure 1) whose poloidal/toroidal size ratio is similar to the plasmoids observed by Bostick (60) in his experiments.

Charged fluid or plasma is pumped to circulate rapidly through the vortex ring. Note that the plasma is forced to undergo an effective precessional motion (a poloidal rotation closing into a toroidal rotation).

A weight change in the apparatus or a change in the pace of time nearby the apparatus would support the proposed conjecture that an ionic plasma vortex could induce a ZPE coherence.

(since we cannot duplicate the drawing in this file, Figure 1 shows a donut shape viewed from the top and generated by loops as if a Slinky toy was connected end to end "Vortex ring mainfesting precessional flow")

An oscillatory ion-acoustic plasma vortex ring can be created with an electrical circuit. A toroidal coil is wound on a ferrite core with wire whose insulator is coated with a mildly radioactive material.

Alternatively the coil could be bombarded by ionizing radiation (61). The radiation only needs to be strong enough to ionize the air or gas near the surface of the toroidal coil, and it maintains a cold plasma.

The coil is then tuned to resonate at the ion-acoustic frequency of this plasma by adding an appropriate capacitance to the circuit. A properly tuned resonance yields ion oscillatory displacement currents in the medium surrounding the wire which acts as a wave guide.

During resonance further ionization could accrue shifting the ion-acoustic frequency. This nonlinear effect can be stabilized with a parallel, variable capacitor controlled via feedback by the magnitude of the output current.

The capacitance is automatically adjusted to maximize the output current unless it becomes too large at which point the system is intentionally detuned. If the ion-acoustic plasma vortex were to interact coherently with the ZPE, then anomalous energy production might occur in such a system.

MACROSCOPIC PAIR PRODUCTION

The plasma vortex ring motif can be applied directly to the virtual ZPE plasma to create a model of an elementary charge. Bostick showed that a pair of plasmoid vortex rings could arise from an abruptly excited, turbulent plasma (60).

In a similar fashion could electron-positron pair production arise as vortex rings from the ZPE modeled as a virtual plasma? In this analogy the charge would be associated with the helicity of the electric flux circulation on the vortex ring (62,63).

Likewise the electric (E) field lines emanating from a charge could be modeled as helical filaments (64). Here the helical filaments would originate from the charge and be sustained continuously by electric flux flowing at the speed of light. This model of E field lines offers a dynamic possibility for activating the vacuum energy.

If an E field line alone could be abruptly rotated, it would mimic the precessional flow of a vortex ring section (Figure 2) and consequently would manifest for an instant virtual charge at a macroscopic level. This would constitute a coherence in the zero-point energy.

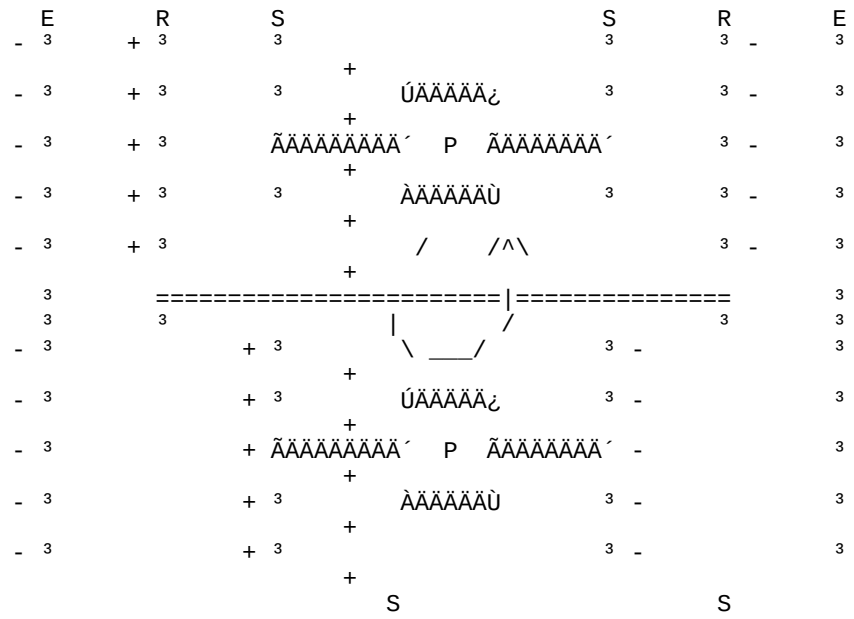
(Figure 2 shows a 1 quarter section of the doughnut shape as described in Figure 1 "Vortex filament model of abruptly rotated E field line") An experiment in which E field lines are abruptly rotated might yield excessive energy from the resulting voltage transients.

Such an experiment has already been done, and its description is essentially the invention by Hyde (65). Hyde uses rapidly spinning segmented rotors to abruptly cut E field lines, and his invention is reported to output power TEN TIMES THE INPUT!

The invention consists of a pair of excitor plates, a pair of segmented rotors and a pair of segmented stators (Figure 3). Charge is free to migrate on the conductive surfaces comprising the rotors and excitor plates, but on the stators the

adjacent, conductive segments are electrically insulated from each other.

(Figure 3 consists of 3 parts, the first shows a simple circle labelled EXCITOR PLATE, the second shows a disk segmented into 3 section similar to the symbol for atomic hazard and labelled SEGMENTED ROTOR and the third shows a circle sectioned into 6 areas much like a pie chard evenly divided into 6 sections, it is labelled SEGMENTED STATOR "Simplified version of excitor, rotor and stator") The components are connected as shown in the side view (Figure 4).



E = EXCITOR PLATE
R = ROTOR SEGMENT
S = STATOR SEGMENT
P = PULSE RECTIFIER

Figure 4. Connection of components (side view) An external voltage source charges the excitor plates which provide an electrostatic polarization field. Insulation on the device's negatively charged surfaces insures that no current leaks from the excitor plates and little power is drwan from the charging voltage source.

The rotors are electrically connected to each other through a conductive shaft which is spun by an electric motor (not shown).

The rotors in the patent description were electrically connected by brushes to their adjacent stators, but Hyde has since improved his invention by removing these contacts (66). The field from the excitor plates induces a polarization between the connected rotors.

The segments on both rotors are aligned to allow them to shield an aligned pair of stator segments. As the rotor spins, aligned stator segments are ALTERNATELY EXPOSED and SHEILDED from the excitor polarization field.

Each stator segment is electrically connected to its counterpart on the other stator through a PULSE RECTIFIER CIRCUIT in which the transient voltage pulses are stepped down and then channeled to a combining rectifier output circuit (not shown).

It is a surprise that such a simple device as Hyde's could output anomalous power. An analysis using just classical physics would predict that the voltage induced across a stator segment pair would swing between zero and the excitor plate voltage since this is the steady state limit for the shielded and exposed conditions. This is observed when the rotor is spun slowly.

However, when the rotor is spun on the order of 6000 rpm, a 3 KV potential across the excitor plates yields stator pulses in excess of 300 KV with a very small drag on the rotor (67).

How the ZPE could be cohered by the abrupt field cutting from the rotors is illustrated in the top view sequence in Figure 5.

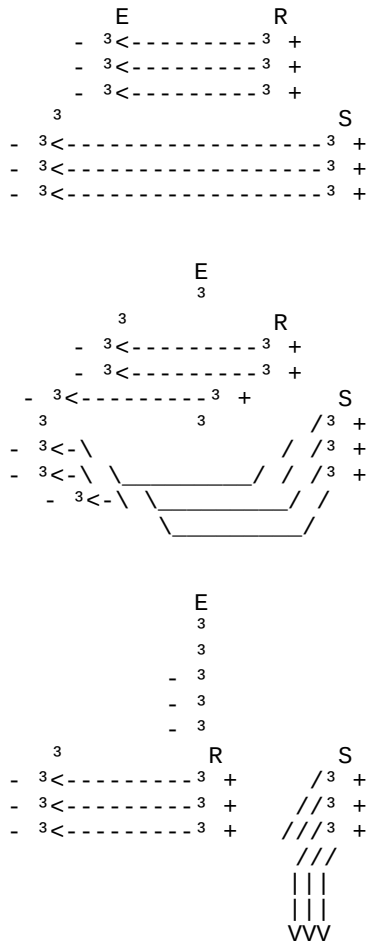


Figure 5. Abrupt E field cuting sequence (top view) During the exposed condition, current flows to charge the stator segment pair. Under rapid spin, the rotor blade cuts through the gap quicker than the charge can leave the stator segment due to the current's momentum from residual inductance of the connecting circuit.

The charge remains on the stator segment during the instant its E field lines are cut resulting in their abrupt rotation. If such an abrupt rotation of E field lines manifests virtual charge from the vacuum energy, then this charge would greatly augment the potential across the stator segment pairs and yield a more vigourous voltage transient.

Note that opposite virtual charge is created simultaneously on the outer surfaces of the connected stator segments. Quantum electrodynamics allows virtual charge pair production from the ZPE as long as charge is conserved. This analysis of Hyde's invention suggests virtual charge pair production in the macroscopic realm.

The resulting transient zero-point energy coherence accelerates the charges of the stator segment circuit, and the system outputs anomalously excessive energy.

SUMMARY

Applying the principles of system self-organization to the theories of the zero-point energy suggests that an appropriate system might be able to induce a coherence in the action of the zero-point energy.

Quantum electrodynamics shows that the ZPE intimately interacts with the various elementary particles with differing

vacuum polarization dynamics. The vacuum polarization description of atomic nuclei suggests that abrupt, synchronous motion of ions or nuclei may be a good candidate for coherent vacuum energy activation.

The observed anomalies associated with the ion-acoustic oscillations of a plasma might be evidence for this. Further circumstantial evidence may arise from the claims of different investigators and inventors whose devices exhibit a common modus operandi: They utilize coherent, synchronous motion of ions or nuclei.

The largest claims are associated with devices that produce cycloid or precessional motion of nuclei. This leads to the hypothesis that a POSITIVELY CHARGED PLASMA VORTEX MIGHT INDUCE A ZPE COHERENCE.

The idea can be experimentally explored by rapidly circulating a charged plasma or fluid through a vortex ring piping system and looking for a gravitational or time variation since there is a recognized theorectical connection between gravity and the action of the zero-point energy.

Since vortex ring plasmoid pair production is observed in turbulent plasmas, modeling the ZPE as a turbulent, virtual plasma supports the vortex ring model for elementary charge and the vortex filament model for electric field lines.

Such a model predicts that the abrupt rotation of electric field lines would manifest virtual charge from the vacuum energy.

Experimental support that macroscopic, virtual charge pair production might provide energy directly from the ZPE arises from Hyde's fully disclosed invention. It appears imperative that Hyde's invention be replicated, for only a repeating experiment could prove that it is possible to tap the zero-point energy as an energy source.

ACKNOWLEDGEMENTS

The help of Oliver Nichelson, Adrea Powell and Carl Rhoades is gratefully acknowledged.

REFERENCES

1) T. H. Boyer, "Random Electrodynamics: The theory of classical electromagnetic zero-point radiation," Phys. Rev. D 11(4), 790-808 (1975)

2) E. M. Lifshitz, L.P. Pitaevskii, STATISTICAL PHYSICS, Part 2, Pregamon, Oxford, 1980. "Hydrodynamic Fluctuations", pp. 369-73

3) P. B. Burt, QUANTUM MECHANICS AND NONLINEAR WAVES, Harwood Academic, NY, 1981.

4) L. de la Pena, A. M. Cetta, "Origin and Nature of the Statistical Properties of Quantum Mechanics," Hadronic J. Suppl. 1(2), 413-39 (1985)

5) I. R. Senitzky, "Radiation-Reaction and Vacuum Field Effects in Heisenberg - Picture Quantum Electrodynamics," Phys. Rev. Lett. 31(15), 955 (1973)

6) G. Nicolis, I. Prigogine, SELF ORGANIZATION IN NONEQUILIBRIUM SYSTEMS, Wiley, N.Y., 1977

7) H. Haken, SYNERGETICS, Springer Verlag, N.Y. 1971

8) M. Suziki, "Fluctuation and Formation of Macroscopic Order in Nonequilibrium Systems," Prog. Theor. Phys. Suppl. 79, 125-140 (1984)

9) A. Hasegawa, "Self-Organization Processes in Continuous Media," Adv. Phys. 34(1), 1-42 (1985)

10) M. B. King, TAPPING THE ZERO POINT ENERGY, Paraclete Publishing, Box 859, Provo, UT, 84603, 1989

11) S. Firrao, "Physical Foundations of Self-Organizing Systems Theory," Cybernetics 17(2), 107-24 (1984)

12) Yu, L. Klimontovich, M. V. Lomonosov; "Entropy Decrease During Self-Organization and the S Theorem," Sov.

Tech. Phys. Lett. 9(12), 606-7 (1983)

13) I. Prigogine, I. Stengers, ORDER OUT OF CHAOS, Bantam Books, NY, 1984

14) P. A. Dirac, Roy. Soc. Proc. 126, 360(1930), Also G. Gamow, THIRTY YEARS THAT SHOOK PHYSICS, Doubleday, NY, 1966

15) T. H. Boyer, "Derivation of the blackbody radiation spectrum without quantum assumptions," Phys. Rev. 182(5), 1374-83 (1969)

16) J. A. Wheeler, GEOMETRODYNAMICS, Academic Press, NY, 1962

17) F. Scheck, LEPTONS, HADRONS AND NUCLEI, North Holland Physics Publ., NY, 1983; pp. 212-23

18) W. Greiner, "Dynamical Properties of Heavy-Ion Reactions Overview of the Field," S. Afr. J. Phys. 1(3-4), 75 (1978)

19) J. Reinhardt, B. Muller, W. Greiner, "Quantum Electrodynamics of Strong Fields in Heavy Ion Collisions," Prog. Part. and Nucl. Phys. 4, 503 (1980)

20) S. W. Hawking, "Wormholes in Spacetime," Phys. Rev. D 37(4), 904-910 (1988)

21) S. W. Hawking, R. LaFlamme, "Baby Universes and Non-Renormalizability of Gravity," Phys. Lett. B 209(1), 39-42 (1988)

22) D. H. Freedman, "Maker of Worlds," Discover 11(7), 46-52 (July 1990)

23) B. S. DeWitt, N. Graham, THE MANY WORLDS INTERPRETATION OF QUANTUM MECHANICS, Princeton University Press, Princeton, 1973

24) F. A. Wolf, PARALLEL UNIVERSES, Simon & Schuster, NY, 1988

25)P. Davies, OTHER WORLDS, Simon & Schuster, NY, 1982

26) T. H. Boyer, "Equilibrium of random classical electromagnetic radiation in the presence of a nonrelativistic nonlinear electric dipole oscillator," Phys. Rev. D 13(10), 2832-45 (1976)

27) S. I. Putterman, P. H. Roberts, "Random Waves in a Classical Nonlinear Grassman Field," Physics 131 A, 51-63 (1985)

28) Y. Kiwamoto, H. Kuwshara, H. Tanaca, "Anomalous Resistivity of a Turbulent Plasma in a Strong Electric Field," J. Plasma Phys. 21(3), 475 (1979)

29) J. D. Sethian, D. A. Hammer, C. B. Whaston, "Anomalous Electron-Ion Energy Transfer in a Relativistic-Electron Beam Heated Plasma," Phys. Rev. Lett. 40(7), 451 (1978)

30) S. Robertson, A. Fisher, C. W. Robertson, "Electron Beam Heating of a Mirror Confined Plasma," Phys. Fluids 32(2), 318 (1980)

31) M. Tanaka, Y. Kawai, "Electron Heating by Ion Acoustic Turbulence in Plasmas," J. Phys. Soc. Jpn. 47(1), 294 (1979)

32) Y. Kawai, M. Guyot

33) Yu G. Kalinin, et al., "Observation of Plasma Noise During Turbulent Heating," Sov. Phys. Dokl. 14(11), 1074(1970).

34) H. Iguchi, "Initial State of Turbulent Heating of Plasmas," J. Phys. Soc. Jpn. 45(4), 1364(1978)

35) A. Hirose, "Fluctuation Measurements in a Toroidal Turbulent Heating Device," Phys. Can. 29(24), 14(1973).

36) M.B. King, "Macroscopic Vacuum Polarization," Proc. Tesla Centennial Symposium, International Tesla Society, Colorado Springs, 1984; pp. 99-107. Also reference 10, pp. 57-75.

37) T.H. Moray, J.E. Moray, THE SEA OF ENERGY, Cosray ResearchInstitute, Salt Lake City, 1978.

38) M. Fleischmann, S. Pons, "Electrochemically Induced Nuclear Fusion of Deuterium," J. Electroanal. Chem. 261, 301(1989).

39) T. Springer, "Investigations of Vibrations in Metal Hydrides by Neutron Spectroscopy," in G. Alefeld, J. Volkl, HYDROGEN IN METALS I, BASIC PROPERTIES, Springer Verlag, NY, 1978; pp. 75-100

40) R.C. Bowman, "Hydrogen Mobility at High Concentrations," in G. Bambakidis, METAL HYDRIDES, Plenum Press, NY, 1981; pp. 109-144.

41) M.B. King, "Electrolytic Fusion: A Zero-Point Energy Coherence?" reference 10, pp. 143-166.

42) H. Fox, "Cold Fusion Successes: Achievements and Primary Sources," Fusion Facts (12), Fusion Information Exchange, Salt Lake City, June 1990.

43) A. Smokhin, "Vacuum Energy A Breakthrough?" NOVOSTI press release 03NTO-890717CM04, 17 July 1989. Also Spec. Sci. Tech. 13(4), 273 (1990).

44) W.P. Baumgartner, Energy Unlimited, Issue 20, Energy Unlimited, Albuquerque, NM, 1986.

45) G.M. Spence, "Energy Conversion Systems," U.S. Patent No. 4,772,816 (1988).

46) J. Papp, "Noble Gas Engine," U.S. Patent No. 4,428,193 (1984).

47)S. Singer, THE NATURE OF BALL LIGHTNING, Plenum Press, NY, 1971.

48)P.O. Johnson, "Ball Lightning and Self Containing Electromagnetic Fields," AM. J. Phys. 33, 119(1965). Also R.C. Jennison, "Relativistic Phase-Locked Cavity Model of Ball Lightning," Electronics Laboratory, University of Kent, U.K. 1990.

49) P.A. Silberg, "Ball Lightning and Plasmoids," J. Geophys, Res. 67(12), 4941(1962).

50)T.H. O'Dell, FERROMAGNETODYNAMICS, John Wiley, NY, 1981.

51) D.H. Jones, et al., "Spin-wave theory of the zero-point energy of solitions in one dimensional magnets," J. Phys. Condens. Matter 1, 6131-44(1989).

52) M. Cieplak, L.A. Turski, "Magnetic solitons and elastic kink-like excitations in compressible Heisenberg chain," J. Phys. C: Solid St. Phys. 13, L 777-80(1980).

53) "The Invention of Hans Coler, Relating to an Alleged New Source of Power," British Intelligence Objectives Sub-Committee, Final Report No. 1043, 1946. (DeClassified 1962).

54) F.S. Sweet, "Nothing is Something: The Theory and Operation of a Phase-Conjugated Vacuum Triode", June 1988; private communication, December 1989.

55) B. Frokjaer-Jensen, "The Scandinavian Research Organization on Non-Conventional Energy and The Implosion Theory (Victor Schauberger)," Proc. First International Symposium on Nonconventional Energy Technology, Toronto, 1981; pp. 78-96.

56) J. Davidson, THE SECRET OF THE CREATIVE VACUUM, C.W. Daniel Co. Ltd., Essex, England, 1989; pp. 258-262.

57) C.W. Misner, K.S. Thorne, J.A. Wheeler, GRAVITATION, Freeman, NY 1970. Chapters 43 and 44 discuss the zero-point energy.

58) N.A. Kozyrev, "Possibility of Experimental Study of the Properties of Time," Joint Publication Research Service, Arlington, VA, 1968.

59) H.E. Puthoff, "Gravity as a Zero-Point Fluctuation Force," Phys. Rev. A 39(5), 2333(1989).

60) W.H. Bostick, "Experimental Study of Plasmoids," Phys. Rev. 106(3), 404(1957).

61) P.M. Brown, "Apparutus for Direct Conversion of Radioactive Decay Energy to Electrical Energy," U.S. Patent No. 4,835,433 (1989).

62) W.H. Bostick, "The Gravitational Stabilized Hydrodynamic Model of the Elementary Particle," Gravity Research Foundation, New Boston, NH, 1961.

63) N.J. Medvedeff, NUCLEAR DYNAMICS, privately published, Hanover, MA, 1961.

64) J.J. Thompson, RECOLLECTIONS AND REFLECTIONS, Cambridge University Press, 1936; pp. 94, 369.

65) W.W. Hyde, "Electrostatic Energy Field Power Generating System," U.S. Patent No. 4,897,592 (1990).

66) W.W. Hyde, private communication, April 1991.

67) W.W. Hyde, private communication, April 1991. A 1987 prototype containing approximately 2000 capacitors and diodes exhibited the following characteristics:

No. rotor segments	240
No. stator segments	480
Rotor speed	6000 rpm
Excitor plate voltage	3 KV DC
Output voltage	602 VDC
Output current	38 amps
Output power	22.9 KW
Input power	2.4 KW
Net output power while free running	20.5 KW

Back To Top Secret Projects

YAHOO! GEOCITIES