

SPESIF Abstracts for Scheduled Speakers

2012

Bouchard, Phil – Finite Theory of the Universe, Dark Matter, and Faster-than-Light Speed” - video presentation of the narrated slideshow by the author

The mathematical representation of General Relativity uses a four dimensional reference frame to position in time and space an object and tells us time is a linear variable that can have both a negative and positive value. This therefore implies time becomes itself a dimension and causes the theory opening doors to ideas such as: singularity, wormhole, paradoxes and so on.

Finite Theory is a new mathematical model is being suggested which is based on the current laws of dynamics. The theory is objective and predicts low scale GPS gravitational time dilation, Mercury’s perihelion precession, gravitational light bending, artificial faster-than-light motion, up to the rotation curve for all galaxies, natural faster-than-light galactic expansion and can consequently be used to determine the ultimate scale of the Universe.

Carter, Hamilton – Podkletnov Effect Experiment Replication

Our project proposes to replicate the Podkletnov Effect experiment as originally reported in 1992. We will present a detailed analysis of the engineering requirements for the experiment and outline how these requirements have caused difficulties in previous replication attempts. Our experimental design will be laid out. The experiment will be executed in a number of phases focused on always performing superconductor rotation via stator coil magnetic fields. Existing experiments, their data and their implications will be reviewed for each phase. If time permits, a primer covering gravitational theories including those from DeWitt, and Chiao, and their relation to the Podkletnov effect will be presented.

Chiang, Chia-Yang – Copper Oxide Nanoarchitectures for Photochemical Hydrogen

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A photoelectrochemical (PEC) cell is a device that drives an uphill chemical reaction, using solar energy photons so that solar energy is stored as chemical potential energy in the form of the reaction products. The process of making chemical fuels, here hydrogen by solar energy conversion, is a sustainable solution to the energy shortage problem. The PEC water splitting process aims to integrate both solar energy absorption and the hydrogen/oxygen generation function at one photoelectrode. This photoelectrode material must be able to absorb sunlight efficiently and have the right band position to trigger the water splitting reaction. Furthermore, for long term consideration, earth abundant, environmentally benign and inexpensive materials are more favorable for low cost and large scale production.

The small band gap material, copper oxide (CuO), has attractive characteristics, i.e. band gap and direct transition, for utilizing solar irradiation to generate hydrogen via performing water splitting reaction. However, large CuO particles have the disadvantage of higher recombination rates for photon excited charge carriers. Also, the short diffusion length of CuO limits the charge carrier density and thus limits the generated photocurrent density. Thus, in the presentation, methods such as flame spray pyrolysis, solution based processes, and sputtering processes to prepare nano size CuO particles as well as bio-templated three dimensional nanostructured thin films are described.

DeBiase, Robert -- Are Casimir Forces Conservative?

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Abstract. The classical Casimir effect leads to an attraction between two neutral metal plates placed in a vacuum. There are two interpretations as to the source of energy behind this effect. In the first, the energy source is considered to be the zero-point fields in the vacuum of space between the plates. In the second, the source is considered to come from the potential energy of atoms in the bulk matter making up the plates. Even though the physical descriptions of these interpretations are quite different they are none-the-less considered to be equivalent and both interpretations are believed to predict conservative forces. The simplest way of calculating energy and force for the zero-point fields interpretation is the proximity force approximation which comes directly from the two parallel plates calculation originally performed by Casimir. This parallel plates calculation is still considered to be the standard by which all other calculations are compared. The simplest way of calculating energy and forces in the bulk matter interpretation is the pair-wise summation approximation which starts off from the potential energy between pairs of polarizable atoms originally calculated by Casimir and Polder. It can be shown that the forces calculated by the pair-wise summation approximation are trivially conservative. It can also be shown that the forces calculated by the proximity force approximation are also conservative. However, there is a catch. The proximity force approximation ignores the local geometry of non-parallel plates, which leads to the use of nonsensical distances between plates at a local scale as well as some absurd results. When the local geometry is included in a generalized proximity force approximation, the difficulties with the local geometry disappear. However, it is not clear that the forces can be made conservative and in general appear to be non-conservative. A non-conservative force between plates of asymmetric geometry could be harnessed for energy production and propulsion and lends itself to experimental testing.

Cui, Qingbin – Financing and Developing Renewable Energy Projects

Assistant Professor, University of Maryland

As most renewable energies are still more expensive than fossil energies, a variety of support schemes have been put in place to accelerate the transition to clean energy future. These schemes include tax credit, energy funds, and other governmental programs in addition to market-based incentive mechanisms for clean energy and energy efficiency. The presentation introduces several of the market mechanisms designed to support the financing and development of renewable energy projects. Power Purchase Agreement, Renewable Energy Certificate, and Carbon Credit will be specially discussed with respect to their financing capacity and environmental benefits. Solar highway projects in Oregon will be used to demonstrate the concept, key feature, process, and financing structure of renewable energy projects.

Eubanks, Marshall -- Stellar Industrial Archaeology: Galactic Scale Astrosociology and The Detection of Alien Industrial Activity

If advanced civilizations of Kardashev type II or type III exist, then they extract raw

materials and produce finished products on an astronomical scale. “Stellar industrial archaeology” may provide the only means of conducting the Search for Extraterrestrial Intelligence (SETI) across extra-galactic distances, as alien industrial activity could be observable across vast distances of space, even if the finished products are less obtrusive. There have been stellar archaeological searches before for mega-artifacts such as Dyson Spheres but little consideration for detecting their construction, except that these were assumed to be conducted using the material of the civilization’s host planetary system. Any truly large-scale industry is more likely to be longer lasting and concentrated in Giant Molecular Clouds, as these contain many orders of magnitude more heavy elements than any planetary system, as these heavy elements are actually easier to extract than those sequestered in planets, as there is adequate energy for the construction and transport of finished products, and finally as there are likely to be better uses for habitable planetary systems than as raw materials. Planetary nebulae are also possible industrial sites, for similar reasons. Stellar industrial archaeology can be conducted by searching these sites for anomalous structures and energy sources, or by spectrographic searches for anomalous deficiencies of various elements, but the most convincing industrial signatures might be at very high energies, assuming the use of technologies such as fusion power.

Fresco, Anthony –

1) Propulsion Methods by Solute Ion Linear Alignment and by Closed Monopole Ion Injection Accelerator

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ASME Technical Paper ES2010-90396 "Solute Ion Coulomb Force Monopole Motor and Solute Ion Linear Alignment Propulsion" describes a motor that is based on an arrangement of solute ion electric field monopoles. Through a process called capacitive deionization, sodium and chlorine ions in salt water are captured and confined by an electrically conductive material to form electric field monopoles. At least four of the like charged monopoles (all negative or all positive) can be arranged on a disc. At least one stationary monopole of the same charge is placed adjacent to the disc and positioned so that a repulsive electric field is formed between the stationary monopole and at least one of the monopoles on the disc so that the disc is then forced to rotate a shaft at the center of the disc. In a related concept, the ES2010-90396 paper also described the linear alignment of like-charged solute ions as a means of propulsion and particle acceleration. This paper describes a method of accelerating ions having an initial velocity by exposing the ions to the electrostatic fields emitted by like-charged monopoles, e.g., protons accelerated in a vacuum tube by sodium solute ion monopoles, etc. The two particle acceleration methods and the motor could potentially be used to reduce the cost of construction and of power to a proton therapy center. Details of the monopole motor and both particle acceleration methods are available in WO 2008/024927 A2 (and US 2010/0199632 A1) Ref. [1].

2) Dielectric Analysis For Torque Of Solute Ion Coulomb Force Monopole Motor

ASME Technical Paper ES2010-90396 "Solute Ion Coulomb Force Monopole Motor and Solute Ion Linear Alignment Propulsion" by the author describes a motor that is based on an arrangement of solute ion electric field monopoles. That is, through a process called capacitive deionization, sodium and chlorine ions in salt water are captured and confined by an electrically conductive material to form electric field monopoles. At least four of the like charged monopoles (all negative or all positive) can be arranged on a disc. At least one stationary monopole of the same charge is placed adjacent to the disc and positioned so that a repulsive electric field is formed between the stationary monopole and at least one of the monopoles positioned on the disc so that the disc is then forced to rotate a shaft at the center of the disc. This paper analyzes the behavior of the dielectric materials forming part of the monopoles to show that the net torque on the motor is greater than zero and also illustrates a novel effect of polarization of a dielectric material

positioned between two like-charged monopoles as occurs in the configuration of the monopole motor. The monopole motor connected to an electrical generator can provide electrical power to electrical loads, which could include for space applications electrode assemblies designed for linear alignment of like-charged solute ions as a means of propulsion and particle acceleration as described in the ES2010-90396 paper. Details of the monopole motor and the propulsion are available in WO 2008/024927 A2 (and US2010/0199632 A1) "Solute Ion Coulomb Force Acceleration and Electric Field Monopole Passive Voltage Source" by the author Ref. [1].

Froning, David – Specially Conditioned EM Fields to Reduce Nuclear Fusion Input Energy Needs

Ordinary Maxwell electromagnetic (EM) fields possess relatively simple U1gauge symmetry, and their angular momentum is analogous to that of spin-1 particles whose like-charges attract and un-like charges repel. This is manifested in coulomb repulsion between free electrons or free ions and coulomb attraction between free electrons and ions. By contrast, angular momentum of SU(2) fields that describe the short-range Weak Nuclear Force in nuclei is analogous to that of spin-2 particles whose like-charges attract. So, free ions that become inside such small SU(2) field regions attract each other, reducing their separation until their fusion occurs. In this respect, Barrett has shown the possibility of EM fields with the same SU(2) gauge symmetry and spin-2 angular momentum as SU(2) matter fields in nuclei. It is therefore conceivable that fuel ions inside SU(2) EM fields in fusion reactors might attract rather than repel each other. So, this paper explores the possibility of ion-attracting SU(2) EM fields reducing the electrical compression energies these fields must exert on nuclear fuel ions in order that their fusion by the SU(2) matter fields of the weak nuclear force can occur. A specific conditioning of U(1) EM field energy into SU(2) EM field energy for a given type of fusion system was assumed, and parametric estimates of input electrical energy reduction were made.

Gamble, Michael – Support Forces in Synchronized Rotating Spring-Mass System and Its Electromagnetic Equivalent

Based on the Dean Drive, an inertial propulsion device, the mechanical system's analysis starts with a Fourier transform of the y-axis force waveshape to determine its harmonic content. A MatLab (FFT) Fast Fourier Transform shows the waveshape is composed of a fundamental frequency (q) and second harmonic ($2q$) along with a steady state (DC) offset with relative amplitudes of 1, 0.33 and 0.69, respectively. However, an FFT does not give any wave phase data. Therefore, two AC harmonic terms and a DC term are required to generate this waveshape. The DC term represents the translational force (movement) of the system in the plus Y-axis. The AC terms represent two oscillating forces in the Y-axis and also in the X-axis. It is found that both the mechanical and electrical forces are offset in the plus y-axis. Also with 2 pulses per cycle the electrical system has more y-axis force and less x-axis force (vibration) than the mechanical one. The secret to making either system work is that the center of force can not be at the same location as the center of mass; it must be offset (polarized). Also, the narrower the waveshape is in the x-axis the less the vibration.

Goodwin, Dave – Proposed Dark Energy Experiment Using Fullerene

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A dark energy experiment is proposed, based on the dark energy research funded by the U.S. Department of Energy, Office of Science. The experiment would replicate the conditions of deep space (ultra-vacuum, isolation from the Earth's magnetic field, and cryogenic temperatures). The experiment would use Fullerene to provide a Faraday Cage for semiconductor detector. The experiment should be able to detect whether the dark energy spectrum actually has a frequency-cubed distribution, if there are any resonances, and the spectrum cutoff. Such an experiment would explain why the observed dark energy density of 4 electron volts per cubic centimeter is 120 orders of magnitude less

than the theoretical prediction (which assumes a frequency cubed distribution and a cutoff at the Planck mass of 22 micrograms). Resonances should occur at known particles (e.g., the proton). The experiment may lead to a method for extracting dark energy for terrestrial and space-based uses.

Ide, Osamu – Anomalous Power Efficiency of A Transformer Driven By Tuned Duty Pulses

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Abstract. One of the authors (O. Ide) has made a prototype of an inverter which makes efficient use of positive EMF (Reference 1 and Reference 2), to be caused by well-tuned duty square wave. And, it is observed that the power efficiency of the inverter prototype reaches 300% plus at maximum while easily exceeding 100% (Reference 3). The theme of the discussion of this report, is the power efficiency characteristics of a transformer itself to compose an inverter, as the author think there is possibility for it to be different from that of the total inverter unit which is already discussed in the above-mentioned references, while putting a focus on it as a single separate unit. In the result of a research based on the experimentally measured data, it has been discovered that the former is quite different from the latter. It has been also discovered that the value of the input power to the primary coil can be either positive or negative, depending on the value of the load connected to the secondary coil. In addition, it was recognized that there exists a critical point of the load value at which the value of the input power becomes zero. This means that at such a critical point the power efficiency of the transformer itself becomes infinite, and that in the negative region of the load value, the value of the input of the transformer must become negative. In other word, energy is flowing out even from the input terminals of the primary coil of the transformer. After an analysis of the wave form data experimentally obtained, it becomes clear that such a phenomenon occurs due to the phase difference between voltage and current of the primary coil of the transformer.

Kosovich, Judy -- The Federal Regulation of Energy Medicine

This paper describes the laws and regulations that affect the practice of energy medicine. State law often has more impact on a health care practice than federal law, but federal law provides a common denominator. Device law is emphasized because practitioners of energy medicine are more likely to use devices than drugs.

Ludwig, Thorsten -- Tuning Coler Magnetic Current Apparatus With Magneto Acoustic Resonance

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Abstract. An attempt was made to tune the Coler magnetic apparatus with the magneto acoustic resonance of the six magnetic rods. Measurements with two replica of the famous Coler “Magnetstromapparat” were conducted. In order to tune the acoustic, magnetic and electric resonance circuits of the Coler device the magneto acoustic resonance was measured with a frequency scan through a function generator and a lock-in-amplifier. The frequency generator was powering a driving coil, while the lock-in was connected to a pickup coil. Both coils were placed on a magnetic rod. Resonances were observed to the 7th Harmonic with a Q of 4000. The magneto acoustic resonances of all six magnetic rod were measured. The second tuning step was

to bring all six resonances close together by manipulating the magnetic rods. In a third step the electric resonance frequency of the Coler device was tuned to the first and 3rd harmonic of the magneto acoustic resonance. The 3rd harmonic was chosen because it was close to the 180 kHz that Hans Coler related to ferromagnetism. Finally the question was studied if Coler converted vacuum fluctuations via magnetic and acoustic resonance into electricity? There is a strong connection between magnetism and quantum field zero point energy (ZPE). The energy output of the Coler devices was measured.

Lunquist, Charles – The Science and Science Fiction of Robert L. Forward

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One way to examine a relationship between science and science fiction is to look at the works of individuals who simultaneously were practicing scientists and authors of science fiction. Dr. Robert L. Forward is such an individual. From 1980 through 1997 he wrote and published about twelve science fiction novels. During the same time interval, he produced many scientific and technical papers. Writing science fiction was essentially a byproduct of his scientific research. His early research concerned gravitation and astronomical objects. Later he studied space transportation technologies, including photon propelled sails, antimatter rockets and long tethers. An immediate observation is that Dr. Forward, in his science fiction, took particular care that the circumstances and technologies used had reasonable scientific bases. A prime example is his use of antimatter propulsion in his fiction. In his scientific career, Dr. Forward was a leading proponent that antimatter propulsion was possible, but very expensive. Enormous sails propelled in space by astronomical photons or laser beams is another propulsion technology employed in his novels. If a distinction is made between fiction based on sound scientific principles and fiction that is pure fantasy, the works of Robert Forward clearly fall in the first grouping.

Miley, George – My Autobiographical Experience with Nuclear Power and the Arms Race

Dr. George H. Miley, Professor Emeritus, University of Illinois and President, NPL associates, INC., is internationally recognized for his innovative contributions to new energy source development and energy conversion technology. He has received numerous awards in recognition of this work, including a Guggenheim Fellowship, NATO Fellowship, Fulbright Fellowship, the Edward Teller Medal, the Integrity in Research Award, and the Preparata Metal. He is Fellow in four leading professional science and engineering societies (APS, ANS, IEEE, and AIAA. At the COFE meeting he will talk about issues related to National Energy Policy and also issues facing the individual scientist/technologist working on new energy sources like LENR or Vacuum Energy.

Moddel, Garret - Test of Zero-Point Energy Emission from Gases Flowing through Casimir Cavities

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We describe initial experimental results on zero-point energy emission from gas flowing through Casimir cavities. A recently issued patent [1] describes a method by which vacuum energy is extracted from gas flowing through a Casimir cavity. According to stochastic electrodynamics, the electronic orbitals in atoms are supported by the ambient zero-point field (ZPF). When the gas atoms are pumped into a Casimir cavity, where long-wavelength ZPF modes are excluded, the electrons spin down into lower orbitals and release energy in the process. This energy is harvested in a local absorber. When the electrons

exit the Casimir cavity, they are re-energized to their original orbitals by the ambient ZPF. The process is repeated to produce continuous power. In this way, the device functions like a heat pump for zero-point energy, extracting it globally from the electromagnetic quantum vacuum and collecting it in a local absorber. This energy can be used for heating, or converted to electric power.

We carried out a series of experiments to test whether energy is, in fact, radiated from Casimir cavities when the appropriate gas flows through them. The Casimir cavity device we tested were nanopore polycarbonate membranes with submicron pores having a density of 3×10^8 pores/cm². Gas was pumped through the membranes in a stainless steel vacuum system, and emitted energy was measured using a broadband pyroelectric detector and lock-in amplifier. Emission in the infrared was clearly observed. We analyzed the emission from different gases and cavities to determine its origin. We report the results and their implications for zero-point energy harvesting.

REFERENCES

[1] Haisch B., and Moddel G., "Quantum vacuum energy extraction," U.S. Patent No. 7,379,286 (2008)

Nagel, Dave - Low Energy Nuclear Reactions: Science and Commerce The George Washington University nagel@gwu.edu

The field of Low Energy Nuclear Reactions (LENR) was originally and poorly called "cold fusion". Although it remains very controversial and under supported, LENR is both increasingly exciting and important now. Some people think that energy from LENR will replace energy from coal, oil and gas, just as those fossil fuels replaced burning of wood.

There is no longer widespread doubt about the ability to initiate energetic nuclear reactions using ordinary chemical energies. The results of thousands of experiments have been reported in hundreds of available papers. Energy gain is the ratio of energy out of a device to energy put into it. LENR energy gains exceeding 25 have been reported in electrochemical experiments using Palladium electrodes and Deuterons from heavy water. Energy gains greater than 400 were reported from pressurized gas experiments involving Nickel powders and Hydrogen.

Despite the solid experimental database, LENR are not understood theoretically. Over two dozen theories have been advanced to explain LENR, but none of them is satisfactorily elaborated and compared with experiment. Hence, the study of LENR is a vibrant field of science. Interest in it has skyrocketed lately, because energy generators based on LENR came to market in 2011, despite the lack of basic fundamental understanding.

Dr. David J. Nagel received a BS degree in Engineering Science (Magna Cum Laude), an MS degree in Physics and a PhD in Materials Engineering. During a half century, Dave has had three successful careers: Officer in the US Navy. After graduating first in his Naval ROTC class, he had four years of active duty and 26 years of reserve service, including three tours as a Commanding Officer. He retired in 1990 with the rank of Captain in the U. S. Naval Reserve. Federal Government Scientist and Manager. Dave joined the civilian staff of the Naval Research Laboratory after his active duty. As a member of the Senior Executive Service and leader of a physics division for over a dozen years, he managed the experimental and theoretical research and development efforts of 150 government, contractor and other personnel, including 80 PhDs (\$30M/year). University Teacher and Researcher. For the past dozen years, Dave has been a Research Professor in the Department of Electrical and Computer Engineering of The George Washington University. He taught graduate level courses on MEMS and NanoTechnology. Now, Dave mentors both undergraduate and graduate students. His current research centers on low energy nuclear reactions.

Pomerantseva, Ekaterina –

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Abstract. Miniaturization of energy storage devices (batteries and supercapacitors) has not kept in pace with constantly evolving Microelectromechanical Systems (MEMS) technology. As a result, autonomy and functionality of microsystems such as microsensors, microactuators, and miniaturized medical implants are

limited by the lack of suitable power sources. The sizes of these devices are often determined by the size of the power supply, and an urgent need exists for scaled-down power sources without compromising their performance.

In this work we present a fabrication approach that combines MEMS methods with the use of biologically templated nanomaterials for lithium-ion battery and supercapacitor hierarchical electrodes. These methods enable fabrication of three-dimensional elements that increase surface area and electrochemically active material loading for the same electrode footprint. The use of nanostructured materials for energy storage device electrodes has advantages of better mechanical integrity, higher electrode/electrolyte contact area and shorter diffusion distances for electrons and ions. This novel technology enables a significant increase in energy density without increasing electrode footprint or compromising power density, and it has demonstrated compatibility with a variety of energy storage materials (Si, TiO₂, and V₂O₅).

Dr. Pomerantseva has a BS in Materials Science (2000), MS in Chemistry and Materials Science (2003), and a PhD in Solid-State Chemistry from Lomonosov Moscow State University (Moscow, Russia). Dr. Pomerantseva started her career in the Laboratory of New Functional Materials under the supervision of Professor Eugene Goodilin. Her research activities involved high temperature superconductors, materials with colossal magnetoresistance, catalysts, ionic conductors and cathodes for lithium batteries. From 2009 till 2010 she worked in Professor Linda Nazar's group at the University of Waterloo (Waterloo, Canada) as a postdoctoral fellow, where she worked on the development of lithium-air batteries. Currently she is working in the group of Professor Reza Ghodssi at the University of Maryland on the development of Li-ion microbatteries and tools for the characterization of the processes in battery electrodes. Over the past 10 years, she has worked across a wide discipline to include components of the materials science, electrochemistry, engineering and microfabrication. Since 2000, Dr. Pomerantseva has written 8 published papers and co-authored 22 others. She is a recipient of multiple awards including Russian Academy of Science, ECS, CRDF and DAAD awards.

Reed, Donald – Bose Einstein Condensate – Hidden Riches for New Forms of Technology and Energy Generation; Potential for a Glimpse into Inner Reality

Abstract: With the announcement of the recent successful production of a Bose-Einstein condensate (BEC) of photons, a circle has been completed which started in 1925 with the vision of Albert Einstein and Satyendra Nath Bose – a sustained macroscopic condensed state of matter where all atoms are in the same lowest quantum state. The creation of an all-optical BEC, involving a surprisingly straightforward “tabletop” method which bypasses the normally requisite cryogenic equipment and ultra-high vacuum chambers necessary for production of the standard delicate atomic BEC, elevates this phenomenon to a new level well beyond its current perception as mere laboratory curiosity. Accordingly, this development certainly heralds eventual incorporation of atomic and photon BECs as standard operating components of energy-efficient mechanical, optical and electrical systems, implying novel ingenious engineering protocols amenable to all the tools of non-linear and quantum optics. Pointing towards such a promising technological future are the suggestion that a photon BEC could serve as a new high-energy ultra-violet (UV) laser photon source, as well as the recent unprecedented implementation of a closed-loop atom circuit (toroidal atomic BEC) demonstrating precise control of superfluid current flow, forecasting the coveted development of an atomic SQUID. Perhaps more significantly, the new highly robust and manageable optical BEC will allow heretofore unfathomable precise probing of the atomic and nano-levels of nature, affording novel high-quality testing procedures of the major foundations of quantum mechanics itself. Such a major advancement, providing a clearer glimpse into the microscopic realms, may present us as never before with an unprecedented view of the quantum engine that underpins physical reality itself and help place the contextual nature of entanglement and quantum superposition on a firmer foundation. Thus, further progress in achieving mastery over the precise flexible manipulation of BEC states could demonstrate that quantum contextuality might be an unsuspected over-arching archetypal principle in nature, leading to new insight in regards to the interpretation of quantum mechanics as applied to *all* levels of nature. Moreover, this hidden essentially unsuspected contextual aspect of natural laws, as exemplified by the dynamics underlying BEC structure, might be brought to bear to account for physical anomalies inexplicable using current paradigms, such as the claimed energy yields from low-energy nuclear reactions (as represented by the so-called process of “cold fusion”), making this phenomenon more tractable and rendered less controversial.

Renshaw, Curt – Galileo-Newtonian Relativity

Abstract. The velocity $c = (\epsilon_0 \mu_0)^{-1/2}$ appears in Maxwell's equations, but these equations say nothing about that velocity with respect to an absolute background and give no reference frame against which that velocity is measured. All experimenters obtain the same values for ϵ_0 and μ_0 , so the observed velocity is the same in any observer's reference frame. Since the speed of the moving observer can assume any value, the EM energy or wave leaving the source must have speed components in a continuous range, including c as measured in any arbitrary reference frame. The reference frame independent nature of Maxwell's equations does not prohibit a range of velocities, but instead dictates this to be so. Thus, Maxwell's equations indicate there are physically detectable components of any EM energy that reach an observer faster or slower than a component traveling at c as measured by that observer. It is this peculiar nature of light that led to the development of special relativity, but it is shown that the Lorentz transformations are nothing more than an elegant manipulation of the Galilean transformations with no physical basis of support. A direct consequence of this demonstration is the possibility of superluminal communications and travel, such as may have been demonstrated with neutrinos at CERN.

Valone, Thomas – Electrokinetics as a Propellantless Propulsion

The “Biefeld-Brown effect” is normally ascribed to Brown's first patent #300,311 and his 1929 article on gravitation, since they are the earliest sources of the term, electrogravitics. However, we have seen T. Townsend Brown and his patents evolve over time which Tom Bahder emphasizes. Later on, Brown refers to “electrokinetics” (that partly overlaps the field of electrogravitics), that requires asymmetric capacitors to amplify the force. Therefore, Bahder's article discusses the lightweight effects of “lifters” and the ion mobility theory found to explain them. Therefore, an analysis of the 90-year old science of electrogravitics (also called “electrogravity” or simply “gravitics”) necessarily includes an analysis of electrokinetics which, on the other hand, is more commonly associated with many patents of T. Townsend Brown as well as Agnew Bahson, starting with the 1960 US patent #2,949,550 entitled, “Electrokinetic Apparatus.” Electrokinetics, which often involves a capacitor and dielectric, has virtually no reported relationship that can be connected with the object's mass or its interaction with gravity. The Army Research Lab in Beltsville, Maryland recently issued a report on electrokinetics, analyzing the force on an asymmetric capacitor, while NASA has received three patents on the same design topic, which are all reviewed in this article. To successfully describe and predict the purported motion in the direction of the positive terminal of the capacitor, it is desirable to use the classical electrokinetic field and force equations for the specific geometry involved. This initial overview also suggests directions for further confirming measurements.

Dr. Thomas Valone is a physicist and licensed professional engineer with 30 years professional experience, is a patent examiner, research engineer, instrumentation designer and also an author, lecturer, and consultant on future energy developments. He has a Master's in physics from the State University of New York at Buffalo, a Professional Engineer's License in NY State, and a Ph.D. in General Engineering from Kennedy-Western (Warren National) University. He is President and founder of Integrity Research Institute, formerly a physics teacher at Erie Community College and previously a Research Director for Scott Aviation-ATO, Inc. He helped design the HullCom® for naval intraship communication, a 60 Hz gaussmeter without harmonic distortion, two bioelectric therapy devices, and a dental mercury vapor ionizer-precipitator. He is editor of *Future Energy, Energetic Processes Vol. I & II, Turning the Corner: Energy Solutions for the 21st Century* and a few conference proceedings, as well as author of *The Future of Energy: An Emerging Science, Zero Point Energy: The Fuel of the Future, Harnessing the Wheelwork of Nature, Practical Conversion of Zero-Point Energy, Homopolar Handbook, Electrogravitics Vol. I & II, Bioelectromagnetic Healing, Bush-Cheney Energy Study, Clinton Administration Energy Study* and about 100 published reports and articles. He has also served as an expert witness, an expert declaration writer for court cases and appeared on CNN, A&E, History and the Discovery Channels, besides a few commercial energy videos.

Werbos, Paul -- Energy Challenges Facing the Nation and NSF Initiatives to Address Them
National Science Foundation

No Abstract

Slides posted at:

http://www.nsf.gov/od/oia/programs/epscor/NationalConference_2011/10-27-2011/Paul_Werbos.pdf

Dr. Paul J. Werbos (www.werbos.com) holds four degrees from the London School of Economics and from Harvard, where he took courses from Julian Schwinger, one of the founders of quantum field theory. For his PhD in applied mathematics from Harvard, he developed a new algorithm, the backpropagation algorithm, which was considered gross heresy at the time, but for which he later won the IEEE Neural Network Pioneer award. He is a Fellow of IEEE and of the International Neural Network Society, which awarded him the Hebb award for his mathematical modeling of brain intelligence. He currently holds responsible positions with the National Space Society, the National Science Foundation, the FedEx Institute of Technology, the Millennium Project (www.stateofthefuture.org) and the IEEE Energy Policy Committee.

Woods, R. C. – Diffraction from Embedded Reflectors in Li-Baker HFGW Detector

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Abstract. Recent experimentation and speculation about the design of a sensitive detector for high-frequency gravitational waves (HFGW) has centered around a number of principles. Those detectors that have been built so far have not yet realized sensitivity sufficient to investigate the cosmic high-frequency relic gravitational wave background, analogous to the cosmic microwave background. A proposal for a more sensitive HFGW detector due to Baker and based upon a principle first enunciated by Li and co-workers has become known as the Li-Baker detector. Its possible design details are currently the subject of scientific debate. One significant aspect concerns the design of the reflector(s) needed to direct the photons produced by the incident HFGW towards the microwave receivers. If the reflector(s) is(are) placed within the Gaussian microwave beam then they become sources of diffraction that can potentially overpower the required signal because the diffracted power will not be distinguishable from photons produced by interaction with the HFGW. This means that diffraction is potentially a source of shot noise at the microwave receivers and, if extreme, may also swamp the receivers. In this paper some estimates of this diffraction are obtained and the design of the reflector(s) is discussed. The Li-Baker detector must be designed in such a way that the diffraction reaching the microwave receivers is reduced as far as possible by employing a suitable geometry and highly absorbent walls for the interaction volume.