

A Journalist's Notes

Jeane Manning

Why attend a conference in person, when its presentations are on the Internet and some are webcast live? One reason to attend is networking—meeting people with complementary research interests. Another is the chance to catch information gems dropped casually at the end of talks and in after-the-speech discussions.

For example, at the Space Propulsion & Energy Sciences International Forum (SPESIF), held February 29 - March 2 at the University of Maryland Riggs Alumni Center in Washington, D.C.—which also featured five other forums including Future Energy, Gravity Waves, Frontiers of Space Propulsion, Astrosociology and Space Science—Boeing engineer Michael Gamble revealed that the aerospace corporation he works for has for years been using the inertial propulsion of forced-processed gyroscopes to move satellites around in orbit electrically, without firing up any rockets. He said that news is old enough that he can freely mention it without disclosure problems.

The news delighted conference host Thomas Valone of Integrity Research Institute, who has been advocating and writing about inertial propulsion for years—when other institutes seemed to dismiss it as fiction. It is also known as reactionless thrusters, reactionless engines or bootstrap drives, for which a Canadian inventor B. Roy Thomson from Winnipeg became famous in the video “Free Energy: The Race to Zero Point.” Thomson demonstrated unidirectional force in a canoe, and with the object suspended from a pendulum.

However, popular purveyors of information such as Wikipedia declare that such a theorized method, where thrust is generated without any need for any outside force or net momentum exchange to produce linear motion, would have to violate the laws of conservation of momentum and conservation of energy. Wikipedia's article associates inertial propulsion with impossible perpetual motion.

Even leading-edge scientists missed this one. Eugene Mallove's book *The Starflight Handbook* (Wiley, 1989) has a chapter on the “Dean Drive and Other Impossibilities.” It says that not one “reactionless space drive” device demonstrated a unidirectional force when suspended from a pendulum. Former Director of NASA's Breakthrough Propulsion Program, Marc Millis, also has a lengthy, illustrated chapter in his coauthored book, *Frontiers of Propulsion Science* (AIAA, 2009), on “Nonviable Mechanical ‘Antigravity’ Devices.” It concludes that “gyroscopic devices misinterpret torques as linear thrust.”

Valone meanwhile has two copies of a photo of Boeing's large test model of its inertial propulsion device. It's real.

Gamble's presentation to SPESIF, “Forces in Synchronized Rotating Spring-Mass and EM Equivalent,” gave new insights into how to make an inertial propulsion device. His paper

was co-authored by Christopher Provatidis, whom he met at last year's SPESIF where they discovered a mutual interest in a historical device called the Dean Drive. The late Norman L. Dean was a career bureaucrat in Washington, D.C., but his private passions were theoretical physics and mechanical engineering. When he read about gyroscopes and their implications for navigation, he decided to solve the mystery of gyroscopic precession. In 1943 he built the first mechanical, non-precessing gyroscope. Today a website launched by Dean's family tells the story: <http://deanspacedrive.org/>. They dedicated the site to the “enterprising initiative of inventors everywhere who have been tricked, duped, swindled, injured, threatened or even killed in their efforts to advance science and the plight of mankind.” (Recent news on the Dean Drive website refers to U.S. Patent 7,900,874 B2, granted to three Fiala family members in Texas, for an inertial propulsion “Device to Move an Object Back and Forth.” The inventors' aim is workable inertial propulsion that would phase out brute-force rockets and their highly explosive propellants. Harvey Fiala is scheduled to speak at an ExtraOrdinary Technology Conference in Albuquerque, New Mexico on July 29, 2012.)

Gamble's presentation to SPESIF 2012 explained how the mechanical inertial propulsion could be converted to its electromagnetic equivalent, with the benefits that electronic devices have over mechanical.

Valone elaborated afterward on what he learned from a chat with Gamble—that Boeing has been using a “scissoring gyros” style of inertial propulsion, with two oppositely rotating, parallel gyroscopes. Integrity Research Institute has a collection of inertial propulsion patents and reports online introducing ways to produce a unidirectional force, but this is the first time that a major corporation's use of the controversial method of producing force has been confirmed. This alternative way to produce force, even in space, can be powered by solar electricity. “Physics and mechanical engineering textbooks need to be rewritten to include this amazing breakthrough,” Valone says.

Tom and Jackie Valone drew attendees' attention to the reprinted article, “Something from Nothing: How to Harness the Power of the Vacuum,” from the February 18-24, 2012 issue of *New Scientist*. It cites results of experiments that lead scientists to conclude that “vacuum fluctuations are real, and responsible for what we call Casimir effects,” but adds the usual phrase “not all physicists buy that.”

Dutch physicist Hendrik Casimir in 1948 thought about what might be pulling molecules together in substance mixtures he was studying, and calculated that the force could come from the so-called vacuum of “empty” space. Quantum theory says empty space is filled with wave-like fields containing energy; Casimir figured out a model for

demonstrating the force from that energy. Two parallel flat metallic plates would limit the wavelength of vacuum fluctuations between them, so the wider range of wavelengths outside the cavity would push the plates together. Steven Lamoreaux in 1996 in Seattle did a physics experiment with a metal plate and spherical lens that proved vacuum energy action is a real effect. He is now at Yale University with a team involved in further experiments.

Science writer David Harris focused that *New Scientist* article on a newer discovery about the vacuum's latent power: physicist Chris Wilson and his team at Chalmers University of Technology in Sweden claim to have squeezed light out of empty space. That would be a third acceptable way that the energy of empty space seems to show up. Besides the original effect, a reverse Casimir effect could use complex shapes on the inner surfaces of the plates to create a repulsive Casimir force. The third way is called the dynamical Casimir effect. If two plates are slammed together quickly, wavelengths that do fit between them are squeezed and the vacuum has to release energy in the form of pairs of photons—light. All these effects and forces described in peer-reviewed papers are tiny, but could solve problems in nano-scale devices.

As SPESIF Coordinator, Valone used Harris' vacuum energy article to bridge to another presentation, "Test of Zero-Point Energy Emission from Gases Flowing Through Casimir Cavities," delivered by Garret Moddel from the University of Colorado and co-authored by Olga Dmitriyeva. Moddel's slides illustrated how vacuum energy or emission of zero-point energy could be captured from noble gases flowing through Casimir cavities. Such an experiment is a test for his U.S. Patent 7,379,286, a co-invention with Bernard Haisch from Calphysics Institute.

Moddel explained that in stochastic electrodynamics (SED is somewhat different than quantum electrodynamics or QED), the orbits of electrons in atoms are supported by the ambient zero-point field. The patented device is analogous to a heat pump—but for extracting zero-point energy instead of heat. His team tried different gases, analyzed results and did see tell-tale emissions in the infrared range, with the highest emission from helium. Moddel said, "We have not proved that extraction of power from the zero-point field is possible. We have some interesting results."

The title of Don Reed's talk, "Bose Einstein Condensate: Hidden Riches for New Forms of Technology and Energy Generation; Potential for a Glimpse into Inner Reality," reveals his excitement about a breakthrough scientists made. A Bose-Einstein condensate (BEC) has been successfully produced recently. In his abstract, Reed said the feat completes a circle started in 1925 by Albert Einstein and Satyendra Nath Bose, who envisioned a sustained macroscopic state of matter in which all atoms are in the same lowest quantum state.

Usually, producing the delicate atomic BEC requires cryogenic equipment and ultra-high vacuum chambers. The creation of an all-optical BEC—by a tabletop method bypassing those requirements—elevates the phenomenon to a level well beyond a mere laboratory curiosity. Reed expects atomic and photon BECs to eventually become standard working parts of energy-efficient mechanical, optical and electrical systems "implying novel ingenious engineering protocols amenable to all the tools of non-linear and quantum optics." The robust and manageable optical BEC makes it possible to

probe atomic and nano-levels of nature and to test the foundations of quantum mechanics itself. Reed stated, "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. . ."

Reed speculates that "this hidden, essentially-unsuspected contextual aspect of natural laws, as exemplified by the dynamics underlying BEC structure" could help scientists account for anomalies that current paradigms don't explain—such as the claimed energy yields from low-energy nuclear reactions (LENR).

The SPESIF 2012 conference began with an overview of LENR by David Nagel, research professor at The George Washington University, titled "Science and Business Commerce Effects Expected from Low-Energy Nuclear Reactions." He reminded the audience that the LENR field was originally "and poorly" called cold fusion. It's increasingly exciting now, although still controversial and under-supported.

Nagel said, "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 database of experiments, LENR is not understood theoretically, Nagel said. Interest in this vibrant field has skyrocketed because energy generators based on LENR gained media attention in 2011, primarily through the Rossi experiments—even though the basic science underlying their excess heat output is not understood.

In a webcasted conference presentation remotely from Utah, Sterling Allan reported on his recent trip to Greece to meet with one of the companies announcing commercial LENR products. He met with representatives of Praxen Defkalion Green Technologies Global Ltd., who have begun testing an LENR device. Allan saw it running but wasn't at the test site long enough to evaluate it.

"Cold fusion is poised to make a huge impact in the world's energy sector. But it's not the only genre," Allan said. He estimates about ten breakthrough energy sectors, with multiple players in each grouping, are in the race to get to market first. Allan's website PESwiki.com began by rating top clean energy breakthroughs and is now focused on exotic energy developments—"those technologies that give college professors a coronary." His trip to Athens was an add-on to viewing an invention in South Africa.

Last fall Allan witnessed a half-megawatt demonstration



Plenary Speaker David Nagel

by Andrea Rossi of Italy, who claims the first commercial nickel-hydrogen fusion product, called E-Cat. However, the first successful nickel-hydrogen system harvesting energy at the atomic level was made in the U.S. by Randell Mills in 1991. A colleague of Allan owns a NASA Glenn Research Center report on 12 months of testing Mills' invention from that time. Allan said it showed an average of 160% over-unity (more energy output than the input could account for). Mills' BlackLight Power doesn't advertise with controversial words such as over-unity, but does claim its CIHT cell releases 200 times more energy from hydrogen than conventional fuel cells generate.

BlackLight Power takes pride in the independent validations of aspects of Mills' theory, and Defkalion also seeks scientific testing. Rossi, on the other hand, says he relies on future satisfied customers to validate his claims.

Defkalion was originally licensed to take Rossi's E-Cat to the world market minus the Americas, but Defkalion and Rossi's Leonardo Corporation split apart last August. Defkalion staff say they have developed their own nickel-hydrogen LENR approach. They have 35 people working full-time, between their office and their laboratory at a separate location, Allan reported.

Nagel, Allan and the conference's banquet speaker George Miley each commented on what Nagel called an Italian soap opera—the drama of personalities involved in high-stakes LENR intrigues with scientists, entrepreneurs and companies forming alliances, splitting apart in public divorces and then reinventing themselves.

Miley's respected and award-winning career has avoided that public fuss, instead focusing on teaching university students for 50 years and on contributing to new energy-source development and energy conversion technology. Now a professor emeritus at the University of Illinois, he has formed a private company, Nuclear Plasma Laboratories Associates Inc., to work toward future fusion devices.

Miley has also written his autobiography. The manuscript's working title refers to his search for a Black Swan—a game-changing sighting or a discovery like the light bulb, the automobile or nuclear fission. While deciding whether to use Black Swan as a metaphor, he viewed what he describes as a "terrible movie" with that title. Its protagonist is a ballerina who pirouettes between art and madness, try-

ing too hard to succeed. Miley saw a lesson for scientists: "Nina searched for her Black Swan of stardom, and in the process became so intense that she lost her balance. That's something that all of us searching for a Black Swan must avoid; we must learn to keep laughing and enjoying life as we zigzag along the path searching for our Black Swans [science breakthroughs]."

Miley spoke to the SPESIF audience about national energy policy issues and on challenges faced by the individual working on new energy sources like LENR or vacuum energy. In his own LENR work spanning more than 20 years, he had "some students and a great post-doc [graduate student] working on this, which is a real trick because we didn't have any money."

He sees mysteries of LENR as a materials problem that will be solved by good materials science. However, he worries about the future and looks to individuals for hope. He said, "Hopefully we can develop a collective vision despite the lack of a government energy or technology plan."

Paul Werbos in a dynamic webcast to the conference also expressed strong concern about the big picture, in "Energy Challenges Facing the Nation and NSF Initiatives." Werbos holds responsible positions with the National Science Foundation (NSF), National Space Society and other prestigious organizations. He told the conference, "I know a lot of you are interested in very fundamental long-term out-of-the-box ideas." Werbos revealed his own deep interest in out-of-the-box ideas and said if he were free for the month he would be full-time working on something really revolutionary.

However, Werbos stated, "right now we have emergencies in the world. There are new technologies that haven't been developed yet at an industrial scale but are good enough that we know they work, and if we can just get these new technologies online we would solve some life-and-death problems that could kill us if we waited for the long-term technology. So even us long-term people have to get on board and try to push the myopic people to solve the urgent problems—using proven technologies."

Werbos focused on two grand challenges—oil and electricity. The solutions he proposes include cutting the cost of plug-in hybrid cars and alternate liquid fuels, a truly intelligent grid, solar farms and advanced power electronics.

You can hear his information-rich general interest speech via a website link on the Integrity Research Institute website. Werbos' slides and all of the conference presentations are available there.

A senior scientist at the U.S. Department of Energy (DOE), Dave Goodwin received the 2012 Integrity in Research award at the conference, for excellence in recognizing and promoting research. Goodwin participated in the first Conference on Future Energy (COFE 1999) and was supportive of its host, Integrity Research Institute, at times when other officials' doors were slamming in the face of an organization that publicizes non-conventional energy science. Valone particularly cited Goodwin's role years ago in helping astrophysicist Saul Perlmutter on the path that eventually took Perlmutter to a 2011 Nobel Prize in physics. Although peer review they were receiving in 1995 for the idea of their experiment was negative, Goodwin facilitated a DOE grant that helped Perlmutter's team to find an answer to the question of whether the universe's expansion is decelerating or accelerating.



Thomas Valone presents David Goodwin with the Integrity Research Institute's "Integrity in Research Award."

In his presentation to the conference, "Proposed Dark Energy Experiment Using Fullerene," Goodwin proposed a "dark energy" experiment based on research funded by the DOE's Office of Science. He explained that accelerating expansion of the universe means that gravitational repulsion is greater than gravitational attraction of "all normal matter and all dark matter."

His first slide noted that dark energy accounts for about 73% of the total energy density of the universe and is measurable via the Lamb shift, so quantum fluctuations may be a source of dark energy, and measurements of acceleration don't match the theoretical estimate—the theoretical estimate is wrong by 122 orders of magnitude.

The experiment Goodwin proposes would replicate conditions found in deep space, and would use Fullerene—hollow molecules made of carbon—to make a Faraday cage to shield a semiconductor detector. Carbon nanotube field effect sensors may be used in the detection. The Faraday cage would eliminate interference from Earth's magnetic field. Goodwin says the experiment should be able to find out whether the dark energy spectrum has a frequency-cubed distribution, if there are resonances, and the spectrum's cutoff point. The hope is that such an experiment might lead to a method for extracting dark energy for use on Earth or in space.

The U.S. DOE is committed to understanding dark energy. DOE is spending \$160 million, and the National Science Foundation more than \$400 million, on a huge telescope in Chile to study what's out there in the universe.

Robert DeBiase of DeBiase Enterprises (Staten Island, New York) posed this question in the title of his presentation: Are Casimir forces conservative? The classical physics view of the Casimir effect involves an attraction between two neutral metal plates placed in a vacuum. There are two interpretations about the source of energy behind the effect. The first considers the source to be the zero-point fields in the vacuum of space between the plates. The second views the source of energy as coming from the potential energy of atoms in the bulk material of the plates. Neither view goes outside of the known laws of conservation of energy. His presentation revealed a "catch" in conventional thinking which ignores the local geometry of non-parallel plates. He concludes that it is not clear that the forces can be made conservative, and in general appear to be non-conservative.

Scientists have not been looking for asymmetric forces on asymmetric geometry, because the prevailing mindset is the "bulk view" of the origin of the Casimir effect. In that view there is no energy going in or out, so no place for an energy sink.

If energy is coming in from the quantum vacuum of space, the Casimir effect could be in an open system. DeBiase said, "A non-conservative force between plates of

asymmetric geometry could be harnessed for energy production and propulsion, and lends to experimental testing." DeBiase' suggestions for an experiment included materials with a corrugated geometry.

Thorsten Ludwig, working with the German Association for Space Power (GASE) and the Berlin Institute for Innovative Energy and Propulsion Technologies, is making progress in understanding how to build a successful replica of an historical invention, the Hans Coler "Magnetstromapparat"—a magnetic current apparatus. Coler was a German military captain who in 1933 built a circuit using magnets, coils and capacitors, with a resonance

which would tap an unknown source to light lamps. He had two related inventions and one was tested by well-known German professors, including W.O. Schumann. Documentation of details disappeared in a bomb attack. After World War II, Coler started building a Magnetstromapparat using material supplied by the British and working only in the presence of British intelligence officers, but he died of heart attack before completing the work. Integrity Research Institute offers for sale online the original 1946 "Invention of Hans Coler Relating to an Alleged New Source of Power" by British Intelligence Objectives Subcommittee with circuit diagrams and commentary.

Ludwig's report to the conference, "Coler Apparatus Tuning with Magneto-Acoustic Resonance," explained what he has learned so far about how to tune the acoustic, magnetic and electric resonance circuits of the Coler device. Ludwig concludes that "there is a strong connection between magnetism and quantum field zero-point energy."

Anthony Fresco (Melville, New York) presented two related topics. The first was "Propulsion Methods by Solute Ion Linear Alignment and by Closed Monopole Ion Injection Accelerator," and the second was "Dielectric Analysis for Torque of Solute Ion Coulomb Force Monopole Motor." He described a proposed motor based on an arrangement of solute ion electric field monopoles, and told how to capture the ions via carbon aerogel, form the

monopoles and arrange them on a disc to rotate a shaft.

His second analysis concludes that "net torque on the motor is greater than zero. . . The monopole motor connected to an electrical generator can provide electrical power. . ."

A possible use that has personal meaning for Fresco is "the motor could potentially be used to reduce the cost of construction and of power to a proton therapy center."

Fresco has at least two particle-acceleration concepts for propelling a space vehicle. His work has led him to speculate: Does haphazard unintentional linear alignment of deuterium or hydrogen ions contribute to the explanation of erratic results with low-energy nuclear reactions?

Osamu Ide of Clean Energy Research Laboratory, Tokyo, spoke about "Anomalous Power Efficiency of a Transformer



Robert DeBiase



Anthony Fresco

Driven by Tuned Duty Pulses.” He made an inverter which makes efficient use of what he calls positive EMF (electromotive force), caused by a well-tuned duty square wave. The power efficiency of the inverter prototype has been observed to be more than 300%, and easily exceeds 100%, he said. He reported on research and data indicating that “the power efficiency characteristics of a transformer itself to compose an inverter” is quite different from that of the total inverter unit, and other discoveries. “Energy is flowing out even from the input terminals of the primary coil of the transformer. . .due to the phase difference between voltage and current of the primary coil of the transformer.”

Other talks delivered at the conference included Hamilton Carter’s “Podkletnov Effect Experiment Replication.” Carter, a graduate student at New Mexico State University, seeks funding for a project that would replicate the 1992 experiment



Hamilton Carter

in which Eugene Podkletnov reported the weight of an object directly above a rotating superconducting disk was decreased. Podkletnov had concluded that the superconducting disk was shielding the Earth’s gravitational force above it. Carter and colleagues plan to rotate the superconductor via stator coil magnetic fields.

Judy Kosovich is a lawyer who worked with the Department of Energy and is now involved with laws and regulations that affect the practice of “energy medicine.” In her speech, “The Federal Regulation of Energy Medicine,” she gave a definition of it as the intentional stimulation of the body in order to affect the flow of energy, *e.g.* by removing blockages or to increase overall vitality. Practitioners of it are more likely to use devices than drugs. After listening to the presentations about challenges faced in the alternative energy sector, Kosovich observed that the experience of the energy medicine field isn’t much different. Among challenges she cited were: lack of cohesion among practitioners, inaccurate and slanted entries in Wikipedia and the political influence of concentrated financial interests.

The University of Maryland contributed several speakers: Ekaterina Pomerantseva works with the Department of Electrical and Computer Engineering and has received multiple professional awards including recognition from the Russian Academy of Science. Her talk had an unusual title, “Tobacco Mosaic Virus Nanotemplates for Next-Generation Energy Storage Microdevices.” She explained that microbatteries are essential to managing power in systems such as wireless microsensors and miniature medical implants. However, miniaturization of energy storage—batteries and supercapacitor electrodes—hasn’t kept pace with the evolution of other aspects of her field of microelectromechanical systems (MEMS) technology. The complex three-dimensional shapes of tobacco mosaic viruses may help solve the problem by providing more surface area in the storage devices. Her slides showed how the researchers modify the viruses to enhance properties such as metal binding, and how the virus self-assembles on a substrate before being activated with a palladium catalyst and coated with nickel. Pomerantseva’s slides depicted how to deposit atomic layers of metals on

these complex nanostructures. The technology is compatible with a variety of energy storage materials.

Chia-Yang Chiang, from the Department of Chemical and Biomolecular Engineering, proposed a way to get energy from sunlight and water. Her talk, “Copper Oxide Nanoarchitectures for Photochemical Hydrogen,” dealt with a photoelectrochemical (PEC) cell—a device that drives an uphill chemical reaction using solar-energy photons. Solar energy is stored as chemical potential energy in the reaction products. Looking for low-cost and large-scale production of hydrogen, she advocated environmentally benign materials that are abundant on Earth.



Chia-Yang Chiang

With most renewable energies more expensive than carbon fuels, what could accelerate the changeover to a clean energy future? University of Maryland assistant professor Qingbin Cui replies, “think outside the box” to make renewable energy reliable. In his presentation, “Financing and Developing Renewable Energy Projects,” he used “solar highway” (solar panels at highway interchange areas) projects in Oregon as an example and discussed features of power purchase agreements, renewable energy certificates, energy-saving performance contracts and carbon credits.

Charles Lunquist’s slide presentation whetted listeners’ appetites for the science and science fiction of Robert L. Forward. Lundquist, from the University of Alabama Huntsville, sees Forward’s fiction as grounded on sound scientific principles. From 1980 through 1997 Forward wrote and published a dozen sci-fi novels and during the same time he produced many scientific papers, including one for the military on the basic principles of the quantum vacuum.

This reporter had to leave to catch a ride before the conference’s end, and missed Phil Bouchard’s slideshow “Finite Theory of the Universe, Dark Matter, Faster-than-Light Speed,” and also missed Curt Renshaw’s paper on “Galileo-Newtonian Relativity.”

The last presentation recorded in this reporter’s notes was titled “Diffraction from Embedded Reflectors in Li-Baker HFGW Detector.” R. Clive Woods of Louisiana State University admitted it was a rather technical aspect of detection of gravity waves and proposed a fairly simple design. He had prepared his presentation with the expectation that a number of experts on his specialty would be in the audience. “And unfortunately I found out that I am the high-frequency gravitational wave expert.” The audience seemed to take that as wry British humor rather than condescension. The presentation and paper can be viewed as an advancement in the field of gravity wave detection.

Tom Valone’s speeches have the warmth of a chat with a trusted friend, and an expansive worldview. These notes on his talk are saved for last because they lead back to the beginning of this article—reasons to attend a conference in person. Valone as MC and as a speaker shared a wealth of personal stories as well as glimpses of new and rediscovered technology.

In one anecdote, he had attended a lecture by an official

from the National Reconnaissance Office (NRO), a U.S. intelligence agency that builds spy satellites. The lecturer didn't answer Valone's questions, so Valone followed him out of the room while asking if the official would help get the technology under discussion declassified. Futuristic propulsion and energy-related technologies have already been developed but kept under military secrecy for too many years, Valone has learned. He holds documents and photos that reinforce his point.

The NRO official, Deputy Director Bennet Hart, said, "Technology like that keeps increasing in classification level until it's out of sight. It's easier for us to get a private contractor to reinvent it. . ." Valone's comment was, "You're asking taxpayers to pay for it twice!"

Valone's SPESIF 2012 speech was on "Electrokinetics as a Propellantless Propulsion." He recently updated his electro-

gravitics books, found on IntegrityResearchInstitute.org and available via *Infinite Energy*.

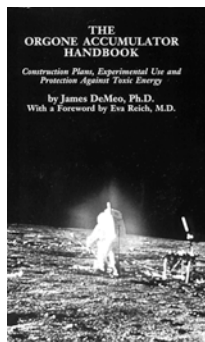
The speakers' stories give insights into not only technical matters, but also human foibles, the politics of energy and hope for a clean energy future. It was worth the travel to be there.

About the Author

Jeane Manning is an award-winning author who recently published a new print edition of her co-authored book *Breakthrough Power: How Quantum-leap New Energy Inventions Can Transform Our World*. It can be ordered from your local bookstore or via <http://BreakthroughPower.net> and online e-bookstores. Follow Jeane's blog at: <http://changingpower.net/>

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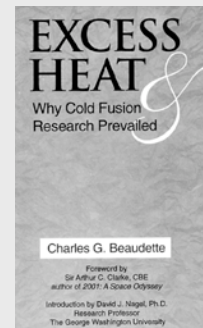
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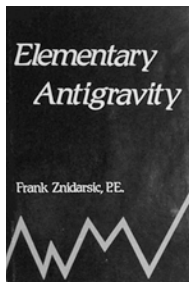
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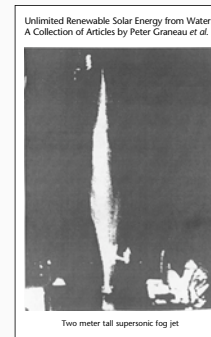
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