Notes on Quest for Zero Point Energy Engineering Principles for "Free Energy" Moray B. King

In the book *Gravitation* by Misner, Thorne, and John Wheeler, Wheeler's theory of geometrodynamics is discussed. The fabric of empty space is described as a quantum foam of fluctuating electric fields at an energy density of 10 to the 94th g/cm3 [p 9]

today's physics might allow tapping virtually limitless quantities of energy by merging theories of ZPE and theories of self- organization.... The real issue is how the random ZPE fluctuations could become coherent. [p 13]

Ila Prigogine won 1977 Nobel Prize in chemistry for defining the conditions under which a system could evolve from randomness towards coherence. The conditions are: far rom equilibrium; non-linear dynamics, and have an energy flux through it. It turns out that ZPE can, under certain circumstances, fulfill these conditions.... [p 14]

The term zero point refers to zero degrees kelvin, which means this energy exists even in the absence of all heat.... Dirac showed how an electron positron pair production could arise from vacuum fluctuations, and quantum-electrodynamics was born... The Heisenberg uncertainty principle allowed QM systems to "borrow" this energy for brief periods. The ether came back into science not as a substance, but as a randomly fluctuating energy. [p 15]

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 anomalous heating. TH Moray stressed the importance of ion oscillations in the plasma tubes of his invention that produced 50 kw of anomalous electrical power in the 1930s. [p. 17]

Another experiment where coherent oscillations of nuclei could be the source of anomalous heat is the electrolytic "cold fusion" experiments of Pons and Fleischmann.... The difficulty in repeating the heat anomaly may have to do with the difficulty of achieving supersaturation, and failing to use pure crystalline palladium. Nonetheless, this is probably the first repeatable experiment in which at least some other researchers were able to produce an energy anomaly. [p. 17]

Russian Chernetskii claims that he has created a plasma device that absorbs ZPE when the plasma's particles undergo cycloid motion. Energy producing inventions by Searl, Spence, and Papp also have cycloid particle motion of plasma... Ball lightning is a candidate for ZPE interaction, because it has been modeled as a vortex ring plasmoid whose particles undergo precessional cycloid motion. cycloid motion within ferrites used by free energy devises of Coler & Sweet [p 18.]

The expectation of gravitational anomalies associated with coherence of ZPE arises directly from general relativity. Gravity is described as curvature of space-time induced by the stress energy tensor. If the ZPE has an enormous energy density, then even a small coherence could produce measurable gravitational anomalies. [p. 19]

Boyer (1975) shows how the blackbody radiation spectrum as well as other quantum events is attributed o the ZPE. Senitsky (1973) has suggested that an elementary particle's very existence is intertwined with the ZPE. Puthoff (1987) has shown that the hydrogen atom's stability is due to a ZPE interaction which prevents the electron from collapsing into the nucleus. Puthoff (1989) has also shown how gravity can be derived from the action of the ZPE, and recently Haisch, Rueda and Puthoff (1994) have shown that the ZPE could be the basis of inertia as well. There have also been proposed ZPE models for the photon and electron. ZPE might well be the primary underpinning of all physics. [p 30]

Forward (1984) invented a simple battery based on the Casimer effect. Casimer predicted and experimentally demonstrated that the zero point fluctuations induced a 1/d**4 attraction between two parallel conductive plates. Forward's battery uses charged foils whose spacing is so thin that the 1/d**4 attraction overcomes the 1/d**2 Coulomb repulsion and results in a DC current output. This proved in principle, that the ZPE can be tapped as an energy source. [p. 31]

surprising stability of high charge density electron beads discovered by Ken Shoulders, called "electrum validum". Shoulders states that energy output greatly exceeds the energy input to create them. These beads appear to be a self-organized structure akin to ball lightning or toridal plasmoids [p. 31]

The greatest ZPE coherence may arise in experiments creating a vortex or processional flow. [p 39]

Another method for cohering ZPE involves abruptly bucking EM fields. When EM fields are in perfect opposition, the field vectors cancel. However, there still exists a stress in the fabric of space and it manifests as a scalar EM potential. Aharonov and Bohm (1959) have shown that the EM potential affects the phase of the quantum mechanical wave function associated with elementary particles. Bearden (1986) has emphasized that the resultant stress is actually a coherence in the ZPE and can propagate as scalar waves. [p. 41]

Quantum electrodynamics (QED) shows how the various elementary particles interact with the ZPE via vacuum polarization Electrons exhibit random polarization where the electron cloud is in equilibrium with the ZPE fluctuations, so normal electron circuits would not experience any ZPE interaction. [p 52.] On other hand, atomic nuclei exhibit orderly vacuum polarization. Abrupt or helical motion of these nuclei induce a cohering effect on the ZPE. In the 1930s, TH Moray introduced a 50KW energy machine that relied on ion oscillations in plasma tubes. Also, "cold fusion" experiments invoke coherent nuclei motion [p 53.]

Vortical motion of plasma nuclei appear to produce even bigger effects. Reed has overviewed vortex theories in the physics literature and has concluded a particular form known as the "force free vortex" is a likely candidate for maximizing ZPE interaction.

The force free vortex arose originally in hydrodynamics and is described by the equation:

del cross v =k v where v =fluid velocity vector, and a= constant.

The curl of the flow is in the same direction as the flow itself.. The name "force free" applies because a fluid can spiral in this manner without being constrained by an external force. The curl equation gives rise to a set of helical solutions where the pitch is fixed but radius may vary. solutions are allowed where the radius gradually shrinks and the velocity increases. [p. 54] Reed also notes the force free vortex occurs in plasma electrodynamics and is described by the curl of the magnetic field B:

del cross B = kB

Ball lightning has been modeled as a vortexring plasmoid, and its anomalous persistence may be indicative of a coherent ZPE interaction.

The logarithmic spiral may be a good candidate for a single solution of the force free vortex. This spiral is based on the ratio of the golden mean phi=1.618, and has a fractal characteristic in that geometric forms imbedded within the spiral maintain their shapes.[p. 55]

Perhaps the most unusual energy anomalies associated with the vortex experiments were claimed by Schauberger. He pumped water through a pipe that was twisted into helix whose cross section was also shaped to induce the water to undergo a second order precessional spin as it flowed through the pipe towards the vortex tip. During high speeds, he claims to have experienced energy gain, and observed a bluish glow around the apparatus.

When water is excited by ultrasonics, it emits a bluish flow called sonoluminescence. Barber and Putterman have shown that the phenomena represents an energy amplification on the order of 100 billion. Nobel laureate Schwinger (1993) has proposed a ZPE interaction to explain the anomaly [p. 56]

A ZPE coherence might also be triggered in highly stressed polarized dielectrics.

When a crystal is cracked, it can sometimes manifest a persistent plasmoid form akin to earthquake lights. Preparata has noted fracto-emission can yield highly accelerated electrons, as well as light emissions which can persist for hours.

Shoulders has discovered a micron sized charged plasmoid which can persist indefinitely on a dielectric surface that he calls electrum validum. [p 57]

Another method that might cohere ZPE is to induce a semi-vortical motion by abruptly twisting a crystalline lattice.

Sweet appears to use lattice twisting in the barium ferrite magnets of his solid state energy invention known as the "vacuum triode amplifier" (VTA) [p. 58] When running, it looses weight. Wheeler's (1962) geometrodynamics shows there is an intimate connection between the ZPE, gravity, and the curving space time metric. Likewise, Puthoff suggests that the basis of gravity is the ZPE itself. [p 61]

Caduceus coils [p 61]