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A SONO-EM MECHANISM FOR FUSION ENGINEERING

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Sonoluminescence and bubble fusion [1] may be very useful in a world where fossil fuel reserves are known to have a finite useable lifetime. Prior to WWII, pulsing sound waves in a liquid medium was known to induce flashes of light. Lahey [2] states these light pulses are due to shock wave heating of the highly compressed gas/vapour to incandescent temperatures and applies fluid dynamics to investigate how thermonuclear fusion might arise. Bubbles in liquids can implode via sound waves causing high temperatures and pressures similar to those inside the sun. At present bubble fusion is not well understood and scepticism remains due to a lack of a convincing theoretical basis. An analogous effect to sonoluminescence known as Cherenkov radiation [3] is seen as a faint glow due to the effect of radioactivity in liquids. This effect indicates a synergy between the photon and the phonon. Likewise, in addition to the therapeutic use of electromagnetic (EM) radiation [4] to treat cancer, acoustic energy can be used to treat a potentially wide range of medical diseases and injuries [5]. In this acoustic application a discrete deposition of energy within the cells of various biological tissues triggers parts of the cell cycle inducing replication of healthy tissues or apoptosis of ailing tissues.

Self-field theory (SFT) (6),[7][8], was recently used to investigate the EM self-field interactions inside the hydrogen atom and the self-fields of a photon of non-zero mass. Using physical spinors to represent the particles and fields, the Maxwell-Lorentz equations yield analytic eigenvalue solutions for the discrete energy levels within the atom and the photon. This leads to a 'photon chemistry' in which compounds of the ordinary photon appear as various fields in regions where the energy density permits these higher photonic compounds to exist. One stoichiometric equation is the reaction between photons and phonons of like frequency. These form into gluons of similar dynamics. In regions where phonic and electromagnetic fields exist, the resultant gluons may provide an environment where fusion can occur. The application of sono-electromagnetic applicators into the axisymmetric design of fusion reactors such as the tokomak may result in a reduction of the size of reactor and the energy input needed to produce an efficient fusion mechanism.

References

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