INDIRECT EXTRACTION OF ZERO-POINT ENERGY FROM THE QUANTUM VACUUM: PATENT 7,379,286

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We propose to indirectly tap a new source of energy, potentially greater than nuclear, well known in quantum physics but considered by physicists not to be useful since it cannot be directly accessed. Zero-point energy is a well established concept originally proposed by Planck and Einstein in 1913. Later it was shown to arise in quantum physics from the Heisenberg uncertainty principle. It has a number of well-known effects. For example, zero-point energy prevents helium from solidifying under normal pressure even at absolute zero temperature. It can also be detected as quantum noise in circuits.

We investigate the feasibility of accessing this zero-point energy source indirectly by capturing electromagnetic energy emitted by transient changes in energy levels of electron orbitals, due to interactions of atoms (preferably monatomic noble gases) with the quantum vacuum field while cycling through Casimir cavities. We would induce shifts comparable in principle to, but larger than, the well-known Lamb shift, by suppressing quantum vacuum field modes within the Casimir cavities. The "Lamb shift," a well explored mainstay of quantum electrodynamics, consists of a shift in the energy levels of electron orbitals, resulting from an atom's interaction with quantum vacuum fluctuations. Recent experiments have shown that Lamb shifts can be controlled and enhanced. It is likely that electron orbital shifts analogous to (but not identical with) Lamb shifts can be induced by moving atoms under modest pressure through Casimir cavities, due to suppression of some wavelengths of quantum vacuum fluctuations in Casimir cavities. This orbital shift should produce emission of electromagnetic energy (photons) as the atoms enter the cavities. We refer to the shift so induced as the "Casimir-Lamb shift." As the moving gas atoms leave the Casimir cavity, the Casimir-Lamb shift would be reversed due to absorption of electromagnetic fluctuations from the ambient quantum vacuum field, without violating the second law of thermodynamics.

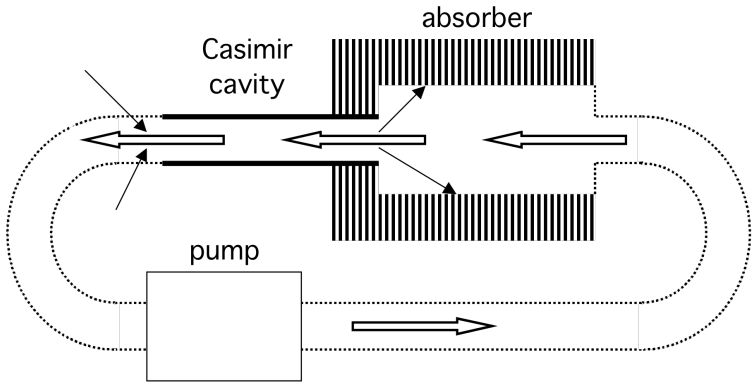

FIGURE – Depiction of approach to tap ambient zero-point fluctuations. As gas enters the Casimir cavity and undergoes a Casimir-Lamb shift, Larmor radiation is emitted, shown as small arrows pointing outwards. The radiant energy is absorbed and extracted. When the atoms exit the cavity the shift is reversed due to absorption from the ambient zero-point field, shown by the inward pointing small arrows