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Casimir's effect and unknown neutrinos

Another interpretation of the experimental measurements

Heinz-Joachim Ackermann

[1] xxx, Germany

[2] Email address: ccc@gmx.de

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Abstract. Casimir's effect seems to prove quantum theory by hypothetical virtual particles' fluctuations. As side-effect, it may be possible that Casimir's effect has discovered a new feature of neutrino pairs.

PACS. PACS-key Casimir's effect – PACS-key proton neutrino

1 Introduction

Quantum theory explains vacuum to be a state of virtual particles fluctuating between formation and annihilation following an interpretation of Heisenberg's uncertainty. These processes would be proved by the experimental Casimir's effect. During the experiment, both the metal plate and the metal sphere are pressed together starting at the separation of $\Delta r = 1 \times 10^{-5}$ m proved by measurements down to 6×10^{-7} m (Mueller [?]). Consequently, the present interpretation leads to the following knowledge. The amplitude Δr between the surfaces is too small to proceed the interactions of the hypothetical vacuum corpuscles which would be forming and annihilating themselves there. However, these particle pairs would interact then at the outer walls of the metal surfaces and push them together.

2 Another feature of neutrinos

Especially, the amplitude Δr distinguishes about the kind of the corpuscles. However, the assumption is possible that the initial pressure at the initial separation between the plate and the sphere shows the first kind of the formation energy equivalent of the virtual particles. This way, the amplitude of the interacting particle pairs is limited by the initial distance Δr between the surfaces.

The pressure has begun at $\Delta r = 1 \times 10^{-5}$ m. Observing that separation Δr at which the force starts acting, the increasing force at smaller distances may not have the primary relevance anymore. The threshold Δr requires the complete attention where the pressure starts.

The particles' formation energy is twice the energy of the resting particles. Consequently, the formation amplitude at Δr is half the amplitude $r/2$ of a resting corpuscle.

A lot of elementary corpuscles are known. But what hypothetical vacuum particle should it be whose interaction is prevented from particles' formation by the initial separation Δr of 10^{-5} m? Firstly, there is the electrostatically determined radius of an electron of about 2.8×10^{-15} m. Secondly, the radius of a proton is about 1.3 fm (1 fm = 10^{-15} m) (Rennert, Schmiedel, Weissmantel [**?**]). Unstable particles are derived from stable particles. Their masses are heavier, and their radii respectively their amplitudes are smaller. The difference between the threshold separation of 10^{-5} m and the necessary distance of 10^{-15} m is at least the factor of ten billion! Consequently, it seems to be the question if one already watches vacuum protons or vacuum electrons at Casimir's experiment while the present conditions are realized. To observe these virtual particle pairs, the distance between the plate and the sphere has to be smaller than 10^{-15} m before a force of vacuum interactions would be noticed.

The supposition seems to be justified that an unknown elementary particle without electric charge – a new neutrino type of stable feature – was discovered at the threshold of Δr. Neutrino pairs' formation and annihilation primarily would cause that kind of Casimir's effect. The separation Δr was half the amplitude $r/2$ of this neutrino type at its formation temperature. The amplitude r of the cold neutrino has to be two times Δr, approximately $r = 2 \times 10^{-5}$ m.

These neutrinos may take part in the energy transmission among particles. Comparing the energy difference with the distance Δr from Casimir's experiment, there was the formation energy of about 0.02 eV respectively the formation temperature of about 250 K. The suggested name of the predicted type of neutrinos is *proton neutrino*.

3 Conclusions

1. Continuously, the environment warmer than the balanced temperature of 250 K would produce proton neutrino pairs and annihilate them successively in the colder environment.
2. Every celestial body was wrapped by a proton neutrino cloud taking energy away to the sphere below of 250 K where more proton neutrino pairs annihilate.
3. Proton neutrino pairs may be the symmetrical end of all the particle interactions of weak interaction.
4. Proving the conception of proton neutrinos, Casimir's effect has to be measured in comparison of both experiments under normal laboratory conditions in vacuum and under cold and shielded conditions. When proton neutrino pairs would push the plate and the sphere together in the cold isolation at the distance of 10^{-5} m, the pressure would be decreasing next to zero when no proton neutrino pair is interacting there.

References

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