Abstract Submitted
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Neutrino Masses and Cosmic Ray Energies below the GZK Cut-Off[1] FRIEDWARDT WINTERBERG, University of Nevada, Reno — In the seesaw hypothesis the small neutrino mass is related to the very large mass of the order 10^{27} eV (GUT mass), far above the GZK cut-off for cosmic rays. Here we propose that the vacuum of space is a Planck mass plasma of positive and negative Planck mass particles [1]. In this hypothesis Dirac spinors of mass m are composed of gravitationally bound very large positive and negative masses, $m^{\pm} = (mc/2G)^{1/3}$ (G, gravitational constant) [2]. For the neutrino mass m = 0.06 eV, one has $m^{\pm} \approx 2 \times 10^{18}$ eV, located near the minimum of the ankle for the cosmic ray spectrum. This is just below the GZK cut-off, where the incoming cosmic radiation would resonantly interact with a neutrino dark matter background, showing in the depression of the cosmic ray spectrum at this energy. [1] F. Winterberg, Z. Naturforsch. **58a**, 231 (2003). [2] H. Hönl and A. Papapetrou, Z. Phys. **114**, 478 (1939).

[1]Neutrino Masses and Cosmic Ray Energies below the GZK Cut-Off

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