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Vacuum Structure and Dynamics; Particle Formation J.X. ZHENG-JOHANSSON, IOFPR, SWE, P.-I. JOHANSSON, Uppsala Univ, SWE — We model the vacuum as filled of neutral vacuuons, each consisting of a p- vaculeon of charge +e at the core and an n- vaculeon of -e on the envelope, mutually bound with a Coulomb energy $\sim 10^6$ J. The model is derived based on overall experimental observations. In particular, as shown in the pair annihilation $e^- + e^+ \rightarrow \gamma + \gamma$, the two emitted γ rays carry the energy ($2M_e c^2 = 1022$ keV) converted from the mass $2M_{e^-}$ of e^- and e^+ only, whilst the Coulomb potential energy $V = -\frac{e^2}{4\pi\epsilon_0 r_0}$ between their charges $+e$ and $-e$ separated at r_0, are not released. Energy conservation requires V and its certain carriers must remain in the vacuum after the annihilation. The afore-modeled vacuum will be polarized by the static field of an external charge, induced with a shear elasticity, and thereby able to propagate the disturbances of the charge's accelerating movements as transverse elastic waves—whence the electromagnetic waves. We have given a systematic representation of the statics and dynamics of this vacuum based on classical equations of motion and solutions (JXZJ & P-IJ, *Unification of Classical, Quantum and Relativistic Mechanics and the Four Forces*, Fwd Prof R Lundin, Nova Science, NY, 2005). The solutions in particular yield a basic material particle, like an electron, proton, etc, formed of a massless oscillatory charge and its resulting electromagnetic waves in the vacuum, having the overall observational properties of the basic material particles.

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