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Theory of Bilocalism and Reciprocity between Space-Time and Matter ERNEST EUN HO SHIN, Chestnut Hill Institute (Formerly Yulsan Research Institute, a division of Yulsan America Inc.) — One important physics that has been overlooked if not ignored in the transition from classical mechanics to quantum mechanics is the bilocalism, which states that in the most fundamental quantum regime where the genesis of fundamental particles takes place, the center of mass (MP) as a point-like physical entity is separate and distinct from the point-like proto-particle (PP) whose motion generates the mass. The existence of bilocalism and also that of the internal space-time whose existence it implies derive naturally from the known structural and transformation properties of space-time, and, therefore, need not be merely axiomatic. Here, the superluminal connection between the two point-like entities insures the system integrity as a single particle. Photons are no exceptions to the bilocalism, and can have non-zero mass values without violating the Special Theory of Relativity. In the bilocalized version of the “mass-less” gauge-invariant Lagrangian of the Standard Theory, the mass term has always been present albeit implicitly and in its generic form, thus making it unnecessary to introduce an extraneous term such as the Higgs. The gauge-invariant generic mass operator replaces the Higgs mass term of the Standard Theory, and yields the reciprocity spin $1/2$ doublets for the ground-state solutions with their nontrivial mass values, which are identified with the weak isospin $1/2$ doublets. Additionally, there are some implications of particular and immediate interest to cosmology.

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