Entangled Double-Helix Superluminal Composite Photon Model Defined by Fine Structure Constant

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Two spin-½ charged half-photons, each composed of one helically-circulating electrically-charged superluminal energy quantum, compose a double-helix photon model of diameter $D = \lambda / \pi$ where λ is the photon's wavelength. The opposite electric charges Q and $-Q$ on the two superluminal energy quanta are calculated to have magnitude $Q = e \, \text{sqrt}(2/\alpha) = 16.6e$ where $\alpha = 1/137.04$ is the fine structure constant of quantum electrodynamics (QED). The two charged half-photons are quantum mechanically entangled, creating the unity of the single composite photon model. The composite photon model suggests a mechanism for electron-positron pair production, while the predicted charges Q and $-Q$ provide a strong experimental test of this composite photon model.