A New Approach to the Quantum Entanglement according to the Theory of the Harmonicity of the Field of Light

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Abstract: Werner Heisenberg's well known requirement that Physical Science ought to occupy itself solely with entities that are both observable and measurable, is almost universally accepted. Starting from the above thesis and accepting Albert Einstein's second fundamental hypothesis, as stated in his historical article "*On the Electrodynamics of moving Bodies"*, we are led to the conclusion that the kinematics of a material point, as measured and described by a localized real-life Observer, always refers not to its present position but rather to the one it occupied at a previous moment in time, which we call Conjugate Position, or Retarded Position according to Richard Feynman. From the experimenter's point of view, only the Conjugate Position is important. Thus, the moving entity is observed and measured at a position that is different to the one it occupies now, a conclusion eerily evocative of the "shadows" paradigm in Plato's Cave Allegory. This, i.e. the kinematics of the Conjugate Position, is analytically described by the "Theory of Harmonicity of the Field of Light". Having selected the Projective Space as its Geometric space of choice, an important conclusion of this theory is that, for a localized Observer, a linearly moving object is possible to appear simultaneously at two different positions and, consequently, at two different states in the Observer's Perceptible Space. This conclusion leads to the formulation of at least two fundamental theorems as well as to a plethora of corollaries all in accordance with the notions of contemporary Quantum Mechanics.

Keywords: Geometrical Space, Projective Space, Perceptible Space, Conjugate Position, Theory of the Harmonicity of the Field of Light, Harmonic Cross-Ratio, Conic Sections, Quantum Entanglement.