

Projective Geometrical Space, Duality, Harmonicity and the Inverse Square Law

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Abstract: Having adopted the fundamental distinction between Perceptible space and Geometrical space, we select the Projective space as Geometrical space of choice for the description of the correlations between the natural world's elements. This description is attempted by the Theory of the harmonicity of the field of light, which always introduces a localized observer or a scientific instrument. As the speed of light is finite, the results of our observations and measurements of a linearly moving element of matter always refer not to its present position, but rather to a previous one, which we call Conjugate position, (the "shadow" in the Plato's Allegory of the Cave). In the Projective Geometrical space the Conjugate positions, in a linear motion, are two which are harmonically connected through the observer. As a consequence of the axioms of the Projective geometry these Conjugate positions are both accepted. Moreover those axioms introduce automatically the Principle of Duality of the Geometrical space's fundamental elements, which leads to the well known Duality in Physics. A result of the Geometrical Principle of Duality is the Inverse square law in the Gravitational field, as well in the Electric field. Thus, this work produces the Inverse square law from First Principles.

Keywords: Projective space, Localized observer, Conjugate position, Harmonic cross-ratio, Theory of the harmonicity of the field of light, Duality, Inverse square law.