

Derivation and Experimental Proof of the Universal Force

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Abstract. Three key arguments from metatheory (the theory of theories) are presented to show that the current pillars of modern physics, i.e. electrodynamics, quantum mechanics, and relativity theory are incomplete and incompatible with one another. These theories were developed under the philosophy of Existentialism which is based upon idealizations instead of reality. This work shows how to perfect the union of the axiomatic and empirical scientific methods in order to derive an improved version of classical electrodynamics based upon finite-size charged particles with interior structure instead of idealized point particles and conservation of energy with an energy potential instead of the idealized vector potential. The derivation of the universal electrodynamic force and its associated field is obtained by properly combining the axiomatic and empirical scientific methods following the rules given in Isaac Newton's Mathematical Principles of Natural Philosophy. This universal force gives rise to improved versions of the electrodynamic force. From the improved version of electrodynamics are derived improved versions of the gravitational force and the inertial force which are supported by significant experimental evidence. Improved models of elementary particles, atoms, nuclei, and molecules are presented with supporting evidence. Finally evidence for the unique symmetry of the universal force is found on all size scales in the universe including elementary particles, atoms, nuclei, molecules, crystals, plant leaves, plant flowers, plant seed pods, animal body structures, orbits of the planets about the sun, structure of the Milky Way galaxy, and the overall structure of the universe from redshift data.