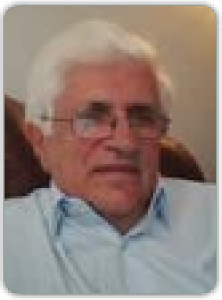
Eliade Stefanescu, J Phys Chem Biophys 2018, Volume 8
DOI: 10.4172/2161-0398-C2-030

4th International Conference on Physics

September 17-18, 2018 | Berlin, Germany



Eliade Stefanescu

Institute of Mathematics of the Romanian Academy, Romania

Matter dynamics in a unitary relativistic quantum theory

In a previous paper, we showed that the Hamilton equations of motion of a quantum particle are obtained as group velocities of the wave packet describing this particle only if the time dependent phase of a particle wave is proportional to the Lagrangian, not to the Hamiltonian as in a solution of the conventional Schrödinger equation. When a Lagrangian of relativistic form is considered, the wave packet of a quantum particle takes a physical form, with a finite spectrum of a cut off velocity (c). Based on a relativistic quantum principle, asserting the invariance of the time dependent phase for an arbitrary change of coordinates, we obtained the relativistic kinematics and dynamics, the electromagnetic field equations, the spin and the electromagnetic and gravitational interactions. When the Lagrangian is considered as a function of the Hamiltonian, we obtain a Schrödinger type equation with an additional term depending on the velocity and the momentum operator. Based on this equation, we investigate the dynamics of a relativistic quantum particle. In this framework, such a particle is described as a continuous distribution of conservative matter, according to the general theory of relativity. In an electromagnetic field, any time dependent phase variation is modified with a term proportional to a vector potential conjugated to the spatial coordinates and a scalar potential conjugated to time. In a gravitational field, the time space coordinates are deformed. In such a field, any plane wave remains perpendicular on a geodesic, while an additional acceleration is possible in the wave plane.

Biography

Eliade Stefanescu completed his graduation from Faculty of Electronics, Section of Physicist Engineers in 1970. He is a Doctor in Theoretical Physics, Senior Scientist I at Advanced Studies in Physics Center; Titular Member of Academy of Romanian Scientists and Member of American Chemical Society in the Division of Physical Chemistry – Subdivision of Energy. His research interests include open quantum physics with applications in theoretical and condensed matter physics and nuclear physics. He is known for a microscopic theory of open quantum systems; the invention and a detailed description of a system converting environmental heat into usable energy and a unitary relativistic quantum theory.

eliadestefanescu@yahoo.fr

Notes: