Contribution ID: **58** Type: **not specified**

# General Covariant Dirac Equation

*Tuesday, 5 September 2023 17:10 (20 minutes)*

All attempts to include the original Dirac equation into the frameworks of the Principle of General Covariance and to obtain observable results have failed. It was shown that the Dirac field does not interact with the gravitational field (see for example:{S. Weinberg.} Gravitation and Cosmology: Principles and Applications of the General Theory of Relativity, Wiley, New York, 1972. 685 p.;{Kenji Hayashi and Takeshi Shirafuji,}// { Phys.Rev.},{\bf D19}(1979),3524-3623.) But this in conflict is with experiment ({F.C. Witterborn and W.M. Fairbank,}// { Phys.Rev.Lett.},.{\bf 19}(1967),1049-1052.)

Hence, it is very important to bring the concept of Spin into correspondence with the Principle of General Covariance. This problem has solution in a form of General Covariant Dirac equation. Particles that correspond to different states of a general covariant Dirac field can be called inelectrons.
It is demonstrated that these particles are characterized by the Spin and the electrical charge in one case and the Spin and two charges (electrical and dual ) in another case. An operator of the electric charge anticommutes with an operator of dual charge. This provides existence of four internal states of the general covariant Dirac field. The transitions between these internal states are in current physics considered as electroweek interactions. We can conclude that to discover new physics it is enouph to put all invented by the observers notions into correspondence with the Principle of General Covariance.

**Primary author:** PESTOV, Ivanhoe (Bogoliubov Laboratory of Theorewtical Physics, JINR)

**Presenter:** PESTOV, Ivanhoe (Bogoliubov Laboratory of Theorewtical Physics, JINR)

**Session Classification:** Parallel B