

The Relationship between the Speed of Light and Cosmic Background Potential

Authors : Youping Dai, Xiping Dai, Xiaoyun Li

Abstract : In this paper, the effect of Cosmic Background Gravitational Potential (CBGP) was discussed. It is helpful to reveal the equivalence of gravitational and inertial mass, and to understand the origin of inertia. The derivation is similar to the classic approach adopted by Landau in the book 'Classical Theory of Fields'. The main differences are that we used $CBGP = \Lambda^2$ instead of c^2 , and used CBGP energy $E = m \cdot \Lambda^2$ instead of kinetic energy $E = (1/2)m \cdot v^2$ as initial assumptions (where Λ has the same units for measuring velocity). It showed that Lorentz transformation, rest energy and Newtonian mechanics are all affected by Λ , and the square of the speed of light is equal to CBGP too. Finally, the top value of cosmic mass density and cosmic radius were discussed.

Keywords : the origin of inertia, Mach's principle, equivalence principle, cosmic background potential

Conference Title : ICCTP 2015 : International Conference on Computational and Theoretical Physics

Conference Location : London, United Kingdom

Conference Dates : August 20-21, 2015