

Neutrino spin oscillations in gravitational fields in higher dimensions

Neutrino physics is one of the most active fields of research with important implications for particle physics, cosmology and astrophysics. On the other hand motivated by some theories including string theory, formulation of physical theories in more than four space-time dimensions has been the subject of increasing attention in recent years. Interaction of neutrinos with gravitational fields is one of the interesting phenomena which can lead to transition between

different helicity states (spin oscillations). Neutrino spin oscillations in Schwarzschild, RN and Kerr backgrounds have been studied in [1,2]. In this work we study neutrino spin oscillations in gravitational fields in higher dimensions. We calculate the transition probability as a function of time and also study the dependence of the oscillation frequency on the orbital radius. The results help us to better understand the behavior of gravity and neutrinos in higher dimensions.

[1]. M. Dvornikov, *Int. J. Mod. Phys. D***15**, 1017 (2006); arXiv: hep-ph/0601095.

[2]. S. A. Alavi, S. F. Hosseini, *Gravitation and Cosmology* 19 (2013) 129–133, arXiv: hep-th/1108.3593