



ID de Contribution: 8

Type: **Non spécifié**

CPTM symmetry and smallness of cosmological constant in framework of extended manifold

mercredi 29 mars 2023 11:05 (15 minutes)

A model of an extended manifold for the Dirac spinor field is considered. Two Lagrangians related by CPTM (charge-parity-time-mass) symmetry are constructed for a pair of the Dirac spinor fields with each spinor field defined in a separate manifold. An interaction between the matter fields in the manifolds is introduced through gravity. A fermionic effective action of the general system is constructed and a tadpole one-loop spinor diagram and part of the one-loop vacuum diagrams with two external gravitational off-shell fields which contribute to the effective action are calculated. It is demonstrated that among different versions of the second spinor Lagrangian there is a special one for which a cancellation of the mentioned diagrams in the total effective action takes place. As a result, the diagrams do not contribute to the cosmological constant, as well there is a zero contribution of the zero point energies of the spinor fields to the action. The non-zero leading order value of the cosmological constant for each manifold in the framework is proportional to the matter density of each separated manifold or difference of the densities, depending on the chosen model of interaction of gravitational fields with fermions. An appearance of the dark matter in the model is shortly discussed as well as further applications of the approach.

Auteur principal: Prof. BONDARENKO, Sergey (Ariel University, Israel)

Orateur: Prof. BONDARENKO, Sergey (Ariel University, Israel)

Classification de Session: Dark and Primordial Universe & Gravitational Waves

Classification de thématique: Dark Universe