Contribution ID : **78**   Type : **Plenary/section talk**

On the theory of spherically symmetric shells in Conformal Gravity

Tuesday, 3 October 2017 08:15 (15)

The spherically symmetric thin shells are the nearest generalizations of the point-like particles. Moreover, they serve as the simple source of the gravitational fields both in General Relativity and much more complex quadratic gravity theories. We are interested in the special and physically umportant case when all the quadratic in curvature tensor (in Riemann tensor) and its constructions (Ricci tensor and scalar curvature) terms are present in the form of the square of Weyl tensor.

By definiton, the energy-momentum tensor of the thin shell is proportional to Dirac's delta-function. We constructed the theory of the spherically symmetric thin shells for three types of gravitational theories with the shell. 1) Pure conformal (Weyl) gravity. The gravitational part of the total Lagrangian is just the square of the Weyl tensor. 2) Weyl + Einstein gravity. 3) Weyl + Einstein-dilaton gravity with the possibility of particle creation. The results are compared with these in General Relativity (Israel equations). We considered in details the shells immersed in the vacuum. Some peculiar properties of such shells are found. In particuliar, for the traceless (= massless) shell it is shown that their dynamics can not be derived from the matching conditions and, thus, is completely arbitrary. In the case 3) the possible physical interpretation of the (mathematicaly allowed) double layer is briefly discussed.

Primary author(s) :   Prof. BEREZIN, Victor (Institute for Nuclear Research of the Russian Academy of Sciences)

Co-author(s) :   Prof. DOKUCHAEV, Vyacheslav (Institute for Nuclear Research of the Russian Academy of Sciences); Prof. EROSHENKO, Yury (Institute for Nuclear Research of the Russian Academy of Sciences)

Presenter(s) :   Prof. BEREZIN, Victor (Institute for Nuclear Research of the Russian Academy of Sciences)

Session Classification : Gravitation and Cosmology - 1

Track Classification : Gravitation and cosmology