



Contribution ID: 90

Type: **not specified**

P. Luz: The effects of intrinsic spin of matter in relativistic cosmology and black holes formation

Monday 19 December 2022 09:30 (15 minutes)

Using the covariant 1+3 threading spacetime decomposition, we discuss solutions of the Einstein-Cartan theory sourced by a cosmological perfect fluid composed by particles with intrinsic spin. It is shown that, even in the presence of intrinsic spin of matter, the metric tensor is described by a general FLRW solution, however the Weyl tensor might not vanish. The coupling between the intrinsic spin and the Weyl tensor leads to the conclusion that, in the considered model, the universe must either be flat or open. In the open case, we derive a wave equation for the the magnetic part of the Weyl tensor and show how the intrinsic spin of matter leads to the emission of gravitational waves. These results allows us clarify a long misunderstanding in the literature regarding the possibility of considering spin effects to avoid the formation of singularities.

Session Classification: Session 1