Contribution ID: **12** Type: **Talk/seminar**

Modified Teleparallel Gravity induced by quantum fluctuations in semi-classical approach

Monday 6 September 2021 18:10 (20 minutes)

In the semi-classical regime, quantum fluctuations embedded in a Riemannian spacetime can be effectively recast as classical back reactions and manifest themselves in the form of non-minimal couplings between matter and curvature. In this work, we exhibit that this semi-classical description can also be applied within the Teleparallel formulation. In the Teleparallel description, quantum fluctuations generically lead to non-minimal matter-torsion couplings. Due to the equivalence between the (classical) Einstein gravity in the Riemannian description and that in the Teleparallel description, some effective models which were constructed using the Riemannian description can be recovered completely with the Teleparallel description. Besides, when the effective quantum correction term is proportional to the torsion scalar T, we obtain a subclass of novel f(T,B,T) gravity, where B is a boundary term, and T is the trace of the energy-momentum tensor. Next, we investigate the cosmological properties in this f(T,B,T) theory. In this work, the matter Lagrangian is solely constructed by a dynamical scalar field. We exhibit some interesting cosmological solutions, such as those with decelerating expansion followed by a late-time accelerating phase.

Author: KUNG, Yu-Hsien (National Taiwan University)

Co-author: CHEN, Che-Yu (Academia Sinica)

Presenter: KUNG, Yu-Hsien (National Taiwan University)

Session Classification: Regular Sessions