

Non-local Gravity Cosmology

Tuesday, 24 October 2023 12:00 (30 minutes)

Recently the so-called Non-Local Gravity acquired a lot of interest as an effective field theory towards the full Quantum Gravity. In this talk, we sketch its main features, discussing, in particular, possible infrared effects at astrophysical and cosmological scales. In particular, we focus on general non-local actions, including curvature or torsion invariants. In all cases, characteristic lengths emerge at cosmological and astrophysical scales. Furthermore, it is possible to fix the form of the Lagrangian and to study the cosmological evolution considering the existence of Noether symmetries. We discuss also possible astrophysical and cosmological applications for non-local gravity models considering late time cosmic expansion, the structure of galaxy clusters, the S2 orbit around the Galactic Center, the possibility of further modes in gravitational waves. As a final comment it is worth saying that non-locality can be tested in various infrared regimes bringing together physics of short and large scales. Clearly, the possibility to find further gravitational wave modes could be an important test bed for the theory.

Primary author: CAPOZZIELLO, Salvatore (Istituto Nazionale di Fisica Nucleare)

Presenter: CAPOZZIELLO, Salvatore (Istituto Nazionale di Fisica Nucleare)

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