Sixteenth Marcel Grossmann Meeting



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Quantum Gravity Phenomenology in the Infrared

Monday, 5 July 2021 18:30 (35 minutes)

Quantum gravity effects are traditionally tied to short distances and high energies. In this talk I will argue that, perhaps surprisingly, quantum gravity may have important consequences for the phenomenology of the infrared. I will center my discussion around a conception of quantum gravity involving a notion of quantum spacetime that arises in metastring theory. This theory allows for an evolution of a cosmological Universe in which string-dual degrees of freedom decouple as the Universe ages. Importantly such an implementation of quantum gravity allows for the inclusion of a fundamental length scale without introducing the fundamental breaking of Lorentz symmetry. The mechanism seems to have potential for an entirely novel source for dark matter and dark energy. The simplest observational consequences of this scenario may very well be residual infrared modifications that emerge through the evolution of the Universe.

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