Contribution ID: **24** Type: **Gong Show Talk (5 mins)**

Probing the curvature of the cosmos from quantum entanglement due to gravity

Thursday, December 14, 2023 2:50 PM (5 minutes)

Ideas from quantum information theory are becoming increasingly useful to tackle problems in quantum gravity. Gravity mediated entanglement has emerged as a novel idea to understand whether the gravitational field is (at least perturbatively) quantum. If gravity is quantum then two massive particles must become entangled through their gravitational interaction. In this work, we seek to understand how this would play out for two massive particles in an expanding background. We show how the the background curvature manifests in the entanglement generated between two oscillating massive particles. More generally, we argue that gravity mediated entanglement is sensitive to the background curvature and can thus be a probe of spacetime curvature.

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