

# Classical vs. quantum divide of gravitons in cosmology

*Wednesday 14 July 2021 15:30 (25 minutes)*

Gravity and matter are universally coupled, and this unique universality provides us with an intriguing way to quantifying quantum aspects of space-time in terms of the number of gravitons. In particular, I will provide a limit on the number of gravitons if we trace out the matter degrees of freedom. I will obtain the universal bound on the number of gravitons. Since the number of gravitons also signify the number of bosonic states they occupy, the number of gravitons will place an indirect constraint on the gravitational entropy of the system. Based on these observations, I will ascertain how the primordial Universe and the subsequent phase transitions in the Universe will capture the essence of classical gravity and gravitational waves and whether there is a possibility of detecting the quantum feature of the graviton in a laboratory.

**Presenter:** MAZUMDAR, Anupam (Groningen University)

**Session Classification:** Inflationary Sources & PBH