Contribution ID: **214** Type: **Talk**

Asteroid mass Primordial Black Hole Dark Matter and its Gravitational Wave Signature

Thursday 15 December 2022 15:30 (15 minutes)

Primordial Black Holes (PBHs) in the mass range $\sim 10^{17} - 10^{22}$g are currently unconstrained, and can constitute the full Dark Matter (DM) density of the universe. Motivated by this, in the current work, we aim to relate the existence of PBHs in the said mass range to the production of observable Gravitational Waves (GWs). We follow a model-independent approach assuming that the PBHs took birth in a radiation dominated era from enhanced primordial curvature perturbation at small scales produced by inflation. We show that the constraints from CMB and BAO data allow for the possibility of PBHs being the whole of DM density of the universe. Finally, we derive the GW spectrum induced by the enhanced curvature perturbations and show that they are detectable in the future GW detectors like LISA, BBO and DECIGO.

Session

Astroparticle Physics and Cosmology

Primary author: Dr MISHRA, Arvind Kumar (Indian Institute of Science Education and Research, Pune, India)

Co-author: Dr GHOSH, Diptimoy (Indian Institute of Science Education and Research, Pune, India)

Presenter: Dr MISHRA, Arvind Kumar (Indian Institute of Science Education and Research, Pune, India)

Session Classification: WG1-Astroparticle Physics and Cosmology