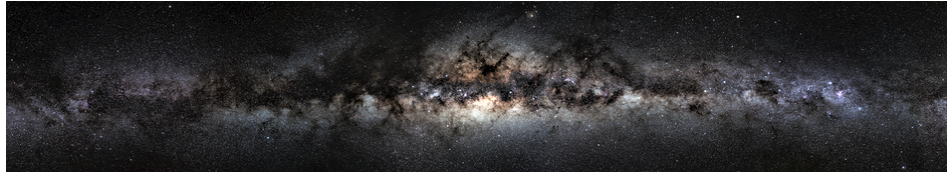


# Dark Sectors of Astroparticle Physics (AstroDark-2021): Axions, Neutrinos, Black Holes and Gravitational Waves



Contribution ID: 54

Type: Oral

## Cloud Cooling Bounds on Intermediate Mass and Light Primordial Black Holes

*Tuesday, 7 December 2021 12:14 (18 minutes)*

Primordial Black Holes (PBH) in the intermediate mass range can be seeds for supermassive black holes and recent LIGO detections of black hole mergers in the mass gap suggest PBH progenitors. I present a novel constraint on the PBH mass fraction spanning PBH masses of  $\sim 10\text{-}10^6$  solar masses from thermal equilibrium considerations. A population of PBH in the central region of the dwarf galaxy Leo T will accrete gas from the interstellar medium and emit high energy photons and protons, depositing heat back into the ISM gas. Using semi-analytical accretion disk modeling, we balance the heating and cooling rates of the Leo T gas to derive competitive bounds. We extend our results to spinning PBH with shock heating from outflows as well as to light PBHs with Hawking evaporation.

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**Session Classification:** Parallel 3: Black Holes and Gravitational Waves