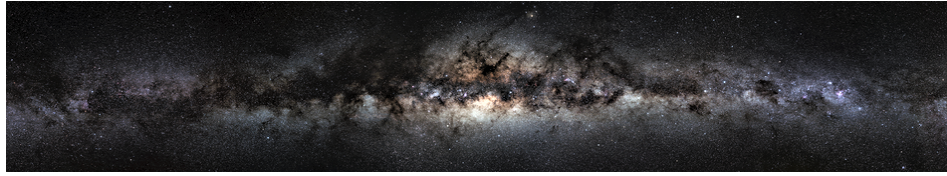


Dark Sectors of Astroparticle Physics (AstroDark-2021): Axions, Neutrinos, Black Holes and Gravitational Waves



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Probing Neutrino Physics in the Early Universe and Compact Objects

Thursday, 9 December 2021 09:30 (40 minutes)

Neutrino decoupling in the high entropy early universe is a protracted process ($T \sim 10$ MeV to $T \sim 10$ keV) that plays out over hundreds of Hubble times and is a key influencer of BBN and CMB observables. Any new physics operating in this period that alters entropy flow and the time-temperature-scale factor relationship could leave “fingerprints” that show up in future high precision measurements of these observables. By contrast, gravitational collapse of massive stars can involve low entropy, lepton degenerate environments that are exquisitely sensitive to lepton number violating BSM physics, especially in the neutrino sector. I will discuss both of these venues and the prospects for future cosmological and gravitational wave measurements to enable them to probe new physics.

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