



Contribution ID: 411

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Sensitivities on non-spinning and spinning primordial black hole dark matter with global 21 cm troughs

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21 cm line arising from neutral hydrogen is one of the most important tools for understanding the thermal and ionization history of the early universe. Primordial black holes (PBHs) are one of the oldest and well motivated DM candidates. Hawking radiating low-mass PBHs (10^{15} – 10^{18} g) can heat up the Intergalactic medium (IGM) by injecting all Standard Model particles and that can affect the global 21 cm signal. Recently, EDGES has claimed an excess in their detected global 21 cm signal, though more recently SARAS 3 has rejected that claim. By considering an EDGES-like measurement of the global 21 cm signal, we derive sensitivities on non-spinning and spinning PBH dark matter (DM). These sensitivities are competitive with existing bounds from various other astrophysical observables. Besides, we also investigate projected bounds on PBH DM abundance using the global 21 cm signal expected from the Dark Ages. We show that in future, unambiguous measurement of global 21 cm signal can either potentially discover or constrain PBH DM.

Session

Astroparticle Physics and Cosmology

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