

Phenomenology 2021 Symposium



Contribution ID: 1198

Type: BSM

Probing Baryonic Dark Matter Models with Gravitational Waves

Monday 24 May 2021 18:15 (15 minutes)

Gravitational waves provide a unique method of testing theories with extended gauge symmetries. In particular, spontaneous symmetry breaking can lead to a detectable stochastic gravitational wave background generated by cosmic strings and first order phase transitions in the early universe. I will discuss the unique gravitational wave signature of a simple model with gauged baryon and lepton numbers, in which a high scale of lepton number breaking is motivated by the seesaw mechanism for the neutrinos, whereas a low scale of baryon number breaking is required by the observed dark matter relic density. This novel signature can be searched for in near-future gravitational wave experiments.

Summary

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Session Classification: DM II