

Phenomenology 2025 Symposium



Contribution ID: 208

Type: **not specified**

Primordial Black Holes from First-Order Phase Transition in the xSM

Tuesday 20 May 2025 15:15 (15 minutes)

Supercooled first-order phase transition (FOPT) can lead to the formation of primordial black holes (PBHs). This scenario imposes stringent requirements on the profile of the effective potential. In this work, we use the singlet extended Standard Model (xSM) as a benchmark model to investigate this possibility at the electroweak scale. The PBHs formed during a supercooled FOPT have a narrow mass distribution around the mass of Earth. This distribution is closely tied to the temperature at which the PBHs form, corresponding to the FOPT at the electroweak scale. This scenario can be probed with microlensing experiments, space-based gravitational wave detectors, and collider experiments. I will also show the possible gravitational signals due to PBH mergers in this model.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

Authors: KALADHARAN, AJAY; WU, Yongcheng (Oklahoma State University); GONÇALVES, dorival (Oklahoma State University)

Presenter: KALADHARAN, AJAY

Session Classification: Cosmology

Track Classification: Particle Cosmology