

Focus Workshop on Cosmological Phase Transitions: Theory, Dark Matter Genesis, and Gravitational Wave Signatures

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MeV First-Order Dark Phase Transitions

Friday, 21 November 2025 14:00 (1 hour)

MeV-scale first-order phase transitions (FOPT) can generate stochastic gravitational waves (GW) in the nanohertz frequency, which can now be probed by Pulsar Timing Array experiments and will be targeted by Square Kilometer Array. Nanohertz GW can also give rise to spectral distortions in the cosmic microwave background and modification of the effective number of neutrino species, providing complementary probes in cosmology. In addition, MeV-scale FOPT can also leave some strong consequences at colliders. This talk is devoted to these complementary probes in cosmology and colliders, and bringing the challenges of dark matter production in the minimal setup.

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Session Classification: Session 5