Contribution ID: **1128** Type: **Poster**

Multicritical Point Principle and Its Phenomenology

Friday, 8 July 2022 20:10 (20 minutes)

Multicritical-Point Principle (MPP) provides a natural scenario to explain the large hierarchy between the Planck scale and the electroweak scale via the Coleman-Weinberg mechanism. We discuss a minimal model to realize such a scale generation, where two real scalar fields are added to the Standard Model and one of them can be a dark matter candidate. We show that the successful scenario, explaining the relic abundance of dark matter and direct search experiments, is given to be well predicted regions of the parameter space. We also demonstrate that the first order phase transition can be realized in such a scenario at TeV scale and it predicts stochastic gravitational waves which could be detected by future space-based experiments e.g., DECIGO and/or BBO.

This talk is based on JHEP 01 (2021) 087, arXiv:2008.08700 [hep-ph] and arXiv:2202.07784 [hep-ph].

In-person participation

No

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Session Classification: Poster Session

Track Classification: Beyond the Standard Model