

## Fingerprinting models of first-order phase transitions by the synergy between collider and gravitational-wave experiments

*Thursday, 6 December 2018 17:15 (15 minutes)*

If a first-order phase transition occurs in the early Universe, gravitational waves are produced from collisions of bubbles and subsequent plasma dynamics. Since the resulting GW spectrum reflects the underlying particle physics model, we may be able to use the gravitational-wave spectrum to explore the form of the Higgs potential. In this talk, we quantitatively discuss this possibility by adopting the Fisher matrix analysis, which is essentially a Gaussian approximation of the likelihood function, to analyze the expected constraints in future space-based interferometers for parameters of the extended models and discuss the testability of the model by the synergy between the collider and gravitational-wave experiment. This talk is based on [K. H. R. Jinnó, M. Kakizaki, S. Kanemura, T. Takahashi and M. Takimoto, arXiv:1809.04994 [hep-ph]].

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