

Probing first order phase transition by the combination of gravitational waves and Higgs couplings

Tuesday, 16 January 2018 14:30 (30 minutes)

Electroweak baryogenesis is a scenario to explain baryon asymmetry of the universe. By the Sakharov conditions, the scenario requires strongly electroweak first order phase transition. For example, when two Higgs doublet model realizes strongly electroweak first order phase transition by thermal loop effects, triple Higgs boson coupling becomes large. On the other hand, if electroweak phase transition is first order, gravitational wave occurs by the phase transition.

In this talk, we focus on extended Higgs sectors which realize electroweak first order phase transition. We discuss the testability of electroweak first order phase transition in the models by the combination of the precision measurements of Higgs boson couplings, the measurement of the triple Higgs boson coupling and the shape of the spectrum of gravitational wave.

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