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Phase transition and gravitational waves in maximally symmetric composite Higgs model

Friday, 21 February 2025 16:12 (5 minutes)

In my talk, I will discuss transitions in a maximally symmetric composite Higgs model with next-to-minimal coset, where a pseudoscalar singlet emerges alongside the Higgs doublet. I will focus on the scenario involving an explicit source of CP violation in the strong sector, which induces a \mathbb{Z}_2 asymmetric scalar potential, and consequently leads to nonzero vacuum expectation value for the singlet. The presence of explicit CP violation leads to strong first-order phase transition from a false vacuum to the electroweak vacuum where the pseudoscalar singlet has a non-zero vacuum expectation value. As a result of such phase transitions, the production of potentially observable gravitational waves at future detectors will offer a complementary avenue to probe the composite Higgs models, distinct from collider experiments.

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