

STRONG CLUES TO WEAK BREAKING: BRIDGING COLLIDER, GRAVITATIONAL WAVES, AND LATTICE STUDIES

SEMINAR

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Abstract

Composite Higgs models stand out as the leading non-supersymmetric approach to address both the electroweak hierarchy problem and the large top quark mass by introducing a strongly coupled confining gauge sector. This framework naturally leads to dynamical electroweak symmetry breaking, producing a composite pseudo-Nambu-Goldstone Higgs boson along with a partially composite top quark. I will highlight the pivotal role of partial compositeness in a UV complete setup in driving electroweak symmetry breaking, while also pointing out the significant challenges in explaining the flavor hierarchy of quarks—areas where lattice gauge theory can provide crucial insights. Beyond collider studies, composite Higgs models are strong candidates for triggering first-order phase transitions in the early universe, generating gravitational waves that could be observed by upcoming detectors such as LISA, AEDGE, and AION-km. I will showcase how combining collider experiments, gravitational wave searches, and lattice gauge theory studies offers a powerful way to probe the underlying dynamics of this rich class of models.

Everyone is invited to attend