

## Composite Higgs models: bridging collider, phase transition, and lattice studies

*Wednesday 16 October 2024 14:15 (15 minutes)*

Composite Higgs models provide a promising way to address both the hierarchy problem and the heavy top quark mass. I will discuss a class of models involving a new strongly coupled confining gauge theory, which lead to dynamical electroweak symmetry breaking by generating a composite pseudo-Nambu-Goldstone Higgs boson and a partially composite top quark. I will emphasize the pivotal role of partial compositeness in breaking electroweak symmetry, presenting a novel point of view. I will highlight the significant challenges to address the flavor hierarchy in the quark sector in this setup, and indicate where lattice gauge theory results will be crucial. Composite Higgs models are ideal candidates for inducing first-order phase transitions in the early universe, leading to gravitational wave production detectable by upcoming detectors like LISA, AEDGE, and AION-km. I will demonstrate how a complementary approach between collider experiments and gravitational wave detection can probe the microscopic details of this class of models.

### Track type

SM and Higgs Physics

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