



Contribution ID: 393

Type: parallel talk

Is the Higgs a Composite Dilaton?

Tuesday 9 May 2017 14:30 (15 minutes)

Non-QCD like confining gauge theories promise to be potential UV completions for the Standard Model Electroweak sector, which do not suffer from fine tuning problems. In these scenarios, the Higgs boson would be a composite particle that is kept lighter than other composites by the dynamics of the gauge theory. To determine the viability of this scenario, we have developed an effective-field-theory (EFT) framework to analyze data from lattice simulations of a large class of confining gauge theories. Simulations of these theories, for which the light fermion count is not far below the critical value for transition to infrared conformal behavior, have indicated the presence of a remarkably light singlet scalar particle, which in our EFT framework is interpreted as a dilaton. In this talk, I will explain the essential features of this framework and discuss results obtained applying this framework to lattice data for SU(3) gauge theory with 8 fermion flavors.

Summary

Talk based upon work in arXiv:1702.04410

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Session Classification: Extra Dimensions & Composite Higgs