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Origin of Mass, Strong Dynamics and the Lattice

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One of the important missions of LHC is to probe the mechanism behind the electroweak symmetry breaking through which elementary particles, such as the W and Z gauge bosons and the quarks, acquire mass. While the most economical solution is to have the Standard Model Higgs mechanism, other possibilities exist. One such possibility is to have dynamical electroweak symmetry breaking (DEWSB) as a result of some new strong interactions at energies of the TeV scale. As the only systematically improvable non-perturbative tool, lattice gauge theory has the potential to (in)validate many non-perturbative methods developed to search for new kinds of strong dynamics that might satisfy phenomenological constraints on DEWSB, and may facilitate the interpretation of the LHC data and hopefully shed light on the origin of mass. In this talk I will give an overview of the recent efforts by the lattice community to understand strong dynamics beyond QCD.

Primary author: Dr LIN, Meifeng (Yale University)**Presenter:** FLEMING, George (Yale University)**Session Classification:** 09 - Progress in Lattice Techniques and New Results**Track Classification:** 09 - Progress in Lattice Techniques and New Results