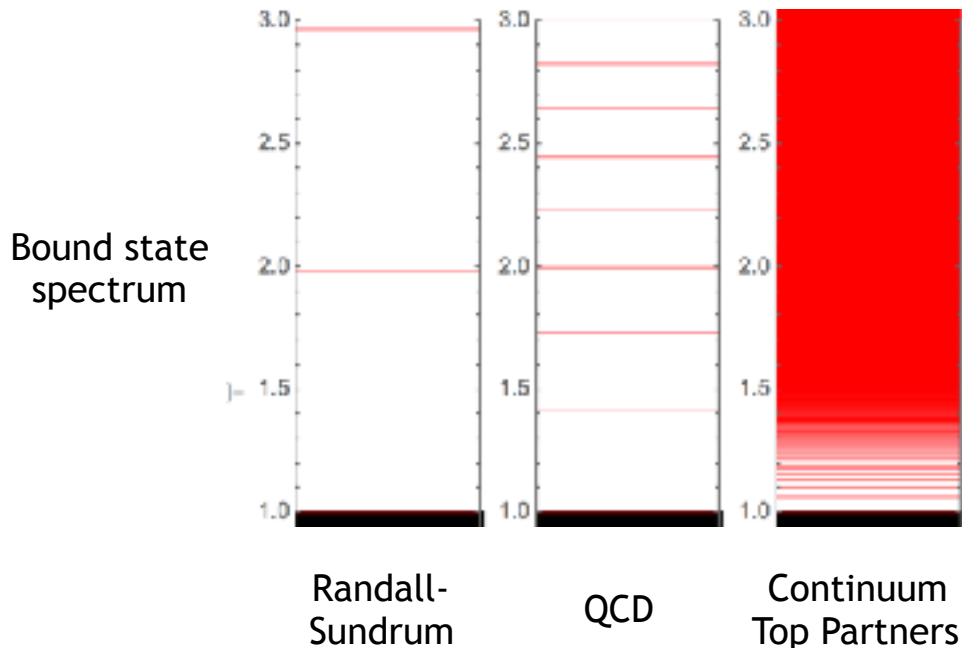


B-Exam

Monday, May 21st



Continuum Top Partners

Salvator
Lombardo

Advisor: Csaba Csaki

Abstract:

The Large Hadron Collider has put the naturalness paradigm under pressure since one expects new colored resonances, e.g. top partners, at the TeV energy scale in order to address the naturalness of the Higgs potential. There exists another possibility, however. New dynamics responsible for furnishing a composite Higgs may exhibit a gapped continuum of colored excitations, in which case the new states, the top partners and vector resonances, appear as branch cuts rather than poles in scattering amplitudes. The new colored states in this scenario cannot be described as Breit-Wigner resonances, drastically changing their phenomenology. I will discuss a model where a fermionic top partner continuum cuts off the quadratic divergence of the Higgs mass term and demonstrate that some direct experimental constraints can be weakened relative to traditional composite Higgs models. The machinery used to calculate the production cross section for a colored continuum will be developed by gauging a non-local effective action.

Date: 21 May 2018

Time: 10 AM

Room: PSB 120