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Continuum Naturalness

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Searches at the LHC have placed the naturalness paradigm under pressure. In this talk I will introduce a novel class of composite Higgs models in which the top and gauge partners responsible for cutting off the Higgs quadratic divergences form a gapped continuum. The new continuum states in this scenario cannot be described as Breit-Wigner resonances, drastically changing their LHC phenomenology, and may require precision studies in high energy physics. I will present a concrete example based on a warped extra dimension with a linear dilaton, where this finite gap arises naturally, and show that naturalness is improved compared to the case with usual resonance type of top partners for the same KK scale (say top partner mass around 2 TeV).

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