



LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS (LEPP)

Joint Experimental and Theory Seminar in Particle Physics and Cosmology:

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Mainz

Effective Field Theory after a New Physics Discovery



When a new heavy particle is discovered at the LHC, it will be interesting to study its decays into Standard Model particles using an effective field-theory framework. We point out that the proper effective theory can not be constructed as an expansion in local, higher-dimensional operators; rather, it must be based on non-local operators defined in soft-collinear effective theory. For the interesting case where the new resonance is gauge-singlet spin-0 boson, which is the first member of a new sector governed by a mass scale M , we show how a consistent scale separation between M and the electroweak scale v is achieved up to next-to-next-to-leading order in the expansion parameter $\lambda \sim v/M$. Large logarithms in this scale ratio can be systematically resummed using the renormalization group.



Friday, Apr. 13, 2018

1:00pm

301 Physical Sciences Building