LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS (LEPP)

Journal Club

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Associated Production of Bosons and Top Quark Pairs as a Window on New Physics

The top quark remains one of the most intriguing known particles, standing out as the only fermion with a Yukawa coupling near unity. This prompts the question of whether top quarks might have some special connection to electroweak symmetry breaking that would help to explain its uniquely high coupling to the Higgs boson. However, the very feature that makes the top quark interesting, namely its large mass, also makes it difficult to study. For example, we can't use Higgs or Z boson decays to measure their couplings to top quarks because the top quark is too massive to be a decay product. One alternative is to measure the associated production top quark pairs with the bosons of interest (Higgs, Z, W). This seminar reviews the status of LHC measurements of top quark pairs produced in association with Higgs, Z, or W bosons and discusses possible new physics scenarios that might lead to deviations from standard model predictions.

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3:00pm

301 Physical Sciences Bldg.