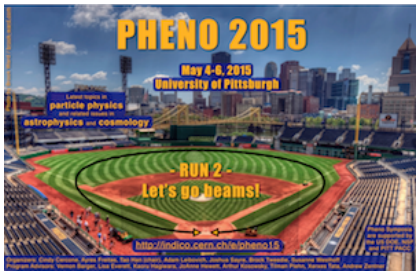

Contribution ID: **9** Type: **parallel talk**

Characterizing Invisible Electroweak Particles through Single-Photon Processes in e^+e^- Colliders

Tuesday 5 May 2015 14:15 (15 minutes)

In light of the stringent bounds on the BSM new states from the CERN Large Hadron Collider (LHC) searches, we explore the situation where the only accessible new states at the electroweak scale consist of a pair of non-colored and electroweak particles, which are degenerate at the tree level and split only by electroweak symmetry breaking at the loop level. To be specific, we consider an underlying supersymmetric model and focus on the cases with only (a) two spin-1/2 higgsino $SU(2)_L$ doublets, (b) a spin-1/2 wino $SU(2)_L$ triplet and (c) a spin-0 left-handed slepton $SU(2)_L$ doublet. In this situation, even the electrically charged particle of each pair is not easily detected in collider experiments. One of the best strategies for detecting and characterizing the charged particles as well as neutral particles is to trigger on a hard-photon radiation. If kinematically accessible, such single-photon processes at e^+e^- colliders with polarized beams enable us to determine the spin of the (almost) invisible particles unambiguously through the threshold excitation pattern and characterize each scenario systematically by measuring the energy and scattering angle of the associated hard photon.

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