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ILC as a SUSY discovery and precision instrument.

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Data from the LHC at 7, 8, and 13 TeV have so far yielded no evidence for new particles beyond the 125 GeV Higgs boson; in particular, there have been no signs of SUSY. However, the complementary nature of physics with e+e- collisions still offers many interesting scenarios in which SUSY can be discovered at the ILC. These scenarios take advantage of the capability of e+e- collisions to observe events with missing four-momentum - a signature not available at hadron colliders, where only transverse imbalance is observable. Due to low backgrounds and trigger-less operation, detectors at e+e- colliders can observe events with much less visible energy than what is possible at hadron colliders. In this contribution, we will present detailed simulation studies done with the ILD concept at the ILC. These studies include simulation of the full SM background, as well as realistic accelerator conditions. We will show results both on expected discovery and exclusion reaches for the most challenging SUSY channels, such as higgsinos or winos at low mass differences. Evaluations of precision of model-parameter measurements, in case of discovery, will also be given. We also report on how such measurements can be used to put constraints on parts of the sparticle-spectrum beyond direct reach, and to discriminate between different models of SUSY breaking at high scales.

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Secondary track (number)

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