SUSY07



Contribution ID: 126

Type: Parallel Talk

## Detecting metastable staus and gravitinos at the ILC

Monday 30 July 2007 17:30 (20 minutes)

A study of various SUSY scenarios is presented in which the lightest supersymmetric particle is the gravitino sG and the next-to-lightest supersymmetric particle is a scalar tau stau with lifetimes ranging from seconds to years. Gravitinos are interesting dark matter candidates which can be produced in decays of heavier sparticles at the International Linear Collider (ILC), but remain undetected in direct searches of astrophysical experiments. We investigate the detection and measurement of metastable staus, which may be copiously produced at the ILC either directly or via cascade decays. A proper choice of the experimental conditions will allow one to stop large samples of staus in the calorimeters of the ILC detector and to study the subsequent decays

## $stau \to \tau$

sG. Detailed simulations show that the

properties of the stau and the gravitino, such as stau mass and lifetime and gravitino mass, can be accurately determined at a future ILC and may provide direct access to the gravitational coupling, respectively Planck scale.

Author: MARTYN, Hans-Ulrich (RWTH Aachen & DESY)

Presenter: MARTYN, Hans-Ulrich (RWTH Aachen & DESY)

Session Classification: Colliders - Susy Phenomenology 8 (Experiment)

Track Classification: Colliders - Susy Phenomenology