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Stau searches and measurement prospects at future Higgs factories

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The direct pair-production of the tau-lepton superpartner, stau, is one of the most interesting channels to search for SUSY. First of all the stau is with high probability the lightest of the scalar leptons. Secondly the signature of stau pair production signal events is one of the most difficult ones, yielding the 'worst' and thus most general scenario for the searches.
The most model-independent limits on the stau mass come from LEP.
LHC exclusion reach extends to higher masses, but under strong model assumptions.
Future electron-positron colliders are ideally suited for stau searches: featuring increased luminosity and centre-of-mass energy and improved technologies, with respect to previous electron-positron colliders, and profiting from cleaner environment, initial state being known, and trigger-less operation of the detectors, with respect to hadron colliders.
The capability of a future electron-positron collider for determining stau exclusion/discovery limits in a model-independent way, together with an overview of the current state-of-the-art and prospects on stau-properties measurements, are shown in this contribution.
The studies used the full detector simulation and reconstruction procedures of the International Large Detector concept (ILD) at the ILC, all SM and machine induced backgrounds are included.
The applicability to other projects will be discussed.

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