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Stau searches at future e^+e^- colliders

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The future e^+e^- colliders offer excellent facilities for SUSY searches. The stau, superpartner of the tau-lepton, is one of the most interesting particles for these searches, being likely the lightest of the sfermions, first one that could be observed, and it can be regarded as the worst and thus most general scenario for the searches. The prospects for discovering stau-pair production at future e^+e^- factories and the resulting detector requirements will be discussed. The study takes the ILD detector concept and ILC parameters at 500 GeV as example. It includes all SM as well as beam induced backgrounds. It shows that with the chosen accelerator and detector conditions, SUSY *will* be discovered if the NLSP mass is up to just a few GeV below the kinematic limit of the collider.

Expectations for another accelerator and detectors conditions are derived. In particular the role of the hermeticity of the detector and of the ability to operate trigger-less will be discussed.

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