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Hunting scalar lepton partners - an example of direct BSM searches at lepton colliders -

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Future e^+e^- colliders are prime tools to search for physics Beyond the Standard Model charged under the electroweak force only. A particular example are scalar partners of the charged leptons, known as sleptons in supersymmetric extensions of the Standard Model. The decays of such scalar lepton partners involve additional neutral fermions (neutralinos in supersymmetric models), which are good dark matter candidates. Future e^+e^- colliders would be able to probe most of the kinematically accessible parameter space of such models, i.e., where the mass of the scalar lepton partner is less than half of the collider's center-of-mass energy, with only a few days of data. Besides constraining more general models, this would allow to probe some well motivated dark matter scenarios in the Minimal Supersymmetric Standard Model, in particular the incredible bulk and stau coannihilation scenarios.

Time Zone

Europe/Africa/Middle East

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