

Abstract Submitted  
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**Hunting for Scalar Lepton Partners at Future  $e^+e^-$  Colliders<sup>1</sup>**

PEARL SANDICK, University of Utah, SEBASTIAN BAUM, Stanford University, PATRICK STENGEL, SISSA, Trieste — New physics close to the electroweak scale is well motivated by a number of theoretical arguments. However, colliders, most notably the Large Hadron Collider (LHC), have failed to deliver evidence for physics beyond the Standard Model. While it is possible that the scale of new physics is beyond the reach of the LHC, it is also possible that new electroweak-scale particles are lurking in a blind spot of the LHC. Prime examples of models that could have thus far gone undetected include those where the new states are charged only under electromagnetism and not under the strong force. Future  $e^+e^-$  colliders are prime tools to study such new physics. In this talk I will discuss the sensitivity of  $e^+e^-$  colliders to scalar partners of the charged leptons, known as sleptons in supersymmetric extensions of the Standard Model. In order to allow such scalar lepton partners to decay, we consider models with an additional neutral fermion, which may also play the role of dark matter. A future lepton collider would be capable of directly (and immediately) discovering many of these promising new physics scenarios.

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