

Potential search for direct slepton pair production in $\sqrt{s} = 360$ GeV at CEPC

The center-of-mass energy of Circular Electron Positron Collider (CEPC) could be upgrade to 360 GeV level (CEPC@360GeV) after its ten-year running at 240 GeV. Besides SM precision measurements, CEPC@360GeV also has good potential for BSM physics searches, which is a good complementary for hadron colliders. This paper presents the sensitivity study of direct stau and smuon pair production at CEPC with $\sqrt{s} = 360$ GeV by full Monte Carlo (MC) simulation. With 1.0 ab^{-1} integrated luminosity and the assumption of flat 5% systematic uncertainty, the CEPC@360 GeV has the potential to discover the production of combined left-handed and right-handed stau up to 168.5 GeV if exists, or up to 159 GeV for the production of pure left-handed or right-handed stau; the discovery potential of direct smuon reaches up to 174 GeV with the same assumption. Given the similar nature of the facilities and detectors, the results can be a good reference for other electron positron colliders with the same center-of-mass energies and target luminosities, such as Future Circular Collider e+e- (FCC-ee) and the International Linear Collider (ILC).

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