

Search for nearly-degenerate higgsinos using forward detectors at the LHC

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Supersymmetric models with nearly-degenerate light higgsinos provide a consistent solution to the naturalness problem under rigorous constraints from current experimental searches for sparticles. However, it is challenging to probe the compressed scenarios at collider experiments due to the hard-to-detect soft final states. To overcome this issue, strategies have been proposed to take advantage of the photon fusion along the ultraperipheral collision at the Large Hadron Collider, which are feasible with the forward detectors installed at the ATLAS and CMS detectors. In this report, I will present our recent work that demonstrated a search strategy for the chargino pair production via photon fusion at the 13 TeV LHC, realizing a good sensitivity that can exclude $m_{\tilde{\chi}_1^\pm}$ up to 270 GeV (308 GeV) for a mass splitting $\Delta m(\tilde{\chi}_1^\pm, \tilde{\chi}_1^0) \in [1, 15]$ GeV with an integrated luminosity of 100 fb^{-1} (3 ab^{-1}) at 95% C.L.

Primary author: 周, 航 (常州大学)

Presenter: 周, 航 (常州大学)

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