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Exploring nearly degenerate higgsinos using mono-Z/W signal

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We propose a new search strategy for higgsinos. Assuming associated production of higgsino-like pairs with a W or Z boson, we search in the missing energy plus hadronically-tagged vector boson channel. We place sensitivity limits for (HL-)LHC searches assuming (1–3.5 GeV) mass differences between the lightest neutral and charged states. We point out that using the $E_T^{\rm miss}$ distribution significantly increases the sensitivity of this search. We find the higgsinos up to 110 (210) GeV can be excluded with 139 (300) fb^{-1} data. The full data of the HL-LHC will exclude (discover) the higgsinos up to 520 (280) GeV. This talk is based on arXiv:2110.04185 [hep-ph] published in PLB.

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