

Contribution submission to the conference SMuK 2023

Search for supersymmetry in single lepton events using angular correlations and heavy-object identification — KERSTIN BORRAS^{4,5}, ●FREDERIC ENGELKE^{4,5}, KIMMO KALLONEN³, HENNING KIRSCHENMANN³, PANTELIS KONTAXAKIS¹, DIRK KRÜCKER⁴, ISABELL MELZER-PELLMANN⁴, ASHRAF MOHAMMED^{4,5}, PARIS SPHICAS^{1,2}, COSTAS VELLIDIS¹, and LUCAS WIENS⁴ — ¹University of Athens — ²CERN — ³Helsinki Institute of Physics — ⁴DESY — ⁵RWTH Aachen IIIA

Results are presented from a search for supersymmetry in events with a single electron or muon, and multiple hadronic jets. The data corresponds to a sample of proton-proton collisions at $\sqrt{s} = 13$ TeV with an integrated luminosity of 138 fb^{-1} , recorded by the CMS experiment at the LHC.

The search targets gluino pair production, where the gluinos decay into the lightest supersymmetric particle (LSP) and either a top quark-antiquark pair or a pair of light quarks in the final state.

We use the angular correlation between the lepton and the W boson's transverse momenta for a strong separation between the signal and the background region. The investigation of the two different signal models benefits from improved top and W tagging methods.

Furthermore, we also present current endeavors to prepare this analysis for the Run3 period using modern analysis tools.

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Search for Supersymmetry
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