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A search for the low-lying SUSY spectrum at the LHC consistent with the recent muon $g-2$ result

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The recent experimental result on the muon $g-2$ from Fermilab has confirmed the old Brookhaven result and increased the tension with the Standard Model. We investigate the electroweak sector of supersymmetry to explain the muon $g-2$ anomaly. We perform a scan of the SUGRA parameter space with the help of a neural network to identify the regions consistent with the $g-2$ anomaly. It is shown that a gluino-driven radiative breaking of the electroweak symmetry is a natural outcome with the sleptons and weakinos being low-lying while the colored sector is heavy. To perform a SUSY search at the LHC using a set of benchmarks, we employ a deep neural network to train the signal and background. We show that benchmarks corresponding to slepton and sneutrino production can be discovered at HL-LHC and HE-LHC.

The talk is based on arXiv:2104.03839 [hep-ph].

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