

Revisiting the LHC Constraints on Gauge-Mediated Supersymmetry Breaking Scenarios

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We revisit Gauge Mediated SUSY Breaking (GMSB) scenarios in the context of LHC data. The ATLAS mono-photon search at 139 inverse femtobarn integrated luminosity at the 13 TeV LHC, in the context of a simplified General Gauge Mediation (GGM) scenario (which is a phenomenological version of GMSB with an agnostic approach to the nature of the hidden sector), relies on assumptions that do not hold across the entire parameter space. We identify a few crucial assumptions regarding the decay widths of SUSY particles into final states with gravitinos that affect the LHC limits on the masses of the SUSY particles. Our study aims to reinterpret the ATLAS constraints on the gluino-NLSP mass plane, considering all possible decay modes of SUSY particles in a realistic GGM model.

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