

# Natural anomaly-mediation from the landscape with implications for LHC SUSY searches

*Thursday 18 July 2024 14:30 (17 minutes)*

Supersymmetric models with the anomaly-mediated SUSY breaking (AMSB) have run into serious conflicts with 1. LHC sparticle and Higgs mass constraints, 2. constraints from wino-like WIMP dark matter searches and 3. bounds from naturalness. These conflicts may be avoided by introducing changes to the underlying phenomenological models providing a setting for natural anomaly-mediation (nAMSB). We examine spectra of nAMSB arising from string landscape. Here, we investigated LHC constraints on nAMSB models that allow  $m_{3/2}$  to lie within 90–200 TeV which may soon be discovered or falsified by a combination of 1. soft OS dilepton plus jet+ MET (OSDLJMET) searches which arise from higgsino pair production, 2. non-boosted hadronically decaying wino pair production searches and 3. same-sign diboson + MET searches arising from wino pair production followed by wino decay to  $W$  +higgsino. Some excess above SM background in the OSDLJMET channel already seems to be present in both ATLAS and CMS data.

## Alternate track

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Yes

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