MEETING OF THE AMERICAN PHYSICAL SOCIETY DIVISION OF PARTICLES AND FIELDS

Contribution ID: **360** Type: **Presentation**

Imposing LHC constraints on the combined Anomaly and Z'-Mediation mechanism of Supersymmetry Breaking

Monday, 31 July 2017 14:46 (15 minutes)

Combining anomaly with Z' mediation of SUSY breaking allows us to solve the tachyonic problem of the former and avoid fine tuning in the latter. This scenario includes an extra U(1)' gauge symmetry and extra singlet scalar S which provides a solution to the 'μ problem' of the MSSM. The low-energy particle spectrum is calculated from the UV inputs using the Renormalization Group Equations. The benchmark points considered in the original model, suggested before the Higgs discovery, predicted a Higgs mass close to the current measured value of 125 GeV. We use the current LHC data to update the predictions of the model, its particle spectrum and in particular the mass of the Z' gauge boson.

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Session Classification: Beyond Standard Model

Track Classification: Beyond Standard Model