

Phenomenology 2014 Symposium



Contribution ID: 90

Type: **not specified**

The LHC confronts the pMSSM

Tuesday 6 May 2014 17:00 (15 minutes)

We explore the impact of current (7+8 TeV) and future (14 TeV) LHC searches on the range of viable sparticle spectra within the 19/20 –dimensional pMSSM. Considering both neutralino and gravitino LSPs, we compare our results with simplified model exclusion limits and describe important cases where the pMSSM results differ significantly from the simplified model descriptions. We also consider models that are poorly constrained by LHC data because of unusual decay topologies and/or displaced decays, and discuss ways to improve the LHC sensitivity in these scenarios. Finally, motivated by naturalness, we examine the sensitivity of current searches to models with light stops and to a specialized set of models with fine-tuning better than 1%. We show that a surprising variety of searches are sensitive to light stops, and that the 14 TeV LHC will be a very powerful probe of natural pMSSM models.

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Session Classification: SUSY IV