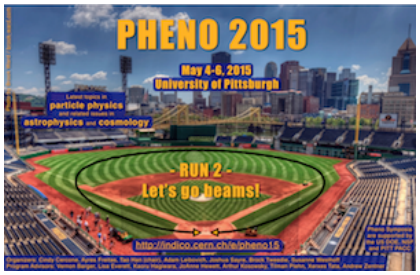

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Dirac Triplet Extension of the MSSM

Monday 4 May 2015 16:45 (15 minutes)

We explore extensions of the Minimal Supersymmetric Standard Model involving
two SU(2)L triplet superfields that share a superpotential Dirac mass yet only one of which couples to the Higgs fields. This choice is motivated by recent work using two singlet superfields with the same superpotential requirements. We find that, as in the singlet case, the Higgs mass in the triplet extension can be raised to 125 GeV without introducing large fine-tuning. For triplets that carry hypercharge, the regions of least fine tuning are characterized by small contributions to the T parameter, and light stop squarks, m(stop) ~ 300 – 450 GeV; the latter is a result of the tan(beta) dependence of the triplet contribution to the Higgs mass. Despite such light stop masses, these models are viable provided the stop-electroweakino spectrum is sufficiently compressed.

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