

Generalized Gaugino Condensation and Discrete R-Symmetries

Monday, August 23, 2010 5:37 PM (15 minutes)

One can define generalized models of gaugino condensation as theories which dynamically break a discrete R-symmetry, but do not break supersymmetry. We consider general examples consisting of gauge and matter fields, and the minimal number of gauge singlet fields to avoid flat directions in the potential. We explore which R-symmetries can arise, and their spontaneous breaking. In general, for a wide range of gauge groups, we find that the discrete symmetry is $\mathbb{Z}_{2b_0 R}$ and the number of supersymmetric vacua is b_0 , where b_0 is the coefficient of the one-loop beta function. We also comment on model building applications where a discrete R-symmetry, broken by the singlet vevs, can account for μ -type terms and allow a realistic Higgs spectrum naturally, or be applied more broadly. This work is found in arXiv:1005.4686 (and has its basis in the earlier work with Michael Dine in arXiv:0909.1615).

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Session Classification: Model Building 23-2 Chair: K. Choi

Track Classification: Model