



On messengers and metastability in gauge mediation

<http://www.firstlight.cn> 2010-11-30

One notoriously difficult problem in perturbative gauge mediation of supersymmetry breaking via messenger fields is the generic presence of a phenomenologically unacceptable vacuum with messenger vevs, with a lower energy than the desired (MSSM) vacuum. We investigate the possibility that quantum corrections promote the latter to the ground state of the theory, and find that this is indeed feasible. For this to happen, the couplings of the messengers to the goldstino superfield must be small, and this implies an additional suppression of the MSSM soft terms with respect to the supersymmetry breaking scale. This in turn sets a lower limit on the masses of the messengers and of the supersymmetry breaking fields, which makes both sectors inaccessible at colliders. Contrary to other scenarios like direct gauge mediation, gaugino masses are unsuppressed with respect to scalar masses.

[存档文本](#)