

Mixed moduli-AMSB models (mirage unification)

Aspects

- ★ Inspired by KKLT moduli stabilization and uplifting in string models
- ★ Soft SUSY breaking terms from mixed gravity/anomaly mediation (mix parameter α , Choi et al.)
- ★ Gauge couplings unify at M_{GUT} but soft terms unify at intermediate scale (hence, mirage unification)
- ★ Spectra **compressed**; for given $m_{\tilde{g}}$, harder to see than mSUGRA/CMSSM at LHC
- ★ Model is pre-programmed in Isasugra/Isajet (model #9)
- ★ Allows solution of gravitino problem, high $T_R > 2 \times 10^9$ GeV allowed, allows for $f_a \sim M_{GUT}$ when mixed axion/LSP dark matter
- ★ See *e.g.* HB, E. Park, X. Tata and T. Wang, JHEP 0608:041,2006 and JHEP 0706:033,2007; HB, A. Lessa, S. Kraml and S. Sekmen, JCAP 1011:040,2010.

ENTER alpha, $M_{(3/2)}$, tan(beta), sgn(mu), M_t :

4,21000,10,1,173.3

ENTER moduli weights n_Q , n_D , n_U , n_L , n_E , n_{Hd} , n_{Hu} [/ for all 0]:

.5,.5,.5,.5,.5,1,1

ENTER moduli parameters L1, L2, L3 [/ for all 1]:

/

Run Isatools? Choose 2=all, 1=some, 0=none:

$M_1 = 433.33$ $M_2 = 494.08$ $M_3 = 785.15$

$\mu(Q) = 441.47$ $B(Q) = 37.08$ $Q = 611.17$

$M_{Hd}^2 = 0.244E+05$ $M_{Hu}^2 = -0.195E+06$ $TANBQ = 14.591$

ISAJET masses (with signs):

$M(GL) = 820.27$

$M(UL) = 735.01$ $M(UR) = 716.75$ $M(DL) = 739.71$ $M(DR) = 717.84$

$M(B1) = 679.88$ $M(B2) = 714.98$ $M(T1) = 538.27$ $M(T2) = 749.67$

$M(SN) = 443.24$ $M(EL) = 450.95$ $M(ER) = 410.52$

$M(NTAU) = 439.37$ $M(TAU1) = 400.14$ $M(TAU2) = 452.30$

$M(Z1) = -389.53$ $M(Z2) = -443.91$ $M(Z3) = 445.47$ $M(Z4) = -537.28$

$M(W1) = -408.44$ $M(W2) = -527.44$

$M(HL) = 114.60$ $M(HH) = 472.09$ $M(HA) = 468.96$ $M(H+) = 478.79$

$\theta_t = 0.9924$ $\theta_b = 0.4300$ $\theta_l = 1.2674$ $\alpha_h = 0.0715$

NEUTRALINO MASSES (SIGNED) = -389.532 -443.910 445.467 -537.279

EIGENVECTOR 1 = -0.49030 0.54897 0.37278 -0.56505

EIGENVECTOR 2 = 0.28127 -0.27972 -0.43961 -0.80585

EIGENVECTOR 3 = -0.70852 -0.70288 0.05374 -0.03263

EIGENVECTOR 4 = -0.42248 0.35545 -0.81541 0.17398