Implications of MSSM

Note Title 3/30/2008

We will come back to details of ch 9 later
(a lot of dry, hard facts about MSSM)

I) Low Energy Constraints

- FCNC
- ~~CP~~ (EDM of e^-, μ^- etc)

II) Renormalization Group Equations (RGE)

- Link to UV complete theory
- Trigger EWSB

$$\frac{dm_{Hu}^2}{dt} = \frac{2}{16\pi^2}\left(-\frac{3}{5}g_1^2M_1^2 - 3g_2^2M_2^2 + \frac{3}{10}g_1^2S + 3f_t^2X_t\right)$$

large Top Yukawa makes $m_{Hu}^2 < 0$

III) Dark Matter

With R-parity

LSP = lightest superpartner = stable

cannot decay but only pair produced/annihilated