Implications of MSSM

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

I) Low Energy Constraints

- FCNC
- \( \mathcal{CP} \) (EDM of \( e^-, \mu^-, e^+ \))

II) Renormalization Group Equations (RGE)

- Link to UV complete theory
- Trigger EWSB

\[
\frac{dM_{H^u}}{dt} = \frac{2}{16 \pi^2} \left( -\frac{3}{5} g_1^2 M_1^2 - 3 g_2^2 M_2^2 + \frac{3}{10} g_1^2 S + 3 f_t^2 \chi_t \right)
\]

\[\text{Large Top Yukawa makes } M_{H^u}^2 < 0\]

III) Dark Matter

With \( R \)-parity

LSP = lightest superpartner = stable

cannot decay but only pair produced/annihilated