

# Large AT without Dessert

*Thursday 12 February 2015 14:40 (20 minutes)*

Even if the unification and supersymmetry breaking scales are around  $10^6$  to  $10^9$  TeV, a large  $A_t$  coupling may be entirely generated at low energies through RGE evolution in the 5D MSSM. Independent of the precise details of supersymmetry breaking, we take advantage of power law running in five dimensions and a compactification scale in the  $10$ - $10^3$  TeV range to show how the gluino mass may drive a large enough  $A_t$  to achieve the required 125.5 GeV Higgs mass. This also allows for sub-TeV stops, possibly observable at the LHC, and preserving GUT unification, thereby resulting in improved naturalness properties with respect to the four dimensional MSSM. The results apply also to models of “split families” in which the first and second generation matter fields are in the bulk and the third is on the boundary, which may assist in the generation of light stops whilst satisfying collider constraints on the first two generations of squarks.

**Presenter:** ABDALGABAR, Ammar (University of Witwatersrand)