



Contribution ID: 161

Type: parallel talk

# The Higgs mass, supergroups and the emergence of new physics at the TeV scale

*Tuesday 7 May 2013 18:00 (15 minutes)*

We investigate the physical implications of formulating the electroweak (EW) part of the Standard Model (SM) in terms of a superconnection involving the supergroup  $SU(2/1)$ . In particular, we relate the observed Higgs mass to new physics at around 4 TeV. The ultraviolet incompleteness of the superconnection approach points to its emergent nature. The new physics beyond the SM is associated with the emergent supergroup  $SU(2/2)$ , which is natural from the point of view of the Pati-Salam model. Given that the Pati-Salam group is robust in certain constructions of string vacua, these results suggest a deeper connection between low energy (4 TeV) and high energy (Planck scale) physics via the violation of decoupling in the Higgs sector.

**Author:** AYDEMIR, ufuk (Virginia Tech)

**Co-authors:** Prof. MINIC, Djordje (Virginia Tech); Prof. TAKEUCHI, Tatsu (Virginia Tech)

**Presenter:** AYDEMIR, ufuk (Virginia Tech)

**Session Classification:** Strings & GUTs

**Track Classification:** Strings & GUTs