



Contribution ID: 904

Type: **Parallel Session Talk**

## Recent Progress in SUSY GUTs

*Saturday, 24 July 2010 09:00 (15 minutes)*

I will summarize recent developments in 4-dimensional supersymmetric grand unified model building. A class of SUSY GUTs based on  $SO(10)$  will be presented which successfully addresses for the first time (i) the doublet-triplet splitting problem to all orders, (ii) realistic quark and lepton mixing, (iii) gauge coupling unification including GUT scale threshold effects, and (iv) the origin of the  $\mu$  term. Expectations for proton lifetime in these models will be discussed, which shows an interesting correlation between the  $e^+ \pi^0$  mode and the  $\bar{\nu}_\mu K^+$  mode. An improvement in the experimental sensitivity by about a factor of ten should reveal proton decay in both these channels, with the lifetime for  $p \rightarrow e^+ \pi^0$  predicted to be below a few times  $10^{34}$  years.

This work is primarily based on the paper "Constraining Proton Lifetime in  $SO(10)$  with Stabilized Doublet-Triplet Splitting", by K.S. Babu, Jogesh C. Pati and Zurab Tavartkiladze, arXiv:1003.2625v2 [hep-ph].

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**Session Classification:** 10 - Beyond the Standard Model (theory and experimental searches)

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