

# Joint Theory Seminar

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## **Title: A Little Twin Higgs - More Natural Left-Right Model**

**ABSTRACT:** It has been shown that the simple twin mechanism can reduce the fine tuning in the standard model to about 10 % without having a tree level quartic coupling for the pseudo Goldstone bosons. Obviously, If one introduces a new quartic coupling to the Higgs fields, the fine tuning will be further reduced. However, it is not always an easy task and will usually introduce some complexity to the model. We present a simple way to provide this quartic to the left-right twin Higgs model. This is made possible by extending the symmetry of the model to include both  $Z_2$  parities in the left-right model. We find that the fine tuning in this model is reduced substantially compared to the original model.

The collider phenomenology is similar to that of the original model and will also be discussed. In particular, under certain limit, the heavy top predicted in both models decouples from left-handed sector and become very hard to be found. We explore the possibility to identify the heavy top in this limit.

**October 1, 2007 12:10 to 1:30 PM. Room 432 PHY/GEO**