

# Naturalness from a Composite Top?

Tuesday

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4:00 P.M.

Rm 415 NSH

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We consider a theory with composite top quarks but an elementary Higgs boson. The hierarchy problem can be solved by supplementing TeV scale top compositeness with either supersymmetry or Higgs compositeness appearing at the multi-TeV scale. The Higgs boson couples to uncolored partons within the top quark. We study how this approach can give rise to a novel screening effect that suppresses production of the colored top partners at the LHC. Strong constraints arise from  $Z$  to  $b\bar{b}$ , as well potentially from flavor physics. Independent of flavor considerations, current constraints imply a compositeness scale near a TeV; this implies that the model is likely tuned at the percent level. Four top quark production at the LHC is a smoking-gun probe of this scenario. New CP violation in D meson mixing is also possible.