



ID de Contribution: 54

Type: 15+5

## Light Colored Scalar as Messenger of Up-Quark Flavor Dynamics in Grand Unified Theories

*vendredi 14 janvier 2011 15:20 (20 minutes)*

The measured forward-backward asymmetry in the  $t\bar{t}$  production at the Tevatron might be explained by the additional exchange of a colored weak singlet scalar. Such state appears in some of the grand unified theories and its interactions with the up-quarks are purely antisymmetric in flavor space. We systematically investigate the resulting impact on charm and top quark physics. The constraints on the relevant Yukawa couplings come from the experimentally measured observables related to  $D^0$ - $D^0$  oscillations, as well as di-jet and single top production measurements at the Tevatron. After fully constraining the relevant Yukawa couplings, we predict possible signatures of this model in rare top quark decays. In a class of grand unified models we demonstrate how the obtained information enables to constrain the Yukawa couplings of the up-quarks at very high energy scale.

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**Classification de thématique:** Main