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## Tevatron Top $A_{FB}$ Versus LHC Top Physics

*Monday, August 29, 2011 3:00 PM (25 minutes)*

We carry out a comprehensive analysis of models for top  $A_{FB}$  at the Tevatron in light of new top data arriving from the LHC. We begin with a careful Tevatron analysis, considering in general which sets of effective vertices give rise to a large forward-backward asymmetry while suppressing the contribution to the total  $t\bar{t}$  cross-section. We show on general grounds that scalar models struggle to produce sufficient asymmetries, while vector models can produce a large asymmetry with a less significant tension in the total cross-section and  $t\bar{t}$  invariant mass distribution at the Tevatron. We examine the essential observables of these models for top physics at LHC7 with  $1 \text{ fb}^{-1}$  of data, including the total cross-section, invariant mass distribution and number of additional jets in  $t\bar{t}$  events. In the case of  $t$ -channel mediators, the LHC total cross-section places a strong constraint on light mediators, while the Tevatron invariant mass distributions place strong constraints on heavy mediators that are able to produce the asymmetry. Vanilla  $t$ -channel models thus seem disfavored at present. Heavy axigluons are becoming increasingly squeezed by LHC7  $t\bar{t}$  and dijet resonance searches. We conclude that LHC7 top analyses are rapidly closing the window for viable models of Tevatron  $A_{FB}$ .

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