ID de Contribution: **505** Type: **Parallel session talk**

New physics in the third generation quark sector: LHC predictions from LEP and Tevatron anomalies

jeudi 21 juillet 2011 10:00 (15 minutes)

The last decade of particle physics beyond the Standard Model has seen extensive developments on an alternative to supersymmetry: the scenarios with warped extra dimensions. Those constitute a new paradigm in the sense that they are dual, through the AdS/CFT correspondence, to composite Higgs models. These scenarios predict strong deviations from the Standard Model mainly in the bottom and top quark sector. In that sense, the LEP anomaly on forward-backward bottom asymmetry (A^b_FB) and the recent Tevatron anomalies on the top asymmetry (A^t_FB) could be interpreted as early signatures of such warped models. We will discuss warped model realizations allowing to address both A^b_FB and A^t_FB, taking also into account the new constraints issued from top pair and dijet production rates at the LHC. Then, I will describe what are the predictions of these warped models at LHC, pointing out the complementarity between Tevatron and LHC on top physics. There are typically two types of predicted signatures at LHC: a resonance peak in the top pair invariant mass distribution (due to the exchange of a Kaluza-Klein excitation of the gluon) or the production of exotic colored fermions (custodians) around a few hundred's of GeV.

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Classification de Session: Higgs and New Physics