MEETING OF THE AMERICAN PHYSICAL SOCIETY DIVISION OF PARTICLES AND FIELDS

Contribution ID: **421** Type: **Presentation**

P5' anomaly for top: tZ' associated production at LHC

Tuesday, 1 August 2017 11:15 (15 minutes)

The LHCb experiment uncovered the P5' anomaly, a deviation in data from Standard Model expectations in the said B -> K*mumu angular observable. This has motivated a possible Z' boson that couples to left-handed b to s transitions, where a model would be the gauged L_mu - L_tau symmetry, but direct search for such a Z' is not promising. Less constrained is a similar Z', but coupling to right-handed t to c transitions. Motivated by this, we study cg -> tZ' associated production at LHC, both for a generic model, and in the L_mu - L_tau with a vector-like U quark as its realization. We also study cc(bar) -> Z' production that would exist within the model. Both processes can be probed already by LHC Run 2 data, all the way up to the HL-LHC.

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Session Classification: Top Quark Physics

Track Classification: Top Quark Physics