



Contribution ID: 346

Type: **not specified**

Four boosted tops from a Regge gluon

Monday, August 29, 2011 11:35 AM (20 minutes)

If the warped Randall-Sundrum (RS) framework is realized in string theory, and if the Standard Model particles propagate in the extra dimension, Regge excitations of the Standard Model states should appear around the TeV scale. Lacking an explicit string theory of RS, we constructed an effective theory to describe the tensor (spin-2) Regge partner of the gluon. We find that Regge gluon decays involving Kaluza-Klein (KK) partners of Standard Model fields are very important. In particular, the decay to two KK gluons (with one possibly off-shell) dominates in most of the parameter space. This decay produces a very distinctive experimental signature: four highly boosted top quarks. We present a preliminary study of the detection prospects for this signal at the Large Hadron Collider (LHC). We find that Regge gluons masses up to about 2 TeV can be probed with 10 inverse femtobarns of data at 7 TeV center-of-mass energy. With design luminosity at 14 TeV, the LHC should be sensitive to Regge gluon masses up to at least 3.5 TeV.

Presenter: SPRAY, Andrew (TRIUMF)

Session Classification: Parallel Session 3