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## Search for $t\bar{t}b\bar{r}$ resonances in ATLAS

The search for  $t\bar{t}b\bar{r}$  resonances that could be produced at the CERN Large Hadron Collider allow the investigation of a wide range of physics beyond the Standard Model. In such a scheme, the top quark is often produced with a transverse momentum that is large as compared to its mass. The decay of such highly boosted top leads to a topology that differs in several respects from that encountered when the top quarks are produced approximately at rest. In particular, for high mass  $t\bar{t}b\bar{r}$  with a lepton + jets final state, the distance between the three jets originating from the hadronic top decay ( $t \rightarrow Wb \rightarrow q\bar{q}b$ ) becomes small, leading to an important jet merging.

We present the analysis applied to the 2012 proton-proton collisions at 8 TeV in the center of mass recorded by the ATLAS experiment, aiming to search for  $t\bar{t}b\bar{r}$  resonance where the complete 3-body decay of the hadronic top is reconstructed as a single fat jet and identified by investigating its substructure.

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