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## Search for $W'^{\rightarrow}tb$ using the 2017 and 2018 in the hadronic final states with ATLAS

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A previous search for  $W'^{\rightarrow}tb$  decays in the hadronic final state using collisions at  $\sqrt{s} = 13$  TeV with luminosity of  $36.1 \text{ fb}^{-1}$  of the data collected by the ATLAS detector in 2015 and 2016 at the Large Hadron Collider was conducted. At 1-5 TeV mass range the search was interpreted for both left-handed and right-handed chiral  $W'$  boson. It was observed that the top and bottom quark masses were consistent with background prediction. The limits on the cross-section were set at high  $W'$ -boson masses, the  $W'$  boson with right left-handed couplings of masses below 3 TeV, 2 TeV are excluded respectively at 95% confidence level.

Since this relies on identifying a large-radius jet from boosted top quarks, jet substructure techniques are employed. The current signal samples are generated using a Geant4 based full simulation, which needs a significant amount of resources to produce. So in order to increase number of signal points probed, a simpler fast simulation is being investigated. The first step is to check the modelling of jet substructure observables relevant for this search between full simulation and fast simulation, and derive appropriate correction factors if necessary.

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