Contribution ID: **69** Type: **Poster**

Search for single production of a vector-like T quark decaying into a Higgs boson and top quark with fully hadronic final states using the ATLAS detector

Tuesday 16 August 2022 15:50 (20 minutes)

A search is made for a vector-like T quark decaying into a Higgs boson and a top quark in 13 TeV proton-proton collisions using the ATLAS detector at the Large Hadron Collider with a data sample corresponding to an integrated luminosity of 139 fb−1. The all-hadronic decay modes H⟶b¯b and t⟶bW⟶bq¯q′ are reconstructed as large-radius jets and identified using tagging algorithms. Improvements in background estimation, signal discrimination, and a larger data sample, contribute to an improvement in sensitivity over previous all-hadronic searches. No significant excess is observed above the background, so limits are set on the production cross-section of a singlet T quark at 95\% confidence level, depending on the mass, mT, and coupling, κT, of the vector-like T quark to Standard Model particles. This search targets a mass range between 1.0 to 2.3 TeV, and a coupling value between 0.1 to 1.6, expanding the phase space of previous searches. In the considered mass range, the upper limit on the allowed coupling values increases with mT from a minimum value of 0.35 for 1.07 <mT< 1.4 TeV up to 1.6 for mT=2.3 TeV.

Authors: ATLAS COLLABORATION; SINGH, Sahibjeet (University of Toronto (CA))

Presenter: SINGH, Sahibjeet (University of Toronto (CA))

Session Classification: Poster session