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## Search for invisible particles produced in association with single-top-quarks with the ATLAS detector using Run-2 data

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The discovery of dark matter is one of the challenges of high-energy physics in the collider era. Many Beyond-Standard Model theories predict dark matter candidates associated with the production of a single top-quark in the final state, the so-called mono-top. A search for events with one top quark and missing transverse energy in the final state is presented. This analysis explores the fully hadronic decay of the top-quark, requiring large missing transverse energy and a boosted large-radius jet in the final state. A Boosted-Decision Tree is used to discriminate the background (mostly coming from top pair production and vector boson production in association with jets) from mono-top signal events. Two alternative interpretations of the obtained results were done, namely the production of a generic dark matter particle and the single production of a vector-like T quark. The analysis makes use of data collected with the ATLAS experiment at  $\sqrt{s} = 13$  TeV during LHC Run-2 (2015-2018) and corresponding to an integrated luminosity of 139 fb<sup>-1</sup>. This analysis is expected to improve the existing limits on the mass of the dark matter candidate from the considered model. New exclusion limit contours in the model parameter space are also foreseen.

### In-person participation

Yes

**Primary author:** VARNES, Erich**Presenter:** NAVARRO GONZÁLEZ, Josep (IFIC (Universitat de València - CSIC))**Session Classification:** Dark Matter**Track Classification:** Dark Matter