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Search for dark mesons decaying to top and bottom quarks in 139 fb-1 of proton-proton collision data at $\sqrt{s} = 13$ TeV with the ATLAS detector at the LHC.

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Extending the Standard Model (SM) with a new strongly coupled dark sector can generate models with both an experimentally accessible dark meson production mechanism and a viable dark matter candidate particle. A search for dark mesons is presented in an integrated luminosity of 139 fb^{-1} of proton-proton collision data at a center of mass energy of 13 TeV with the ATLAS detector at the Large Hadron Collider (LHC). In this model, dark pions are pair-produced and then decay to top-antitop or top-antibottom quark pairs. This talk describes the strategy and expected sensitivity of the all-hadronic channel of this search, with a signature of six or more jets and no additional missing transverse energy. Exclusion limits from this analysis are expected to provide new dedicated constraints on dark meson parameter space, exceeding existing limits derived from the reinterpretation of prior analyses.

Career stage

Graduate student

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