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Search for Resonant Production of Dark Quarks in the Dijet Final State with the ATLAS Detector

This poster presents the search for a new Z' resonance decaying into a pair of dark quarks which hadronise into dark hadrons before promptly decaying back as Standard Model particles. This analysis is based on proton-proton collision data recorded at 13 TeV center of mass energy with the ATLAS detector at the Large Hadron Collider between 2015 and 2018, corresponding to an integrated luminosity of 139 fb⁻¹. After selecting events containing large-radius jets with high track multiplicity, the invariant mass distribution of the two highest-transverse-momentum jets is scanned to look for an excess above a data-driven estimate of the Standard Model multijet background. No significant excess of events is observed and the results are thus used to set 95% confidence-level upper limits on the production cross-section times branching ratio of the Z' to dark quarks as a function of the Z' mass for various dark-quark scenarios.

Author: PORTILLO QUINTERO, Dilia Maria (TRIUMF (CA))

Presenter: PORTILLO QUINTERO, Dilia Maria (TRIUMF (CA))

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