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Measurement of four-top-quarks production with the ATLAS detector at the Large Hadron Collider

Thursday 30 July 2020 08:00 (25 minutes)

The hard scattering process in which two top-quark-antiquark pairs are produced is also called four-top-quarks production and is predicted to have a small cross-section of 12 fb in the standard model. This very rare process has not been observed yet. The background is mainly given by top-quark-antiquark production in association with heavy flavor jets. In this presentation, two analyses are presented which aim to establish experimental evidence for this process based on the full Run 2 dataset recorded with the ATLAS detector. The first analysis selects events with exactly one charged lepton and several jets or two charged leptons of opposite electric charge. The second analysis is based on a lepton pair with the same electric charge or events with more than two leptons. In both channels multivariate techniques are used to optimize the separation between signal and background events and enhance the sensitivity. Finally, both channels are combined.

I read the instructions

Secondary track (number)

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