Top quark pair property measurements using the ATLAS detector at the LHC

Precise measurements of the properties of the top quark test the Standard Model (SM) and can be used to constrain new physics models. The top-quark is predicted in the SM to decay almost exclusively into a $W$ boson and a $b$-quark. We present a wide range of searches for non-SM top quark decays using the 13 TeV ATLAS datasets, including $t\rightarrow q\ H$ and $t\rightarrow q\ Z$. In addition, measurements of the spin correlation and colour flow in $t\bar{t}$ production are also presented.

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