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Top-quark background estimation for physics Beyond Standard Model in the dilepton and jets final state with the ATLAS detector

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This analysis presents the top-quark background estimation for the $H \rightarrow Sh$ channel using the full Run-2 data, corresponding to an integrated luminosity of 139 fb^{-1} of pp collisions at $\sqrt{s} = 13 \text{ TeV}$. The final state for this analysis is formed by two oppositely-charged leptons ($e^\pm \mu^\mp, \mu^\pm e^\mp, e^\pm \mu^\mp + \mu^\pm e^\mp$) and jets. In this analysis the dominant Standard Model background are the top-quark processes ($t\bar{t}$ and Wt). The top control/validation regions are defined in the 1 b-jet and 2 b-jets phase space, respectively. The construction of the top-quark validation region is defined to correct the Monte Carlo mismodeling observed in the leptonic kinematics. Finally, the derived normalization factor in the top-quark control region is applied in the top-quark processes in both the control region and the signal region.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

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