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Top modelling and tuning in CMS

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State-of-the-art theoretical predictions accurate to next-to-leading order QCD interfaced with Pythia8, Herwig, and Sherpa event generators are tested by comparing the unfolded $t\bar{t}$ differential data collected with the CMS detector at 8 and 13 TeV. These predictions are also compared with the underlying event activity distributions in $t\bar{t}$ events using CMS proton-proton data collected at a center of mass energy of 13 TeV. In addition, studies of jet shapes in $t\bar{t}$ events at 13 TeV are presented. Studies to derive and test the new CMS event tune obtained through jet kinematics in $t\bar{t}$ events and global event variables are also described.

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