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Measurement of the ttbb production cross section in the all-jet final state with CMS

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We present a measurement of the ttbb cross section, using data collected in pp collisions at sqrt(s) = 13 TeV by the CMS experiment at the LHC corresponding to an integrated luminosity of 35.9 fb-1. The cross section is measured in the all-jet decay channel of the top quark pairs by selecting events containing at least eight jets, of which two are identified as b jets. A combination of multivariate analysis techniques is used to reduce the large background consisting uniquely of jets produced through the strong interaction, and to discriminate the jets originating from the top quark decays and additional jets. The cross section is measured for the visible ttbb phase space, as well as for the full phase space. The measured cross sections are compared with predictions of several event generators and are found to be generally higher than the theoretical predictions. This measurement provides valuable input to studies of the ttH and four top quark processes, for which the normalisation and modelling of the ttbb process represents a leading source of systematic uncertainty. Furthermore, these results represent a stringent test for perturbative QCD predictions at the LHC.

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