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Measurement of the top quark mass in the all-jets final state at $\sqrt{s}=13\text{TeV}$ and combination with the lepton+jets channel (Article) [Open Access](#)

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Abstract

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A top quark mass measurement is performed using 35.9fb⁻¹ of LHC proton–proton collision data collected with the CMS detector at $s=13\text{TeV}$. The measurement uses the $t\bar{t}$ all-jets final state. A kinematic fit is performed to reconstruct the decay of the $t\bar{t}$ system and suppress the multijet background. Using the ideogram method, the top quark mass (m_t) is determined, simultaneously constraining an additional jet energy scale factor (JSF). The resulting value of $m_t=172.34\pm 0.20(\text{stat}+\text{JSF})\pm 0.70(\text{syst})\text{GeV}$ is in good agreement with previous measurements. In addition, a combined measurement that uses the $t\bar{t}$ lepton+jets and all-jets final states is presented, using the same mass extraction method, and provides an m_t measurement of $172.26\pm 0.07(\text{stat}+\text{JSF})\pm 0.61(\text{syst})\text{GeV}$. This is the first combined m_t extraction from the lepton+jets and all-jets channels through a single likelihood function. © 2019, CERN for the benefit of the CMS collaboration.

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
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