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## Measurement of the top quark mass in the all- jets final state at root s=13 TeV and combination with the lepton plus jets channel

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### Abstract

A top quark mass measurement is performed using 35.9 fb<sup>-1</sup> of LHC proton-proton collision data collected with the CMS detector at  $\sqrt{s} = 13$  TeV. The measurement uses the tt all- jets final state. A kinematic fit is performed to reconstruct the decay of the tt 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  $m_t = 172.34 \pm 0.20$  (stat+ JSF)  $\pm 0.70$  (syst) GeV is in good agreement with previous measurements. In addition, a combined measurement that uses the tt lepton+ jets and all- jets final states is presented, using the same mass extraction method, and provides an  $m_t$  measurement of  $172.26 \pm 0.07$  (stat+ JSF)  $\pm 0.61$  (syst) GeV. This is the first combined  $m_t$  extraction from the lepton+ jets and all- jets channels through a single likelihood function.

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