



ATLAS Paper Draft

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Version 0.20

Comments are due by: Comments deadline

Top quark mass measurement using the soft muon tagging technique in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector

A measurement for the top-quark mass m_t in the ℓ +jets channel for $t\bar{t}$ events is presented, with an experimental technique used for the first time in ATLAS. Semi-leptonic decays of b -hadrons produced by the same top which produced the leptonically decaying W -boson are exploited. The distribution of the invariant mass of the lepton from the W -boson decay ℓ (with $\ell = e, \mu$) and of the soft muon μ originated by the b -hadron decay, $m_{\ell\mu}$, is reconstructed in data and a profile likelihood fit is performed to extract m_t . The measured value of the top quark mass is $m_t = 174.44 \pm 0.76$ (stat.+syst.) GeV ($m_t = 174.44 \pm 0.39(stat.) \pm 0.64(syst.)$ GeV) based on a data collected during 2015+2016 Run2 campaign corresponding to an integrated luminosity of 36.1 fb^{-1} .

To be submitted to:

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