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Measurement of the top quark mass using the B-hadron lifetime technique

Abstract

A measurement of the top quark mass using the transverse decay length ($L_{xy}$) of B-hadrons reconstructed in $t\bar{t}$ candidate events with exactly one charged lepton or one electron and one muon in the final state is presented. The analysis makes use of the proton-proton collision data recorded by the CMS experiment at a center of mass energy of $\sqrt{s} = 8$ TeV during the year 2012. Using the median of the $L_{xy}$ distribution reconstructed in data we measure: $m_t = 173.5 \pm 1.5_{\text{stat}} \pm 1.3_{\text{syst}} \pm 2.6_{\text{p(t)}}$ GeV, in good agreement with previous measurements of the top quark mass.

Click on a plot/table to get the pdf version of it.

Figures

Secondary vertex characteristics in data and as predicted from simulation and control regions in the different channels analysed. The expected contributions from each individual channel are stacked and the total is compared to the observed data. The bottom panels display the ratio of the observed data to the prediction.

Tables

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