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Measurement of the top-quark mass from the b jet energy spectrum with the CMS detector

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A first measurement of the top-quark mass is presented based purely on the peak position of the energy spectrum of b jets produced from top-quark decays. This novel technique follows a recent theoretical proposal aiming to minimize systematic uncertainties related to the modeling of top quark production. The analysis is performed selecting top-antitop events with electron-muon final states in proton-proton collision data at $\sqrt{s} = 8$ TeV with the CMS detector, corresponding to an integrated luminosity of 19.7 fb⁻¹. The energy peak position is obtained by fitting the observed energy spectrum, and is translated to a top-quark mass estimation using relativistic kinematics, calibrated with Monte Carlo simulation.

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