

TOP-MASS MEASUREMENTS FROM DØ

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We present three analyses of the mass of the top quark (m_t) using top-antitop candidate events collected by the DØ experiment during the current run of the Fermilab Tevatron Collider: (i) a 3.6 events/fb sample of data in the lepton+jets channel analyzed to extract a precision value of m_t using the “Matrix-Element” method (ME), wherein each event probability is calculated from the differential production cross section as a function of m_t and the overall jet energy scale, with the latter partly constrained by the two jets from W decay into $q\bar{q}$, (ii) first measurement of the mass difference between top and antitop quarks as a check of CPT invariance in the quark sector, also utilizing the ME method in lepton+jets channels, corresponding to a 1 event/fb data sample, and (iii) measurements of m_t in dilepton final states (updated to 3.6 events/fb), based on “matrix” weighting, “neutrino” weighting and the ME method, relying, respectively, on the likelihood of observing the events in data for a range of assumed m_t values, distributions generated from event weights used to compare the calculated and reconstructed missing transverse energies, and event probabilities based on the leading-order differential cross section as a function of assumed m_t .

Primary author: Prof. FERBEL, Thomas (Universities of Rochester/Maryland)

Presenter: Prof. FERBEL, Thomas (Universities of Rochester/Maryland)

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