

Top Quark Mass Calibration for Monte Carlo Event Generators

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We generalize and update our former top quark mass calibration framework for Monte Carlo event generators based on the e^+e^- hadron-level 2-jettiness distribution in the resonance region for boosted top production. The updated framework includes the addition of the shape variables sum of jet masses, modified jet mass and the treatment of two more gap subtraction schemes to remove the leading renormalon. These generalizations entail implementing a more versatile shape-function fit procedure and accounting for a certain type of massive power corrections. The theoretical description employs boosted heavy-quark effective theory at NNLL matched to soft-collinear effective theory at NNLL and full QCD at NLO and includes the dominant top width effects. We update the top mass calibration results by applying the new framework to PYTHIA 8.205, HERWIG 7.2 and SHERPA 2.2.11.

Alternate track

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