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Top quark mass calibration for Monte-Carlo event generators (15' + 5')

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The lack of knowledge how the top quark mass parameter in Monte-Carlo event generators (MCs) is related to field theoretically defined mass schemes limits the theoretical interpretation of the top quark mass measurements based on templates obtained from direct reconstruction analyses at hadron colliders. In the first part of the talk I review the conceptual aspects of the problem and argue which classes of field theoretic heavy quark mass definitions have a close relation to the quark mass parameter in MCs. In the second part I describe a method to calibrate the top quark MC mass parameter by fits of MC hadron level predictions for observables with very strong mass sensitivity to corresponding hadron level QCD predictions. I demonstrate the approach for thrust in electron positron collisions using factorization based QCD calculations at NNLL / NLO that account for hadronization and the complete top mass dependence, and I present concrete numerical results.

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