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NLO and offshell effects in top quark mass determinations

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The top quark mass is one of the most important parameters of the Standard Model, which therefore has to be determined very precisely. The LHC experiments dedicate entire analysis programs to deal with this task. Among various strategies, the template fitting method is one successful approach to extract the top quark mass from LHC data relying on top quark mass sensitive observables such as the mass of the lepton-bjet pairs. Using different theoretical models ranging from fixed-order detailed descriptions to parton showers, a number of scenarios are studied to obtain an overview of physics effects and uncertainties that impact the determination of the top quark mass in the current experiments.

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