

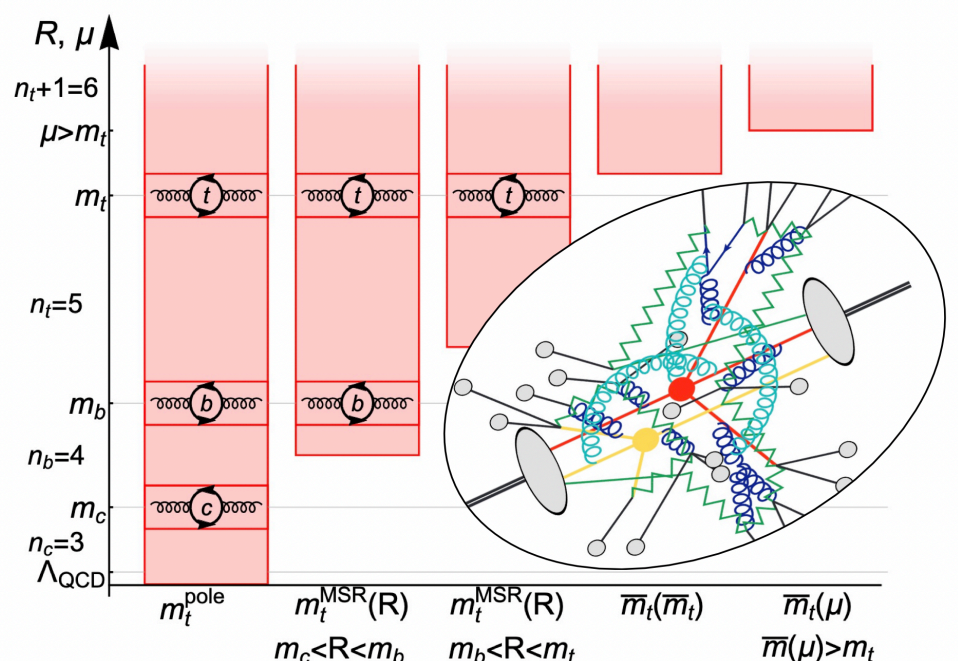
On the top quark mass parameter in MC event generators.

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Auditorium & Webcast 16:00 h

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The top quark mass is currently known from so-called direct measurements with an uncertainty of 300 MeV. This represents a remarkable precision of better than 2 permille, and future measurements at the LHC will reduce this uncertainty even further. In the direct measurements the top quark mass parameter of the MC event generator used in the experimental analysis is determined. There is a general agreement that this top quark mass parameter is close to the pole mass renormalisation scheme, but at this high level of experimental precision it is eventually mandatory to quantify that relation in a more precise and quantitative manner. In the colloquium, I will provide a pedagogical overview of what we currently know about the top quark mass parameter in MC event generators.

I discuss a simple framework involving the invariant mass of boosted top quark jets in e+e- collisions in which the question can now be addressed systematically and which also shows which ingredients are needed to answer the question in general. It turns out that aspects such as the implementation of the parton shower or the modelling of hadronization effects need to be controlled at a high precision and affect the answer. It is thus also possible that there is a dependence on the Monte Carlo and the observables used for the top mass measurement. I provide an outlook on ongoing work to generalise the results to observables sensitive to the top quark decay.



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