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On the fixation of the uncertainties to the running top-quark mass in the electro-weak sector

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A specific representation of the known one-loop EW correction to the relation between the pole and running

$msbar$-scheme masses of the top-quark through particle masses of the Standard Model is given within the Fleischer-Jegerlehner tadpole scheme, where the vacuum expectation value of the Higgs field is renormalized. The importance of taking into account both the EW and QCD effects in this relation in the considered case is emphasized. It is noted that the discard of the EW corrections leads to over 10GeV shift in the difference between the pole and running t-quark masses. This magnitude exceeds essentially the modern uncertainties of the considered relation, following from the treatment of the Tevatron and LHC data where both pole and running t-quark masses are defined in the widespread approach when only the QCD corrections are kept in mind between them. Three other theoretical schemes of defining vacuum expectation value of the Higgs field are considereds. It is shown that in these schemes the 1-loop EW huge effects are essentially minimized. The relation to the recent results of extraction of the top-quark running mass values from CMS and ATLAS data are discussed.

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