

# Bottom mass effects on the Z boson transverse momentum and their implications for the W mass measurements

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The inclusive transverse momentum spectrum ( $p_t$ ) of the Z boson is measured with high precision at the LHC and for this reason it is used as a standard candle to tune Monte Carlo event generators. In turn, this implies that a change in theoretical description of the Z  $p_t$  affects MC predictions used in other SM precision measurements, such as the W mass measurement. One of the uncertainties that currently affects the theoretical prediction comes from the fact that in the usually used five flavor scheme (5FS), heavy flavors are treated as massless. In this work we aim to improve the theoretical prediction of this observable by studying the effect of consistently including the description of the inclusive Z boson transverse momentum coming from the four flavor scheme (4FS) computation of Z in association with  $b\bar{b}$  (where the bottom quarks are massive) on the top of the 5FS scheme description of the neutral current Drell-Yan. Finally, we estimate the effect of these effects on the measurement of the W mass.

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