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Standard Model prediction of the B_c lifetime (17+3)

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Applying an operator product expansion approach an updated Standard Model prediction of the B_c lifetime is presented. The non-perturbative velocity expansion is carried out up to third order in the relative velocity of the heavy quarks. The scheme dependence is studied using three different mass schemes for the \bar{b} and c quarks, resulting in three different values consistent with each other and with experiment. Uncertainties resulting from scale dependence, neglecting the strange quark mass, non-perturbative matrix elements and parametric uncertainties are discussed in detail. The resulting uncertainties are still rather large compared to the experimental ones, and therefore do not allow for clear-cut conclusions concerning New Physics effects in the B_c decay.

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