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[Cancelled] Bottom and Charm Mass determinations from global fits to QQ bound states at N3LO

The bottomonium spectrum up to n = 3 is studied within Non-Relativistic Quantum Chromodynamics up to N3LO. We consider finite charm quark mass effects both in the QCD potential and the MS-pole mass relation up to third order in the Upsilon-scheme counting. The u = 1/2 renormalon of the static potential is canceled by expressing the bottom quark pole mass in terms of the MSR mass. A careful investigation of scale variation reveals that, while n = 1, 2 states are well behaved within perturbation theory, n = 3 bound states are no longer reliable. We carry out our analysis in the nl = 3 and nl = 4 schemes and conclude that, as long as finite mC effects are smoothly incorporated in the MSR mass definition, the difference between the two schemes is rather small. Performing a fit to b-bbar bound states we find mb(mb) = 4.216 +- 0.039 GeV. We extend our analysis to the lowest lying charmonium states finding mc(mc) = 1.273 +- 0.054 GeV. Finally, we perform simultaneous fits for mb and alphaS finding alphaS(mZ) = 0.1178 +- 0.0051. Additionally, using a modified version of the MSR mass with lighter massive quarks we are able to predict the uncalculated O(alphaS^4) virtual massive quark corrections to the relation between the MS-bar and pole masses.

Primary authors: Dr MATEU BARREDA, Vicent (University of Salamanca); Dr GARCIA ORTEGA, Pablo (University of Salamanca)

Presenter: Dr MATEU BARREDA, Vicent (University of Salamanca)

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