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Quark mass determinations with the RI-SMOM scheme and HISQ action

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Lattice QCD provides several avenues for the high precision determination of quark masses. Using the RI-SMOM scheme applied to lattice calculations with the HISQ action, we obtain mass renormalisation factors that we use to provide strange and charm quark masses with 1% precision. The calculation involves the study of various sources of systematic uncertainty, including an analysis of possible nonperturbative (condensate) condensate contributions. These results allow a comparison of different mass determination methods of comparable precision. In particular we (HPQCD) find good agreement between RI-SMOM and current-current correlator determinations based on the same lattice QCD bare masses, providing a strong test of our understanding of systematic uncertainties.

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