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Radiative Electroweak box correction to pion, kaon and Nucleon β decay

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Recent investigations of tests of unitarity of the first row of the CKM matrix report roughly 3σ tension. Non-perturbative calculations of the radiative corrections (RC) are needed to reduce the theory uncertainty in CKM matrix elements. Here we present the electroweak box contribution to the pion, kaon and neutron decays. For pion and kaon case, we present published results from eight $N_f = 2 + 1 + 1$ HISQ-ensembles analyzed using Clover fermions. Our results after extrapolation to the physical point are $square_{\gamma W}^{VA}|_{\pi} = 2.810(26) \times 10^{-3}$ and $square_{\gamma W}^{VA}|_K = 2.389(17) \times 10^{-3}$. We also present first results for RC to neutron decay from three $N_f = 2 + 1 + 1$ HISQ ensembles.

Topical area

Standard Model Parameters

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