

QED-corrected Lellouch-Luescher formula for $K \rightarrow \pi\pi$ decay

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A precise Standard Model prediction for the direct CP violation in the $K \rightarrow \pi\pi$ decay process is of great importance in confronting experiments and constraining new physics. The state-of-art lattice QCD precision of this process will soon achieve a value for which QED effects can no longer be neglected. The inclusion of QED in such calculations is planned and the formalism to relate the finite-volume matrix element obtained from these calculations to the physical amplitude is underway. Here we present preliminary results on the extension of Lellouch-Luscher formula in presence of QED, therefore providing such formalism for the extraction of physical amplitudes for the $K \rightarrow \pi\pi$ process with charged initial and/or final states.

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