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New result for ε' in $K \to \pi\pi$ decay using periodic boundary conditions

Thursday, 3 August 2023 14:30 (20 minutes)

We report our recent results for $K \to \pi\pi$ matrix elements and ε', the measure of direct CP violation, released on arXiv:2306.06781. This is RBC/UKQCD's first result for ε' with periodic boundary conditions (PBC), while our earlier calculations were performed with G-parity boundary conditions, where the isospin-0 two-pion ground state corresponds to the on-shell kinematics. Using the GEVP method with multiple two-pion operators, we overcome the difficulty that PBC require us to calculate the matrix elements with excited two-pion final states to obtain the on-shell kinematics. We therefore continue measurements with more configurations and on finer lattices to improve the precision. This talk includes the report on the latest status of new calculations.

Topical area

Quark and Lepton Flavor Physics

Primary author: TOMII, Masaaki (UConn)

Presenter: TOMII, Masaaki (UConn)

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