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ϵ'/ϵ from the lattice and its implications

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Recent publication [arXiv:1505.07863 by RBC and UKQCD Collaborations] of the first lattice QCD calculation of the complex kaon decay amplitude A_{0^-} with physical kinematics, using a single $32^3 \times 64$ domain wall ensemble is discussed. Approximate agreement with the experimental value for $\text{Re}(A_{0^-})$ is obtained. The calculated value of $\text{Im}(A_{0^-})$ is used to compute the direct CP violating ratio $\text{Re}(\epsilon'/\epsilon)$, which is found to be ~ 2 sigma lower than the experimental value. The outlook for improved determination as well as implications are discussed. The talk is based on the lattice work done by the presenter in collaboration with RBC and UKQCD collaborations and the phenomenological work is being done with Enrico Lunghi and Christoph Lehner.

Primary author: Dr SONI, amarjit (Brookhaven National Lab)

Presenter: Dr SONI, amarjit (Brookhaven National Lab)

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