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## Rare kaon decays from lattice QCD

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The rare kaon decays,  $K \rightarrow \pi\nu\nu_{\bar{b}}\bar{\nu}$  and  $K \rightarrow \pi l^+ l^-$ , serve as ideal probes for the observation of New Physics (NP) effects. To isolate the NP contributions successfully, one needs to control the errors for Standard Model prediction from both short- and long-distance contributions.

RBC-UKQCD collaborations have performed a successful exploratory study on the calculation of the long-distance contributions to KL-KS mass difference, and are now developing the necessary methods to calculate the long-distance contributions to rare kaon decay amplitudes. In this talk, I will introduce the physical background for rare kaon decays and describe the state of our preliminary calculations.

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