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## **$K\pi$ Scattering as a Step Towards $B \rightarrow K^*\ell^+\ell^-$ from Lattice QCD**

*Friday 7 November 2025 16:40 (20 minutes)*

The study of rare semileptonic  $B$  decays such as  $B \rightarrow K^*\ell^+\ell^-$  offers a sensitive probe of the Standard Model and potential new physics, but a key theoretical challenge for lattice QCD is the treatment of the resonant  $K^*$  in the final state. Traditional calculations rely on the narrow-width approximation, treating the  $K^*$  as stable. In this talk, I present first steps towards going beyond this approximation by studying  $K\pi$  scattering on an RBC/UKQCD ensemble and extracting information about the  $P$ -wave channel relevant to the  $K^*$ . I will discuss the methodology, show initial results for the finite-volume spectrum and phase shift, and outline the path toward determining  $B \rightarrow K\pi$  matrix elements in a fully dynamical framework.

### **Parallel Session (for talks only)**

Quark and lepton flavor physics

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**Session Classification:** Quark and lepton flavor physics