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Towards $K\pi$ scattering with domain-wall fermions at the physical point using distillation

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Resonances play an important role in Standard Model phenomenology. In particular, hadronic resonances are found in flavour-physics processes, such as B and D decays, which can be central for New Physics searches. Lattice QCD simulations combined with the finite-volume method can nowadays be used to reliably study strongly coupled scattering processes such as $K\pi$ and thus the hadronic resonance K^* . In this work, we approach $K\pi$ scattering on a domain-wall $N_f = 2 + 1$ RBC-UKQCD ensemble at the physical point. We use the distillation method within Grid and Hadrons software to compute sets of operator basis. That allows solving an eigenvalue problem to extract the low-energy finite-volume spectra, which is then translated into scattering information. We update the state of the calculation by reviewing the smearing process and displaying consistency checks and conclude by showing preliminary data.

Primary author: PITANGA LACHINI, Nelson (University of Edinburgh)

Presenter: PITANGA LACHINI, Nelson (University of Edinburgh)

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