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Physical-mass calculation of $\rho(770)$ and $K^*(892)$ resonance parameters via $\pi\pi$ and $K\pi$ scattering amplitudes from lattice QCD

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We present our study of the $\rho(770)$ and $K^*(892)$ resonances from lattice QCD employing domain-wall fermions at physical quark masses. We determine the finite-volume energy spectrum in various momentum frames and obtain phase-shift parameterizations via the Lüscher formalism, and as a final step the complex resonance poles of the $\pi\pi$ and $K\pi$ elastic scattering amplitudes via an analytical continuation of the models. By sampling a large number of representative sets of underlying energy-level fits, we also assign a systematic uncertainty to our final results. This is a significant extension to data-driven analysis methods that have been used in lattice QCD to date, due to the two-step nature of the formalism.

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