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I=0 and 2 pion-pion scattering phase shift with physical quark mass

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We summarize the results of the recent work of calculating the $\pi\pi$ scattering phase shifts for both the s-wave I=0 and I=2 channels at 4 different energies around the kaon mass with physical quark mass and focus on three new topics presented in that work. (i) A determinant test that can be applied to multi-operator data at a single time separation to detect excited state contamination. (ii) A fitting strategy that exploits theoretical input to estimate the excited state error which improves upon the method used to estimate this error in our 2015 calculation. (iii) A method of presenting the combined error on a scattering phase shift determined from finite-volume studies, giving a phase shift error at fixed energy rather than errors on both the phase shift and the energy at which it is evaluated.

Primary authors: WANG, Tianle (Columbia University); KELLY, Christopher (Columbia University)

Presenter: WANG, Tianle (Columbia University)

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