

BAND Science Highlight

Two-body scattering emulator without Kohn anomalies

Fast & accurate emulators are needed to perform Bayesian analyses for complex nuclear reactions. We construct an emulator using Eigenvector Continuation applied to the (general) Kohn variational principle (KVP). However, the KVP is prone to spurious singularities known as Kohn anomalies, which introduce uncontrolled errors.

We use the various forms of the scattering asymptotic boundary condition and develop a mixed approach that efficiently mitigates these anomalies.

We demonstrate that our mixed emulator reproduces the exact calculations accurately.

Drischler, Quinonez, Giuliani, Lovell, and Nunes, <u>Phys. Lett. B **823**</u>, <u>136777</u>



Figure: Comparison of MCMC results using our mixed emulator (red) and the exact solver (black) for elastic scattering of neutrons on ⁴⁰Ca at 20 MeV.