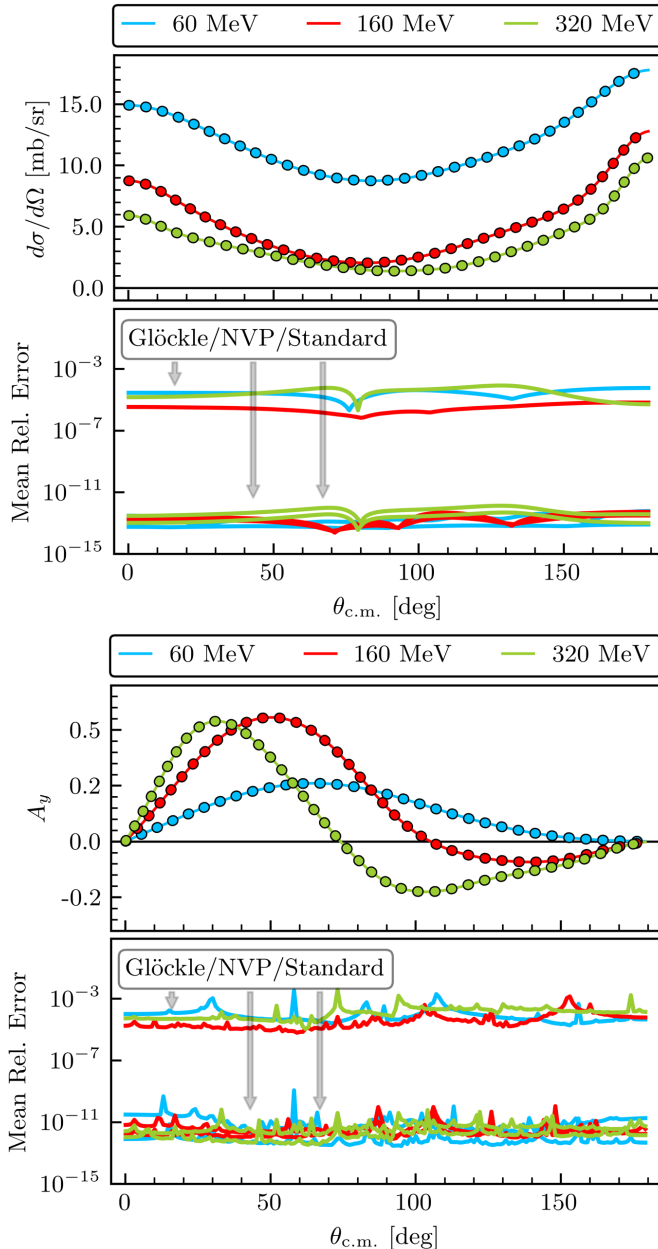




Emulators for nucleon-nucleon scattering using chiral interactions



Objectives

- Bayesian uncertainty quantification needed for new-generation nucleon-nucleon forces used in NUCLEI applications → emulators to speed up evaluations.
- Extend emulators to coupled channels and complete set of two-body scattering observables.
- Test different reduced-order model implementations.

Impact

- Extended emulators successfully tested for all observables with chiral interactions (figures on left). Three emulators compared; two of them have less than 10^{-11} errors while running >200 times faster!
- These emulators can now be applied for parameter estimation of the new forces, which enables the propagation of errors as well as validation tests.

Accomplishments

A.J. Garcia et al., Phys. Rev. C **107**, 054001 (2023)

J.A. Melendez et al., J. Phys. G **49**, 102001 (2022)