U.S. DEPARTMENT of ENERGY | Office of Science

Seeking simple insights from complex nuclear reactions

FRIB Theory Alliance

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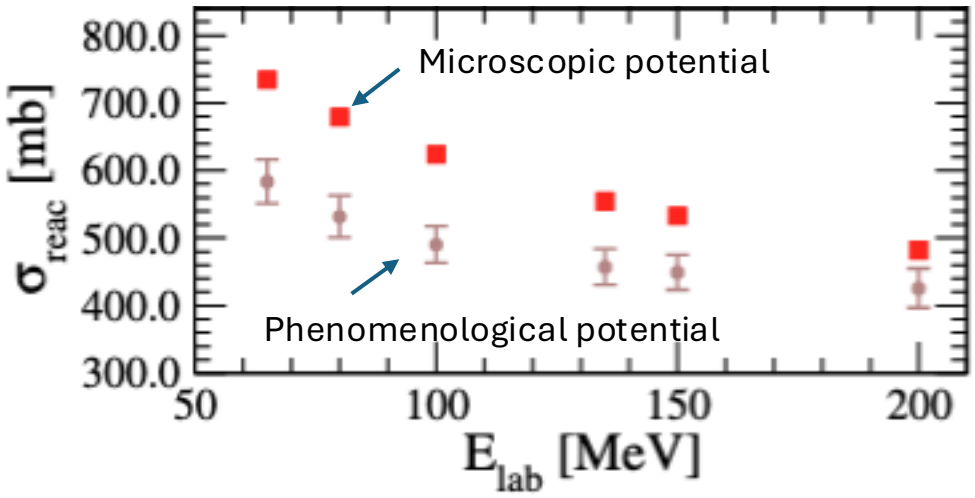
Objectives

Build reliable optical potentials for studies of nuclear reactions far from stability

Results

Used ab initio symmetry-adapted no-core shell model (SA-NCSM) and spectator expansion of multiple scattering theory to obtain microscopic optical potentials for the Mg isotopic chain up to ^{32}Mg

^{32}Mg proton reaction cross section



Impact

Our published optical potentials are readily available for experiments to use.

Accomplishments

Our video on optical potentials received second place award in Annual Review of Nuclear and Particle Science Video Contest



https://www.youtube.com/watch?v=VGoA8SFPNzw

Publication: Sargsyan, Fuentealba Bustamente, Beyer and Elster. J. Phys. G: Nucl. Part. Phys. (2026) Emerging Leaders special volume