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Unique double folding optical parameters for 240 MeV⁶Li beam¹

KRISHICHAYAN, Texas A&M University, X. CHEN, Washington University at St. Louis, Y.-W. LUI, Y. TOKIMOTO, J. BUTTON, D.H. YOUNGBLOOD, Texas A&M University — Theoretical calculations with different interactions and relativistic models have shown that the location of the GMR is sensitive to the symmetry energy. To better determine the contribution from symmetry energy ISGMR measurements should be extended to unstable nuclei using inverse reactions. Most ISGMR information has come from inelastic α scattering but unfortunately helium does not make a good target. Chen et al.[1] have demonstrated that ⁶Li inelastic scattering at 40 MeV/A is a viable reaction for ISGMR studies and ⁶Li foil targets are well suited to these studies. Here we report results for elastic scattering of 240 MeV ⁶Li ions on ²⁴Mg, ²⁸Si, ⁴⁰Ca, ⁴⁸Ca, ⁵⁸Ni, ⁹⁰Zr, and ¹¹⁶Sn and inelastic scattering to low-lying states of these targets to develop a systematic optical potential that can be used in Giant Resonance studies of unstable nuclei. Density dependent double folding calculations using the M3Y effective NN interaction were used to obtain the real part of the optical potential and the transition potential. A Woods-Saxon potential was used for the imaginary part. B(EL) values obtained for low lying 2⁺ and 3⁻ states are mostly in agreement with the adopted values. The progress on developing a systematic potential will be presented. [1] X.Chen et al., Phys.Rev. C79,024320(2009).

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