

Abstract Submitted
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Isotopically-Resolved Neutron Total Cross Sections as a Probe of Nuclear Structure¹ COLE PRUITT, Washington Univ — Total neutron cross sections (σ_{tot}) are a direct, Coulomb-blind probe of nuclear forces and are tightly correlated with several bulk nuclear properties of great interest (neutron skin thickness, electric polarizability). While σ_{tot} data have been collected on many natural samples, isotope-specific data, most valuable for understanding nuclear properties away from β -stability, are very sparse even for closed-shell nuclei. In light of this deficit, we have completed a campaign of isotopic-specific σ_{tot} measurements on $^{16,18}\text{O}$, $^{40,48}\text{Ca}$, $^{58,64}\text{Ni}$, and $^{112,124}\text{Sn}$ from 3-300 MeV. We present σ_{tot} and isotopic differences and discuss the advantages and disadvantages of the waveform digitizer technology that enabled our measurements. We also discuss preliminary Dispersive Optical Model (DOM) fits employing these data, fits that, ultimately, will provide dispersively correct and non-local optical nucleon potentials and allow for predictions of neutron-skin thicknesses.

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