

Abstract Submitted  
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**Proton radiography, nuclear cross sections and multiple scattering** SKY SJUE, Los Alamos National Laboratory, LANSCE PROTON RADIOGRAPHY TEAM — Proton radiography is a valuable tool for assessing dynamic experiments over times as short as 100 nanoseconds. Facilities now exist or are in development in the China, Germany, Russia and the United States with proton energies ranging from 800 MeV to 50 GeV. The multiple Coulomb scattering distribution of protons and the cross sections for proton interactions with the nucleus both depend on the proton energy. A detailed understanding of these effects is necessary to gain the best possible quantitative information from proton generated radiographs. We will present an analysis of the integrated nuclear cross sections for various metals at 800 MeV kinetic energy using step wedges at Los Alamos Neutron Science Center at 800 MeV, along with results at 24 GeV from Alternating Gradient Synchrotron at 24 GeV. The results will be compared with models of multiple scattering and several models of the nuclear interactions. Finally, we will discuss trends in the interplay between nuclear attenuation and multiple scattering as a function of proton energy.

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