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Experimental Constraints from Heavy-ion Collisions on the Momentum dependence of the Symmetry Potential KYLE BROWN, Michigan State Univ — Nucleons in dense nuclear matter appear to have reduced inertial masses due to momentum-dependent interactions they experience with other nucleons. This reduction of their masses is often referred to as their effective mass, and at saturation density the masses are reduced to about 70% of their vacuum mass. In asymmetric matter the effective masses of neutrons and protons can be different, leading to an effective mass splitting. The sign and magnitude of this splitting is poorly constrained at densities away from saturation density. Recent experiments at the National Superconducting Cyclotron were performed to help constrain these momentum dependent interactions. By measuring the kinetic energy spectra of neutrons and protons, or analogously using "pseudo neutrons" from measured tritons and helium-3, the sign and magnitude of this effective-mass splitting can be extracted, with the help of transport models. Collisions of beams of ^{40,48}Ca at 50 and 140 MeV/A impinged on targets of ^{58,64}Ni and ^{112,124}Sn. Light charged particles up to boron were detected in the upgraded High-Resolution Array and neutrons were detected in the Large-Area Neuron Array. I will present details about the experiment setup and then discuss some first results on the spectral ratios with comparisons to transport model calculations. This research is supported by the National Science Foundation under Grant No. PHY-1565546 and the Department of Energy under Grant No. DE-NA0002923.

Kyle Brown
Michigan State Univ

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