Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

**A nonlocal application of the dispersive optical model to $^{208}$Pb**[1]

M. A. KEIM, Department of Physics, Washington University, St. Louis, MO 63130, USA, M. H. MAHZOON, Department of Physics and Astronomy, Michigan State University, East Lansing, MI 48824, USA, M. C. ATKINSON, Department of Physics, Washington University, St. Louis, MO 63130, USA, R. J. CHARITY, Department of Chemistry, Washington University, St. Louis, MO 63130, USA, W. H. DICKHOFF, Department of Physics, Washington University, St. Louis, MO 63130, USA — A nonlocal application of the dispersive optical model to neutrons and protons in $^{208}$Pb is presented. A nucleon self-energy is described by parametrized real and imaginary parts connected through a dispersion relation. This parametrization includes nonlocal Hartree-Fock and local Coulomb and spin-orbit real terms, and nonlocal volume and surface and local spin-orbit imaginary terms. A simple Gaussian nonlocality is employed, and appropriate asymmetry parameters are included to describe the N-Z dependence of the nucleus. These parameters are constrained by fitting to experimental data, including particle numbers, energy levels, the charge density, elastic-scattering angular distributions, reaction cross sections, and the neutron total reaction cross section. From the resulting nucleon self-energy, the neutron matter distribution and neutron skin are deduced.

[1]This work was supported by the US Department of Energy, Division of Nuclear Physics under grant DE-FG02-87ER-40316, the US National Science Foundation under grants PHY-1304242 and PHY-1613362, and the Washington University Office of Undergraduate Research

Michael Keim
Department of Physics, Washington University, St. Louis, MO 63130, USA

Date submitted: 24 Jun 2017 Electronic form version 1.4