

Abstract Submitted
for the OSS18 Meeting of
The American Physical Society

Further Evidence for Stiff Symmetry Energy from Wide Isovector Aura¹ PAWEL DANIELEWICZ, Michigan State Univ, YANNICK CIANYI, African Institute for Mathematical Sciences, Tanzania — On account of symmetry energy dropping with density, nuclear isovector density extends farther out than the isoscalar density, leading to an isovector aura surrounding a nucleus. The faster the drop of the energy with density, the wider the aura. The width and sharpness of the aura can be assessed by simultaneously analyzing elastic scattering and quasielastic charge-exchange data off the same target, with the two, respectively, testing primarily isoscalar and isovector densities. In the past (P. Danielewicz et al., Nucl. Phys. 958, 147 (2017)) we analyzed unpolarized nucleon elastic and quasielastic cross sections on ^{48}Ca , ^{90}Zr , ^{120}Ca and ^{208}Pb . We now augment the analyzed set with two more targets, ^{92}Zr and ^{94}Zr , and expand the data to include vector analyzing powers. The results consistently point to large widths, 1fm, of the isovector aura, now for 6 nuclei. Such an aura implies stiff symmetry energy, with a slope parameter $L \lesssim 70\text{MeV}$. The neutron skins may be viewed as nucleus-dependent reflections of the aura.

¹Work supported by the U.S. National Science Foundation under Grant PHY-1403906.

Pawel Danielewicz
Michigan State Univ

Date submitted: 12 Mar 2018

Electronic form version 1.4