Mirror Charge Radii and the Neutron Equation of State[1] ALEX BROWN, Michigan State University — The differences in the charge radii of mirror nuclei are shown to be proportional to the neutron skins of neutron-rich nuclei and the corresponding slope of the neutron equation of state near a value of 0.10 neutrons/fm^3. The neutron skin is important for constraining the neutron equation of state for use in astrophysics. The charge radii of several neutron-rich nuclei are already accurately measured to the accuracy of about 0.005 fm. Experiments at radioactive beam facilities are needed to measure the charge radii of the corresponding proton-rich mirror nuclei to a similar accuracy. It is also shown that neutron skins of nuclei with $N = Z$ depend upon the value of the neutron EOS at a density of 0.10 neutrons/fm^3.

Alex Brown
Michigan State University

Date submitted: 27 Jun 2017   Electronic form version 1.4