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New precision measurements of the neutral weak form factor of 208Pb[1]

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The neutron rich 208Pb nucleus can offer important information regarding nuclear structure. The parity violating asymmetry in longitudinally polarized elastic electron-nucleus scattering can be sensitive to the neutron RMS radius. A precise measurement of this quantity can provide meaningful constraints on the density dependence of the symmetry energy of neutron-rich nuclear matter; an important parameter for the nuclear equation of state. While the electroweak nature of the interaction lends itself to a clean interpretation of the results it also presents significant experimental hurdles. In the summer of 2019 the PREX collaboration successfully completed data collection using the CEBAF accelerator at Jefferson Lab. The analysis and results of this experiment, as well as implications on our understanding of nuclear structure are going to be presented.

[1]on behalf of the PREX collaboration