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des physiciens et physiciennes

Contribution ID: 3477

Type: **Invited Speaker / Conférencier(ère) invité(e)**

## **(I) Parity violation measurements of the neutron skin in $^{208}\text{Pb}$ and $^{48}\text{Ca}$**

*Monday 6 June 2022 10:45 (30 minutes)*

The PREX-II and CREX experiments at Jefferson Lab have completed measurements of the parity violating elastic electron scattering asymmetry from  $^{208}\text{Pb}$  and  $^{48}\text{Ca}$  targets. These asymmetries are sensitive to the weak charge radius of the nuclei, and thus to the RMS radius of the neutron distribution. In neutron-rich nuclei such as  $^{208}\text{Pb}$  and  $^{48}\text{Ca}$ , the neutrons extend to larger radii than the protons, forming the neutron skin. Evaluation of the neutron skin in  $^{48}\text{Ca}$  provides an important benchmark for nuclear theory, while that of  $^{208}\text{Pb}$  provides meaningful constraints to the density dependence of the symmetry energy in neutron rich nuclear matter, a parameter of the nuclear equation of state. A brief discussion of the experimental techniques, analysis, and results of the experiments will be presented, as well as our understanding of the impact regarding nuclear matter systems, from nuclear structure to neutron stars.

\*We acknowledge the support of the U.S. Department of Energy Office of Science, Office of Nuclear Physics, the National Science Foundation, and NSERC (Canada).

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**Session Classification:** M1-4 Nuclear Structure and Astrophysics (DNP) | Structure nucléaire et astrophysique (DPN)

**Track Classification:** Technical Sessions / Sessions techniques: Nuclear Physics / Physique nucléaire (DNP-DPN)