The unique properties of the electroweak interaction give us the chance to deepen our understanding of the universe. Using parity violating electron scattering (PVES) we can perform precision tests of the Standard Model or determine unknown nuclear properties. These types of measurements will guide future searches for physics beyond the standard model (BSM) and improve our knowledge of nuclear physics.

In this colloquium I will talk about three PVES measurements. First I will discuss the recently released measurement of the weak charge of the proton from the Qweak collaboration. This measurement is the most precise determination of a parity violating asymmetry in electron scattering to date and paves the way for the higher precision needed for future experiments. I will then transition to some of the most exciting measurements that will come in the next few years. With PREX/CREX we will make an important determination of parameters needed to understand high density nuclear matter. Finally I will discuss the status of the proposed MOLLER experiment. For all of these measurements the challenges as well as what they can teach us about the universe will be discussed.