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**The Nuclear Physics of Neutron Stars**

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The neutron radius of a heavy nucleus is a fundamental nuclear-structure observable that remains elusive. Progress in this arena has been limited by the exclusive use of hadronic probes that are hindered by large and controversial uncertainties in the reaction mechanism. The finite nucleus - a system that is 18 order of magnitude smaller and 55 orders of magnitude lighter than a neutron star - may be used as a miniature surrogate to establish important correlations between its neutron skin and several neutron-star properties. Indeed, a nearly model-independent correlation develops between the neutron skin of  $^{208}\text{Pb}$  and the transition density between the liquid mantle and the solid crust in the neutron star. The implications of the proposed purely electroweak Parity Radius EXperiment (PREX) at the Jefferson Laboratory on neutron-star structure will be reviewed and connections to other fields, such as atomic and condensed-matter physics, will be established.