Abstract Submitted
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Applications of modern chiral interactions in nuclear matter and nuclei[1] FRANCESCA SAMMARRUCA, University of Idaho — Experimental investigations are in progress, and more are planned for the near future, to set reliable constraints on the isospin asymmetric part of the nuclear equation of state. The latter plays a fundamental role in a broad spectrum of systems and phenomena, including the skins of neutron-rich nuclei and the location of the neutron drip lines. From the theoretical standpoint, microscopic calculations with statistically meaningful uncertainties are essential to guide experiments. We will discuss recent calculations of the nuclear and neutron matter equations of state [1] at different orders of the chiral expansion. We will present applications and discuss the significance of those predictions as a foundation for future studies of convergence of the chiral perturbation series. Anticipating future experiments which may provide reliable information on the weak charge density in nuclei, we discuss the possibility of constraining the size of three-neutron forces in neutron matter. [1] F. Sammarruca, L. Coraggio, J.W. Holt, N. Itaco, R. Machleidt, and L.E. Marcucci, Phys. Rev. C **91**, 054311 (2015).

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