

Abstract Submitted
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Ab initio predictions of the symmetry energy and recent constraints.¹ FRANCESCA SAMMARRUCA, University of Idaho — The symmetry energy plays a crucial role in the structure and the dynamics of neutron-rich systems, including the formation of neutron skins, the location of neutron drip lines, as well as intriguing correlations with the structure of compact stars. With experimental efforts in progress or being planned to shed light on the less known aspects of the nuclear chart, microscopic predictions based on ab initio approaches are very important. In recent years, chiral effective field theory has become popular because of its firm connection with quantum chromodynamics and its systematic approach to the development of nuclear forces. Predictions of the symmetry energy obtained from modern chiral interactions will be discussed in the light of recent empirical constraints extracted from heavy ion collisions at 400 MeV per nucleon at GSI [1]. Applications of our equations of state [2] to neutron-rich systems will also be discussed, with particular emphasis on neutron skins, which are sensitive to the density dependence of the symmetry energy. [1] P. Russotto *et al.*, arXiv:1608.04332. [2] F. Sammarruca *et al.*, Phys. Rev. C **91**, 054311 (2015).

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