Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Contribution of isovector mesons to the symmetry energy in a microscopic model[1] FRANCESCA SAMMARRUCA, University of Idaho — The equation of state of isospin asymmetric nuclear matter (IANM) has broad applications, ranging from the structure of rare isotopes to the properties of neutron stars. Important quantities that emerge from IANM studies are the symmetry energy and the symmetry potential. The latter arises from the difference between the neutron and proton single-particle potentials in IANM, along with the closely related proton and neutron effective masses. In this paper, we concentrate on the role of isovector mesons in the symmetry energy. The impact of isovector mesons on the symmetry energy has been discussed in the literature, particularly in the context of mean-field approaches, both relativistic and non-relativistic. Because our framework is microscopic, our findings are easily understood in terms of contributions of each meson to the appropriate component of the nuclear force and the isospin dependence naturally generated by isovector mesons. We demonstrate the outstanding role of the pion in building the symmetry energy. We comment on fundamental differences between our approach and the one of mean-field models, particularly pionless QHD theories.

[1]Support from the Department of Energy is acknowledged

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Date submitted: 27 Dec 2011 Electronic form version 1.4