

Abstract Submitted  
for the DNP06 Meeting of  
The American Physical Society

**Understanding in-medium hadronic interactions through the nuclear equation of state**<sup>1</sup> PLAMEN KRASSTEV, FRANCESCA SAMMARRUCA, University of Idaho — The relation between energy/particle and density, known as the nuclear equation of state (EOS), plays a major role in a variety of nuclear and astrophysical systems. Spin- and isospin- asymmetries can have a dramatic impact on the equation of state and potentially alter its stability conditions. An example is the possible manifestation of ferromagnetic instabilities, which would signal the existence, at some density, of a spin-polarized state with lower energy than the unpolarized one. This issue is being discussed extensively in the literature and the conclusions are presently very model dependent. We will present and discuss recent progress in our study of highly asymmetric neutron/nuclear matter, in particular spin-polarized matter. The approach we take is microscopic in that the EOS properties are derived from realistic free-space nucleon-nucleon interactions. This makes it possible to understand the nature of the predicted EOS in terms of specific features of the nuclear force and the applied medium effects.

<sup>1</sup>Support from the U.S. Department of Energy is gratefully acknowledged.

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Date submitted: 22 Jun 2006

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