Abstract Submitted
for the APR06 Meeting of
The American Physical Society

The Nuclear Equation of State and Its Applications to Neutron Stars[1] PLAMEN KRASTEV, FRANCESCA SAMMARRUCA, University of Idaho — One of the most challenging problems in both theoretical and experimental nuclear physics is to understand the nature of matter under extreme conditions of density and pressure. Observations of neutron star properties impose important constraints on the equation of state of dense matter, as the latter is the basic input quantity that enters the structure equations of these compact objects. Continuing with our systematic study of the effective nucleon- nucleon interactions in dense and isospin-asymmetric hadronic environment, we will present predictions of neutron star masses and radii obtained from our relativistic equation of state. We use realistic nucleon-nucleon potentials defined in the framework of the meson-exchange potential model and the Dirac-Brueckner approach. We will provide an overview of theoretical predictions and recent observational data. This broad outlook will help us gauge the quality of our tools and determine the importance of mechanisms beyond the present model.

[1]The authors acknowledge financial support from the U.S. Department of Energy under grant DE-FG02-03ER41270

Plamen Krastev
University of Idaho

Date submitted: 09 Jan 2006 Electronic form version 1.4