



独立行政法人理化学研究所 仁科加速器研究センター  
第174回 RIBF核物理セミナー  
RIKEN Nishina Center for Accelerator Based Science  
The 174<sup>th</sup> RIBF Nuclear Physics Seminar

Microscopic Calculations of Homogeneous and Inhomogeneous Neutron Matter

\*This seminar is co-organized with iTHES, RIKEN.

Dr. Stefano Gandolfi  
(Los Alamos National Laboratory /iTHES visitor)

Recent advances in experiments of the symmetry energy of nuclear matter and in neutron star observations yield important new insights on the equation of state of neutron matter at nuclear densities. In this regime the EOS of neutron matter plays a critical role in determining the mass-radius relationship for neutron stars. We show how microscopic calculations of neutron matter, based on realistic two- and three-nucleon forces, make clear predictions for the relation between the isospin-asymmetry energy of nuclear matter and its density dependence, and the maximum mass and radius for a neutron star.

On the other side, the properties of inhomogeneous neutron matter at low to moderate densities are very important to describe the neutron star crust, and we show how microscopic calculations of confined neutrons can put severe constraints on density functionals commonly used to describe heavy nuclei and the crust.

February 26 (Wed.) 2014 15:00 ~  
RIBF Hall (rm.201), RIBF bldg., RIKEN

Contact: Nuclear Physics Seminar Organizing Committee  
[npsoc@ribf.riken.jp](mailto:npsoc@ribf.riken.jp)  
<http://ribf.riken.jp/~seminar/>