国立研究開発法人理化学研究所　仁科加速器研究センター
第208回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 208th RIBF Nuclear Physics Seminar

Nuclear equation of state for core-collapse simulations with realistic nuclear forces
現実的核力に基づく重力崩壊シミュレーションのための核物質状態方程式の研究

Dr. TOGASHI, Hajime (RIKEN Nishina Center)

The equation of state (EOS) for nuclear matter plays important roles in the studies of astrophysical objects such as neutron stars and core-collapse supernovae (SNe). Since the EOS table is required to provide thermodynamic quantities in an extremely wide range of densities, proton fractions and temperatures, the nuclear EOSs available for SN simulations (SN-EOS) are limited. Furthermore, in these SN-EOSs, uniform nuclear matter is treated with phenomenological models. Therefore, we construct a new type of SN-EOS starting from the realistic nuclear Hamiltonian composed of the Argonne v18 two-body potential and Urbana IX three-body potential by the cluster variational method.

In this talk, we will report the properties of our SN-EOS and its application to numerical simulations of core-collapse SNe. Furthermore, we will discuss an extension of our variational approach so as to treat hyperon mixing.

＊ The talk will be given in English language..

Oct. 27th (Tue.) 2015　13:30～
RIBF Hall (rm.201), RIBF bldg., RIKEN

Contact: Nuclear Physics Seminar Organizing Committee
npsoc@ribf.riken.jp
http://ribf.riken.jp/~seminar/