

Isobaric analog resonances of neutron-rich nuclei

N. Imai¹,

¹ *Center for Nuclear Study, Univ. of Tokyo*

We're studying the single particle structure of even-odd neutron-rich nuclei via the isobaric analog resonances (IARs). The IARs are populated by the proton resonance elastic scattering in inverse kinematics with the low-energy RI beams and the proton target such as a polyethylene. We have so far measured the IARs of low-lying states of ³⁵Si [1] and ³¹Mg [2] which are located in the vicinity of so-called "island of inversion". In the frame work of the shell model, the mechanism of the island of inversion is attributed to the change of the shell structure driven by the tensor force. The experimental level schemes and spectroscopic factors will provide us stringent tests of the model.

However, the recent result of the structure of ³⁵Si obtained by (d,p) reaction is partly inconsistent with our result [3]. We have measured the IARs of ³⁵Si with wider energy range to understand the origin of the inconsistency.

In this contribution, we will introduce these studies. In addition, we'll also discuss a new low-energy RI beam line called OEDO [4], which are currently under construction in RIBF. The physics program to measure the IARs of medium heavy nuclei with the OEDO will be also presented

[1] N. Imai et al., Phys. Rev. C 85, 34313 (2012).

[2] N. Imai et al., Phys. Rev. C 90, 011302 (2014).

[3] G. Burgunder et al., Phys. Rev. Lett. 112, 042502 (2014).

[4] <http://www.cns.s.u-tokyo.ac.jp/oedo/> .