

Jun Terasaki  
November 27, 2007

### JUSTIPEN visitor report

Jun Terasaki visited RIKEN under the JUSTIPEN program from October 15 to November 13. The schedule included:

- 1) Discussion with Drs. Takashina, Aoi, Kanno, and many other members of RIKEN on comparison of experimental data and calculations of  $(p,p')$  cross section of even Ni isotopes. The calculations were performed by applying density and transition densities obtained by quasiparticle random-phase approximation (QRPA) by myself to folding-model calculations by Dr. Takashina. One of results is shown in Fig.1. Overall agreement is very good, and more systematic study is in progress. Discussion was made also about what particle-hole excitations are important in those first  $2+$  states.

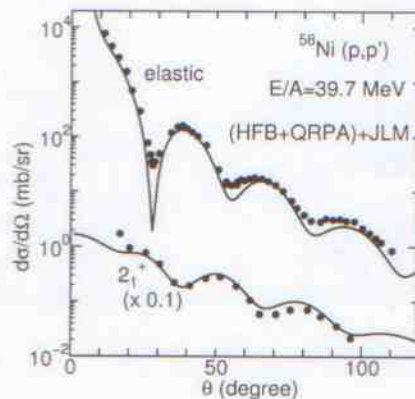


Fig. 1. Differential cross sections of elastic and inelastic (first  $2+$  state)  $(p,p')$  reaction on  $^{58}\text{Ni}$ . Dots are experimental data, and solid curves are calculation with QRPA and folding model using JLM potential.

- 2) Discussion on  $B(E2)\uparrow$  to the first  $2+$  states of even Ti isotopes with Dr. Suzuki, who has recently measured  $B(E2)\uparrow$  of  $^{58}\text{Ti}$  (analysis is in progress).
- 3) Discussion on QRPA calculation with Drs. Nakatsukasa and Yamagami. We discussed about technical details, for example, what space size is necessary, and what accuracy is required.
- 4) Discussion with Drs. Sagawa and Margueron on what pairing interaction is adequate. This discussion was made on the occasion of visiting Tohoku University at Sendai.
- 5) Discussion with Dr. Kohama on nuclear root-mean-square radii of ground states. It turned out that those of Hartree-Fock-Bogoliubov calculations with Skyrme forces were in good agreement with those of black-nucleus model by Dr. Kohama in neutron-rich regions.
- 6) Seminar presented at RIKEN on November 1.

Title:

Systematic properties of Pygmy resonance of neutron-rich nuclei

abstract:

I show strength functions and transition densities of even-even medium-heavy nuclei up to neutron drip line calculated using quasiparticle random-phase approximation for a few  $J^\pi$  channels. Growth of transition strength is predicted in a low-energy region (Pygmy resonance) as neutron number  $N$  approaches the neutron drip line. Three properties are discussed systematically: Enhancement of Pygmy resonance after magic numbers, relation between the strength of Pygmy resonance and radius of ground state, and emitted neutron number obtained from excited-state density distribution.

The same seminar was presented also at Tohoku University on November 9.