RCNP EXPERIMENT E326

PROPOSAL FOR EXPERIMENT AT RCNP

22 January 2009

TITLE:

Pigmy E1 and giant M1 resonances in N=50 isotones, ^{88}Sr, ^{90}Zr and ^{92}Mo.

SPOKESPERSONS:

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EXPERIMENTAL GROUP:

Name	Institution	Title or Position
Y. Fujita	Dep. Phys., Osaka University	Associate Professor
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T. Kondo	Dep. Phys., Konan University	PhD studen
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A. Okamoto	Dep. Phys., Konan University	PhD studen
K. Hatanaka	RCNP, Osaka University	Professor
H. Okamura	RCNP, Osaka University	Professor
M. Yosoi	RCNP, Osaka University	Associate Professor
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H.J. Ong	RCNP, Osaka University	Assistant Professor
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T. Suzuki	RCNP, Osaka University	Doctoral student
H. Fujita	RCNP, Osaka University	Researcher
H. Matsubara	RCNP, Osaka University	PhD student
Y. Shimbara	Dep. Phys., Niigata University	Assistant Professor
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T. Kawabata	CNS, Univ. Tokyo	Assistant Professor
Y. Sasamoto	CNS, Univ. Tokyo	PhD student
Y. Sakemi	CYRIC, Tohoku University	Professor
M. Itoh	CYRIC, Tohoku University	Professor
H.P. Yoshida	CYRIC, Tohoku University	Postdoctoral fellow

THEORETICAL SUPPORT:

Name	Institution	Title or Position
S. Goriely	AA, Universite Libre de Bruxelles, Belgium	Senior Researcher
H. Sagawa	Aizu University	Professor
H. Nakada	Chiba University	Chiba University

RUNNING TIME:

Beam tuning time for experiment	2 days
Data runs	6 days

BEAM LINE: Ring : WS course

BEAM REQUIREMENTS:

Type of particle	proton
Beam energy	300 MeV
Beam intensity	$\leq$ 10 nA
Any other requirements	energy resolution $\leq$ 20 keV
	halo-free, small emittance

BUDGET: Experimental expenses 1,700,000 yen

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Pigmy E1 and giant M1 resonances in N=50 isotones, ^{88}Sr, ^{90}Zr and ^{92}Mo.

SPOKESPERSON: Hiroaki Utsunomiya and Atsushi Tamii

SUMMARY OF THE PROPOSAL

We propose to investigate extra E1 and M1 strengths in N=50 isotones, ^{88}Sr, ^{90}Zr and ^{92}Mo, in the low-energy tail of GDR by high-resolution inelastic proton scattering at 300 MeV. Emphasis is placed on giant M1 and pigmy E1 resonances previously reported in inelastic proton scattering and nuclear resonance fluorescence experiments, respectively. We measure proton spectra and angular distributions of E1 and M1 strengths at most forward angles including 0o. The present investigation is expected to resolve the bump structure of giant M1 nature to large extent and to clarify E1 and M1 strengths by a thorough theoretical analysis of angular distributions with ΔL=0 and ΔL=1 DWBA plus E1 Coulomb excitation calculations.