RCNP EXPERIMENT E283

PROPOSAL FOR EXPERIMENT AT RCNP

26 January, 2006

TITLE: Excitation of α cluster in ^{9}Be and ^{208}Pb

SPOKESPERSON:

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EXPERIMENTAL GROUP:

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Kosuke NAKANISI	RCNP, Osaka University	D3
Hisanobu HASHIMOTO	RCNP, Osaka University	D2
Masaru YOSOI	RCNP, Osaka University	Associate Professor
Mark B. GREENFIELD	Dept. of Physics, ICU	Professor
Masayoshi TANAKA	Kobe Tokiwa College	Professor

RUNNING TIME:

Total running time not including beam preparation 2.5 days

BEAM LINE:

WS-course, Grand RAIDEN

BEAM REQUIREMENTS:

Type of particle	proton
Beam energy	300 MeV
Beam intensity	$\sim$ 20 nA
Other requirements	Energy resolution $\sim$ 150 keV
	Beam must be halo-free
	Energy stability over experimental run is required

BUDGET:

Travel plans - 6 participants should be supported by RCNP

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SUMMARY OF THE PROPOSAL

The present work aims at the search for the excitation of the isovector dipole resonances (DR's) consisting of the giant dipole resonance and spin dipole resonance in the α-clusters of relevant nuclei by using the (p,p') reaction. In the series of the RCNP experiments we have observed the DR's in ^{6,7}Li, and their analogs in ^{6,7}He and ^{6,7}Be. The DR's are expected to be located at $E_x \approx 26$ MeV in ^{9}Be and ^{208}Pb. In the E234 experiment we have measured the ^{9}Be(p,p') spectra at few scattering angles. In this experiment we will complete the measurement of the ^{9}Be(p,p') spectra at θ_L=3-25°. As a typical example for the heavy nucleus, we will also observe the ^{208}Pb(p,p') spectra.