RCNP EXPERIMENT E313

PROPOSAL FOR EXPERIMENT AT RCNP

14 Febrary 2008

TITLE:

Study of nuclear medium effect in nucleon-nucleon interaction using (p,pn) reactions

SPOKESPERSONS:

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EXPERIMENTAL GROUP:

Imamura, T.	Kyushu Univ.	M1	Wakasa, T.	Kyushu Univ.	AP
Dozono, M.	Kyushu Univ.	D1	Sagara, K.	Kyushu Univ.	P
Maeda, Y.	Kyushu Univ.	A	Kuroita, S.	Kyushu Univ.	M2
Shimoda, H.	Kyushu Univ.	M1	Sueta, T.	Kyushu Univ.	M1
Hatanaka, K.	RCNP	P	Okamura, H.	RCNP	P
Tamii, A.	RCNP	AP	Tameshige, Y.	RCNP	D4
Matsubara, H.	RCNP	D2	Ishikawa, D.	RCNP	M1
Suda, K.	RCNP	R			
Sakaguchi, H.	Miyazaki Univ.	P	Fujita, N.	Miyazaki Univ.	M1
Nonaka, A.	Miyazaki Univ.	M1	Yasuda, Y.	Tsukuba Univ.	RA
Zenihiro, J.	Kyoto Univ.	D3			
Sakemi, Y.	CYRIC	P	Ito, M.	CYRIC	A
Yoshida, H. P.	CYRIC	RA			

RUNNING TIME:

Development of device	4 days
Data runs	12 days

BEAM LINE: Ring : WS course (LAS+NPOL3)

BEAM REQUIREMENTS:

Type of particle	Polarized Protons
Beam energy	392 MeV
Beam intensity	$\leq$ 100 nA

BUDGET:

Experimental expenses	4,865,000 yen
Travel expenses	2,600,000 yen
Total	7,465,000 yen

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SPOKESPERSONS: NORO, Tetsuo (Dept. of Phys., Kyushu University)
YAMADA, Yukiko (Dept. of Phys., Kyushu University)

SUMMARY OF THE PROPOSAL

We propose to measure analyzing powers A_y for (p,pn) reactions on ^{2}H, ^{6}Li, and ^{12}C leading to the 1s$_{1/2}$ hole-states. The purpose of this experiment is to study the nucleon-nucleon (NN) interaction in nuclear field. We have already measured various kinds of spin observables for (p,$2p$) reactions and have found evidences which suggest in-medium modification of the NN interaction.

For the coincidence measurement, we plan to detect emitted protons using the large acceptance spectrometer, LAS, and to detect emitted neutrons using the high resolution neutron detector, NPOL3 system, in the west experimental hall. The kinematical condition employed is that corresponds to a zero-recoil condition and we plan to take data at three kinds of angular settings, neutron-forward, proton-forward, and symmetric angle pairs. In addition to these 1s$_{1/2}$ knockout, we also intend to take data for p-shell knockout in order to examine the reliability of the firstly observed (p,pn) data at RCNP.