RCNP EXPERIMENT E181

PROPOSAL FOR EXPERIMENT AT RCNP

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TITLE : Observation of $(p, 2p)$ Reactions on Light Nuclei

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EXPERIMENTAL GROUP :

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RUNNING TIME : Test running time and calibration runs 2.0 days
Data runs 5.5 days

BEAM LINE : WS course (Grand Raiden + LAS)

BEAM REQUIREMENTS :

Type of particle	Polarized proton
Beam energy	392 MeV
Beam intensity	300 nA

BUDGET : Experimental expenses 7.3 M Yen

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SPOKESPERSON : NORO, Tetsuo and NAKAMURA, Masanobu

SUMMARY OF THE PROPOSAL

It is proposed to measure differential cross sections and analyzing powers for $(p, 2p)$ reactions on nuclei from deuteron to p-shell or light sd-shell nuclei. One of the purposes of this measurement is to study the A_y reduction problem observed in this reaction corresponds to $s_{1/2}$-knockout. ¿From the proposed systematic measurement using light nuclei, it is expected to see whether the reduction of the analyzing powers of these reactions scales to the nuclear density or to the deviation from the on-shell condition caused by finite Q-values of the reactions. Helium-4 target, which central density is unusually high but the separation energy of one nucleon does not stand out from those of $1s_{1/2}$ nucleon in neighboring nuclei, will play an important role in this systematic study. Another purpose is to examine the reliability of IA analysis, where the recoil effect is neglected or only perturbedly treated, for such light target nuclei. For this purpose, measurement with various kinematical condition is planned for a few target.