

## PROPOSAL FOR EXPERIMENT AT RCNP

January 25, 2010

**TITLE:****Determination of Spin-Orbit Splitting in  $^{17}\text{N}$  via the  $^{18}\text{O}(\bar{p}, 2p)$  Reaction****SPOKESPERSON:**

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**EXPERIMENTAL GROUP:**

Full Name	Institution	Title or Position
Tomohiro Uesaka	Center for Nuclear Study, University of Tokyo	AP
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Yoshiko Sasamoto	Center for Nuclear Study, University of Tokyo	D3
Hiroshi Tokieda	Center for Nuclear Study, University of Tokyo	M2
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Juzo Zenihiro	RCNP, Osaka University	PD
Yuusuke Yasuda	RCNP, Osaka University	PD

**RUNNING TIME:** Installation time without beam 5 days(for each beam time)  
 Detector Setup 1 day  
 Data runs 5 days

**BEAM LINE:** Ring : WS course

**BEAM REQUIREMENTS:** Type of particle polarized p  
 Beam energy 200 MeV  
 Beam intensity  $\leq 500$  nA  
 Any other requirements halo-free, small emittance

**BUDGET:**

Experimental expenses 500,000 yen for  $^{18}\text{O}$  target and travel expenses

**TITLE:****Determination of Spin-Orbit Splitting in  $^{17}\text{N}$  via the  $^{18}\text{O}(\vec{p}, 2p)$  Reaction****SPOKESPERSON:** Tomohiro Uesaka**SUMMARY OF THE PROPOSAL**

An experiment to measure cross section and analyzing power for the  $^{18}\text{O}(\vec{p}, 2p)$  reaction at  $E_p = 200$  MeV is proposed. The purposes of the proposed experiment are twofold: One is to determine the  $1p$  proton single hole state distributions, up to higher excitation energies, and deduce the  $1p$  spin-orbit splitting in proton hole states in  $^{17}\text{N}$ . The other is to take cross section and analyzing power data for a variety of kinematical conditions for comprehensive understanding of the polarization effects in the  $(\vec{p}, 2p)$  reaction at the energies.

The  $\text{H}_2$   $^{18}\text{O}$  ice target and the double-arm spectrometers (Grand RAIDEN-LAS) are used in the experiment.