Measurement of hole-state distribution in $^{44}\text{Ca}$ by using (p,2p) reaction

T. Fukunaga, T. Noro, T. Wakasa, S. Sakaguchi, T. Nozoe, J. Yasuda, K. Hatanaka$^a$, A. Tamii$^a$, H. Miki$^a$, and K. Ito$^a$

Department of Physics, Kyushu University, Fukuoka 812-8581, Japan
$^a$ Research Center for Nuclear Physics, Osaka University, Osaka 567-0047, Japan

fukunaga@phys.kyushu-u.ac.jp

It is a current interest in nuclear physics to investigate the role of the tensor force in shell evolution. One of such effects is the tensor monopole effect which is proposed by Otsuka and others [1]. In order to examine the effect, we are measuring hole state distributions in Ca isotopes using (p,2p) reactions. We have already confirmed that on $^{48}\text{Ca}$ target the s-factor using (p,2p) is consistent with one using (e,e’p).

As a part of the study, we measured cross sections and analyzing powers for $^{44}\text{Ca}(p,2p)$ reaction by using a polarized proton beam. By comparing the data with DWIA calculations, $l$ and $j$ values of final states are determined and s-factor values were deduced. We compare the results with previous studies using (d,${}^3\text{He}$) on the same target and those using (e,e’p) on $^{48}\text{Ca}$ target.


Recoil momentum distributions of cross section and analyzing power for $^{44}\text{Ca}(p,2p)$ reactions. Lines are results of DWIA calculations.