Abstract Submitted
for the DNP96 Meeting of
The American Physical Society

Sorting Category: 18

Measurement of $\mathbf{K_z^z}$ for the $^3\mathbf{H}(\vec{\mathbf{p}},\vec{\mathbf{n}})$ Reaction for Neutron Energies 0.5-1.9 MeV[1] J. R. WALSTON, C. R. GOULD, D. G. HAASE, B. W. RAICHLE, M. L. SEELY, NCSU and TUNL, W. TORNOW, W. S. WILBURN, Duke University and TUNL, C. D. KEITH, IUCF, G. W. HOFFMANN, UT at Austin, S. I. PENTTILÄ, LANL — We report measurements of the zero degree longitudinal polarization transfer coefficient K_z^z for the reaction $^3H(\vec{p},\vec{n})$. Recent calculations suggest a dramatic variation in low energy K_z^z due to the presence of the 0^- level in ^{4}He. A dynamically polarized proton target was used to analyze the polarization of the neutrons from the reaction, taking advantage of the large spin dependent longitudinal n-p cross section difference, $\Delta\sigma_L$. The polarized neutrons were produced by 1.3-2.7 MeV longitudinally polarized protons incident on a tritiated titanium foil. Our measurements confirm resonance behavior in K_z^z, with peak values approaching 80% at around 800 keV neutron energy. The $^3H(\vec{p},\vec{n})$ reaction is a good source of longitudinally polarized neutrons in the 0.6-0.9 MeV neutron energy range.

[1]This work supported in part by the U. S. Department of Energy under contracts DEFG09-88-ER40411 and DEFG05-91-ER40619

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[X] Prefer Oral Session
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Date submitted: June 27, 1996

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