

Abstract Submitted  
for the DNP08 Meeting of  
The American Physical Society

**Precision Determination of the Excitation Energy of the Long-Lived Isomer in the Superallowed Fermi Emitter  $^{42}\text{Sc}$**  M. STERNBERG, G. SAVARD, Chicago, J. CLARK, I. TANIHATA, N. SCIELZO, A.F. LEVAND, Y. WANG, H. SHARMA, A. HECHT, A.C.C. VILLARI, J. FALLIS, ANL, R. SEGEL, Northwestern, A. HEINZ, V. WERNER, J.R. TERRY, Yale, E.A. MCCUTCHAN, Yale, H. AI, B. SHORAKA, E. WILLIAMS, R. LUTTKE, D. FRANK, C.W. BEAUSANG, Yale, P. REGEN, Surrey, K.S. SHARMA, Manitoba — Some Q-value measurements for superallowed Fermi emitters used in calculation of the  $V_{ud}$  quark mixing matrix element came into question after measurements at ANL and confirmation of these measurements by JYFLTRAP found the Q-value for  $^{46}\text{V}$  to differ by more than 2 keV ( $7\sigma$ ) from the previous accepted value. A new precision Q-value measurement for the superallowed emitter  $^{42}\text{Sc}$  performed by JYFLTRAP found no substantial shift from the previous accepted Q-value. Their measurement included a new precision measurement of the excitation energy of the  $7+$  long-lived isomeric state of  $^{42}\text{Sc}$ , which did not agree with old measurements. New measurements of this excited state have been performed at YRSTBall to within roughly 200 eV. Combined with recent measurements for the mass of this excited state performed by the Canadian Penning Trap group of ANL, a new precision Q-value measurement has been completed and no substantial shift in the  $^{42}\text{Sc}$  Q-value is observed.

Matthew Sternberg  
University of Chicago/ANL

Date submitted: 01 Jul 2008

Electronic form version 1.4