Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Isomeric character of the 4_1^+ state in ^{44}S: Mechanisms of breaking of the N=28 shell[1] J. PARKER IV, I. WIEDENHOVER, J. BAKER, P. COTTLE, D. MCPHERSON, M. RILEY, D. SANTIAGO-GONZALEZ, A. VOLYA, FSU, V. BADER, T. BAUGHER, D. BAZIN, A. GADE, T. GINTER, H. IWASAKI, C. LOELIUS, C. MORSE, F. RECCHIA, D. SMALLEY, R. STROBERG, D. WEISSHAAR, K. WHITMORE, NSCL, A. LEMASSON, GANIL, H. CRAWFORD, A. MACCHIAVELLI, LBL, K. WIMMER, CMU — The N=28 nucleus ^{44}S exhibits a rich structure of excitations which illustrates different mechanisms of breaking the N=28 shell. A Coulomb excitation measurement [1] and an implantation-decay experiment [2] established the coexistence of 2p2h-deformed and 0p0h-spherical configurations. A two-proton knockout reaction [3] indicated a 4^+ state which shell model calculations suggest is likely isomeric, prolate-deformed and formed from a 1p1h configuration. A recent two-proton knockout experiment measured the lifetime of this 4^+ state using the recoil distance method and the GRETINA array. Results for the lifetime of the 4^+ state will be presented and its implication for the mechanisms of breaking the N=28 shell will be discussed.

[1] T. Glasmacher etal., Phys.Lett. B 395 (1997), 163
[2] C. Force etal., Phys.Rev.Lett. 105, 102501 (2010)
[3] D. Santiago-Gonzalez et al., Phys.Rev. C 83, 061305 R (2012)

[1]Supported by the National Science Foundation

John Parker IV
Florida State University

Date submitted: 30 Jun 2015 Electronic form version 1.4