

Abstract Submitted
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Doppler broadening in the β -proton- γ decay sequence SARAH SCHWARTZ, Michigan State Univ., NSCL, Univ. Southern Indiana, C. WREDE, M.B. BENNETT, S.N. LIDDICK, Michigan State Univ., NSCL, D. PEREZ-LOUREIRO, NSCL, A. BOWE, Michigan State Univ., NSCL, Kalamazoo Coll., A.A. CHEN, McMaster Univ., K.A. CHIPPS, Colorado Sch. Mines, ORNL, Univ. Tennessee, Knoxville, N. COOPER, Yale Univ., D. IRVINE, E. MCNEICE, McMaster Univ., F. MONTES, NSCL, JINA, F. NAQVI, Yale Univ., R. ORTEZ, Michigan State Univ., NSCL, Univ. Washington, S.D. PAIN, ORNL, J. PEREIRA, NSCL, JINA, C. PROKOP, Michigan State Univ., NSCL, J. QUAGLIA, S.J. QUINN, Michigan State Univ., NSCL, JINA, J. SAKSTRUP, M. SANTIA, S. SHANAB, Michigan State Univ., NSCL, A. SIMON, NSCL, Univ. Notre Dame, A. SPYROU, Michigan State Univ., NSCL, JINA, E. THIAGALINGAM, McMaster Univ. — We report the first observation of Doppler-broadening in β delayed proton- γ decay. The broadening occurs because the daughter nucleus γ decays while recoiling from proton emission. A method to analyze β delayed nucleon emission was applied to two Doppler-broadened ^{25}Al peaks from the $^{26}\text{P}(\beta\text{p}\gamma)^{25}\text{Al}$ decay. The method was first tested on the broad 1613 keV γ -ray peak using known center-of-mass proton energies as constraints. The method was then applied to the 1776 keV γ -ray peak from the 2720 keV excited state of ^{25}Al . The broadening was used to determine a ^{26}Si excitation energy of 13.3 ± 1.0 (stat.) ± 0.7 (syst.) MeV. This energy is consistent with proton emission from the known T=2 isobaric analog state of ^{26}P in ^{26}Si .

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