

Abstract Submitted  
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**Nuclear Structure Physics at HI $\gamma$ S: Parity Assignments to Levels in  $^{138}\text{Ba}$** <sup>1</sup> A. TONCHEV, W. TORNOW, Duke U. and TUNL, C. ANGELL, M. BOSWELL, H. KARWOWSKI, UNC and TUNL, J. KELLEY, NCSU and TUNL, J. LI, S. MIKHAILOV, Y. WU, Duke U. and DFELL, N. TSONEVA, U. of Giessen — Nuclear resonance fluorescence measurements have been performed on the  $^{138}\text{Ba}$  nucleus using polarized  $\gamma$ -ray beams at the High-Intensity  $\gamma$  Source (HI $\gamma$ S). Taking advantage of the monoenergetic and pulsed HI $\gamma$ S beams, negative parity assignment were made to seven J=1 states in the energy region of 1 MeV below the neutron separation threshold. These low-lying dipole excitations have been related to the so-called pygmy dipole resonance. Further analysis will determine the branching ratio of these E1 dipole states and their partial cross sections. In addition to the decays to the ground states, we have observed for the first time strong gamma transitions from the first three  $2^+$  states in  $^{138}\text{Ba}$  to the ground state.

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