

Abstract Submitted  
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**Probing the Pygmy Dipole Resonance in  $^{112}\text{Sn}$  and  $^{124}\text{Sn}$** <sup>1</sup>  
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Duke U. and TUNL — A high-resolution nuclear fluorescence experiment of en-  
riched  $^{112,124}\text{Sn}$  has been performed using the 100% polarized photon beam at the  
High-Intensity Gamma-Ray Source (HI $\gamma$ S). Four HPGe detectors were used to ob-  
serve 66 dipole transitions with excitation energies between 6.4 MeV and 8.4 MeV.  
The parity of each of the 21 previously identified transitions in  $^{124}\text{Sn}$  was found to be  
 $J^\pi=1^-$ . In addition, 10 new levels in  $^{124}\text{Sn}$  were identified, as well as 5 new levels in  
 $^{112}\text{Sn}$  all of which are E1 excitations with the exception of a 6.917 MeV state in  $^{124}\text{Sn}$   
excited by an M1 transition. Both nuclei exhibited considerable decay strength to  
the first excited state. We shall discuss the possible causes of these decays as well as  
their implications to r-process nucleosynthesis. The measurements will be compared  
with calculations using quasiparticle random-phase approximations.

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