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Exploring the Puzzle of Decay Half-lives Southeast of ¹³²Sn MIGUEL MADURGA, ROBERT GRZYWACZ, ZHENGYU XU, University of Tennessee, ALEKSANDRA FIJALKOWSKA, Warsaw University, ANDREA GOT-TARDO, INFN Legnaro, MARIA BORGE, IEM-CSIC, RAZVAN LICA, IFIN-HH, IDS COLLABORATION, VANDLE COLLABORATION — The region of nuclei around doubly magic 132 Sn [1] offers a unique window to study nuclear structure. Calculations in the region are used to provide the nuclear parameters in models of isotope productions in stellar rapid neutron capture (r-process) [2]. However, recent measurements of the decay half-lives in the region show systematic discrepancies with shell model calculations[3]. The beta decay of ¹³²Cd was studied at the ISOLDE facility, CERN. The large majority of the beta-decay strength was expected to populate the unbound lowest-energy 1^+ state [2]. The neutron time-of-flight array VANDLE [4,5] was installed at the ISOLDE decay station. Large Gamow-Teller strength was observed in the neutron time-of-flight spectra. Analysis of the data indicates several individual 1+ states are fed in 132 In. Strength fragmentation offers a compelling explanation for the experimental half-life of ¹³²Cd being longer than state-of-the-art calculations [2]. [1] K.L. Jones et al., Nature 465, 454 (2010). [2] P. Mller, B. Pfeiffer, and K.-L. Kratz, Phys. Rev. C67,055802 (2003). [3] G. Lorusso et al., Phys. Rev. Lett. 114, 192501 (2015). [4] W. A. Peters et al., Nucl. Inst. Meth. A836, 122 (2016). [5] S.V. Paulauskas et al., Nucl. Instrum Meth. A737, 22 (2014).

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