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Connecting Nuclear Structure to Stellar Astrophysics: Neutron Skin in Tin Isotopes[1] JACK SILANO, ANTON TONCHEV, ANTHONY RAMIREZ, NICOLAS SCHUNCK, Lawrence Livermore National Laboratory, WERNER TORNOW, SEAN FINCH, FNU KRISHICHAYAN, Duke University and Triangle Universities Nuclear Laboratory, DAVID LITTLE, MICHAEL JONES, ROBERT JANSSENS, The University of North Carolina at Chapel Hill and Triangle Universities Nuclear Laboratory, COLE PRUITT, LEE SOBOTKA, Washington University, St. Louis, ADRIANA BANU, James Madison University, JAYSON VAVREK, Massachusetts Institute of Technology, NADIA TSONEVA, ELI-NP — The first observation of a neutron star merger by the LIGO-Virgo collaboration in 2017 highlights the need to improve our fundamental understanding of the equation of state (EOS) of dense, neutron rich matter. The origin of heavy elements in the r-process and the structure of neutron stars are governed by the properties of neutron rich matter, for which experimental data is limited. Further analysis of this historic event and all future neutron star mergers relies on constraining the nuclear EOS with experimental observables. We propose a novel method for systematically studying the evolution of the neutron skin in stable tin isotopes, by measuring the low-energy nuclear dipole strength over the broadest possible range of neutron-to-proton ratios in a single element. Nuclear resonance fluorescence with 100

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