Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Experimental study on the β- strength function in the decay of neutron-rich ^{133}In ZHENGYU XU, MIGUEL MADURGA, ROBERT GRZYWACZ, THOMAS KING, COREY HALVERSON, JOSEPH HEIDEMAN, MANINDER SINGH, RIN YOKOYAMA, University of Tennessee, Knoxville, THE ISOLDE DECAY STATION COLLABORATION — An experimental work has been recently conducted at the ISOLDE decay station (IDS), to study the neutron-unbound states in ^{133}Sn following the beta decays of ^{133}In. The main decay strength of $Z < 50$ and $N > 82$ nuclei is anticipated to be the Gamow-Teller transition transforming a deeply bound $g_{7/2}$ neutron into a $g_{9/2}$ proton. In addition, first-forbidden transitions are postulated to take noticeable strength feeding lower-lying states. In order to examine these highly excited states above neutron separation energy, the neutron time-of-flight array, VANDLE, was installed at IDS to measure β-delayed neutron-emission energies. In this contribution, we will discuss our latest results regarding the excitation energies, branching ratios, and log-ft of a series of neutron unbound states observed in the ^{133}In decay. To gain insights into the microscopic configurations of those states and the strength distribution in ^{133}Sn, we carried out a large-scale shell-model calculation, of which the result and its comparison with experimental data will also be presented.

Zhengyu Xu
University of Tennessee, Knoxville

Date submitted: 25 Jun 2020 Electronic form version 1.4