Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Spectroscopy of ^{38}S[1] C. R. HOFFMAN[2], Argonne National Laboratory — The ^{38}S ($Z = 16$, $N = 22$) excited-state decay scheme has been expanded including a number of new levels with tentative spin-parity assignments. In particular, the yrast sequence has been expanded up to $J^\pi = 8^+$ with candidates for $J > 8$ identified as well. Interpretations of the new data with respect to theoretical calculations and the systematic trends in region have been made and will be discussed. In general, the excited levels of ^{38}S were well described by shell model calculations invoking the newly developed FSU cross-shell interaction. ^{38}S nuclei were populated via fusion and subsequent two-proton evaporation of a ^{22}Ne beam on an ^{18}O target at $\sim$45 MeV. ^{38}S recoils were identified using a feed-forward trained neural network including inputs of position, time-of-flight, and energy loss information taken at the focal plane of the FMA. Gretina surrounded the target position and detected prompt γ-rays in coincidence with ^{38}S recoils. Coincidences, energy summations, intensities, and angular information were all used in the construction of the final ^{38}S decay scheme.

[1]This work was supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics, under Contract No. DE-AC02-06CH11357 (ANL), and the U.S. National Science Foundation under grant No. PHY-1712953 (FSU). This research used resources of ANLs ATLAS facility, which is a DOE Office of Science User Facility.
[2]As spokesperson for all members of ATLAS experiment 1747.

Calem Hoffman
Argonne National Laboratory

Date submitted: 26 Jun 2020 Electronic form version 1.4