Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

In-beam γ-ray spectroscopy of exotic $N = 32$ and 34 nuclei DAVID STEPPENBECK, Center for Nuclear Study, University of Tokyo, SUNFLOWER COLLABORATION — Recent investigations of exotic $N = 32$ and 34 nuclei have highlighted the presence of sizable subshell closures that are absent in stable isotones. The presence of a new subshell closure at $N = 34$ was recently reported in ^{54}Ca, while previous studies focused on the development of the $N = 32$ gap in Cr, Ti and Ca. On the theoretical side, these subshells were investigated, for example, in the framework of tensor-force-driven shell evolution, and were attributed to a reordering of the $\nu f_{5/2}$ orbital relative to the $\nu p_{3/2} - \nu p_{1/2}$ spin-orbit partners as protons are removed from the $\pi f_{7/2}$ state. It was also reported that no significant $N = 34$ gap exists in Ti isotopes despite the fact that an inversion of $\nu f_{5/2}$ and $\nu p_{1/2}$ has been noted. The strength of the $N = 34$ closure in Sc isotopes provides further input on the evolution of the $\nu f_{5/2}$ orbital in exotic systems. Moreover, the structures of Ar isotopes, which are presently reported to ^{48}Ar, provide information on the magnitude of the $N = 32$ closure "below" Ca isotopes. In the present work, the low-lying structures of ^{50}Ar and ^{55}Sc are reported to investigate further the evolution of the respective $N = 32$ and 34 subshell closures in nuclei far from stability.

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Date submitted: 30 Jun 2014 Electronic form version 1.4