



## Spectroscopy of Trans-fermium Nuclei with the Argonne Gas-Filled Analyzer

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Spectroscopy of trans-fermium nuclei around the  $Z=100$  and  $N=152$  deformed shell gaps has been an active area of research at the ATLAS facility at Argonne National Laboratory for many years since the pioneering experiments using the Gammasphere  $\gamma$ -ray detector array and the Fragment Mass Analyzer (FMA), which led to the observation of a rotational band and K-isomers in  $^{254}\text{No}$ . Rotational bands, K-isomers,  $\gamma$ -decay and spontaneous fission decay properties of trans-fermium nuclei provide stringent tests of nuclear models which are also used to describe the heaviest known nuclei. To extend these studies to more proton-rich nuclei, odd- $A$  and odd-odd nuclei, and heavier nuclei, the Argonne Gas-filled Fragment Analyzer (AGFA) was constructed. During the talk selected results of the first in-beam spectroscopy AGFA campaign with Gammasphere and first decay spectroscopy AGFA campaign in stand-alone mode will be reviewed. Among others the following experiments will be discussed: high statistics prompt and delayed  $\gamma$ -ray spectroscopy of the benchmark nucleus  $^{254}\text{No}$ , observation of a rotational band in the fissile nucleus  $^{254}\text{Rf}$ , characterization of a new K-isomer in  $^{251}\text{Md}$ , and discovery of a new isotope  $^{251}\text{Lr}$ . Plans for experimental program with AGFA will be also presented.

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