

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

### Contenu

Nuclei near the closed  $Z=100$ ,  $N=152$  deformed shells are prolate deformed but higher order shapes play important role for their structure, e.g.  $\beta_6$  is critical for creating the  $N=152$  energy gap. In-beam, K-isomer,  $\alpha$ -decay and spontaneous fission spectroscopy of trans-fermium nuclei provide a stringent test of nuclear models which are used to describe the heaviest known nuclei. To extend these studies to heavier, more proton-rich, odd-A, odd-odd nuclei, the Argonne Gas-filled Fragment Analyzer (AGFA) was constructed. During the talk, recent decay and isomer spectroscopy experiments with AGFA in stand-alone mode and in-beam spectroscopy experiments with AGFA coupled to Gammasphere will be reviewed. Among others, the high statistics prompt and delayed  $\gamma$ -ray spectroscopy of the benchmark nucleus  $^{254}\text{No}$ , the observation of the ground-state rotational band in the fissile nucleus  $^{254}\text{Rf}$ , and the discovery of the new isotope  $^{251}\text{Lr}$  will be presented. The impact of these results on shape evolution in this region will be discussed. Plans for experimental program with AGFA will be also presented.

This material is based upon work supported by the U.S Department of Energy, Office of Science, Office of Nuclear Physics, under contract number DE-AC02-06CH11357. This research used resources of ANL's ATLAS facility, which is a DOE Office of Science User Facility.

**Auteur principal:** SEWERYNIAK, Dariusz (Argonne National Laboratory)

**Orateur:** SEWERYNIAK, Dariusz (Argonne National Laboratory)

Déposé par SEWERYNIAK, Dariusz le lundi 11 avril 2022