

## HEAVY-ELEMENT SPECTROSCOPY AT JYFL

P.T. Greenlees, S. Eeckhaudt, T. Grahn, P. Jones, R. Julin, S. Juutinen, H. Kettunen,  
M. Leino, A.-P. Leppänen, P. Nieminen, M. Nyman, J. Pakarinen, P. Rahkila, C. Scholey,  
J. Uusitalo

*Department of Physics, University of Jyväskylä, Finland*

P.A. Butler, J.E. Bastin, R.-D. Herzberg, R.D. Humphreys, P.J.C. Ikin, G.D. Jones,  
T. Page, A. Pritchard

*Department of Physics, University of Liverpool, U.K.*

A. Chatillon, A. Gørgen, W. Korten, Ch. Theisen

*DAPNIA/SPhN CEA-Saclay, France*

J. Gerl, F.P. Heßberger, P. Kuusiniemi

*Gesellschaft für Schwerionenforschung, Darmstadt, Germany*

T.L. Khoo

*Argonne National Laboratory, Argonne, Illinois, U.S.A.*

P. Reiter

*IKP, University of Cologne, Germany*

K. Eskola

*Department of Physics, University of Helsinki, Finland*

Since 1998, when the ground-state rotational band of  $^{254}\text{No}$  was observed for the first time using GAMMASPHERE coupled to the FMA[1], a large number of spectroscopic studies have been performed on transfermium nuclei. Such studies are important in that they allow constraints to be placed on the various theoretical models, and yield information on the properties of the mean field far from stability. Of particular interest are the studies of odd-mass nuclei, which may allow the ordering and excitation energies of the single-particle orbitals in the region to be determined.

At JYFL, the relatively large fusion-evaporation cross sections available from the interaction of a  $^{48}\text{Ca}$  beam with various targets close to  $^{208}\text{Pb}$  have been utilized in in-beam gamma- and electron-spectroscopic measurements. These studies have been centred around the gas-filled separator RITU[2], in conjunction with various Ge arrays (JUROSHERE, SARI and JUROGAM) and the conversion-electron spectrometer, SACRED[3,4]. The focal plane of RITU has recently been upgraded with the addition of the U.K. Universities GREAT spectrometer[5]. Another important part of the GREAT project is the Total Data Readout (TDR) acquisition system, which is now in use at JYFL.

To date, the structures of  $^{250}\text{Fm}$ ,  $^{251}\text{Md}$ ,  $^{252,253,254}\text{No}$  and  $^{255}\text{Lr}$  have been investigated by the collaboration in experiments at JYFL (for a review, see [6]). Highlights from the more recent measurements (e.g. studies of  $^{254}\text{No}$  and  $^{251}\text{Md}$  using JUROGAM) will be presented.

- [1] P. Reiter et al., Phys. Rev. Lett. **82**, 509 (1999).
- [2] M. Leino et al., Nucl. Instr. Meth. **B99**, 653 (1995).
- [3] P.A. Butler et al., Nucl. Instr. Meth. **A381**, 433 (1996).
- [4] H. Kankaanpää et al., To be published in Nucl. Instr. Meth.
- [5] R.D. Page et al., Nucl. Instr. Meth. **B204**, 634 (2003).
- [6] R.-D. Herzberg, J. Phys. **G30**, R123 (2004).