Spectroscopy of heavy elements at Dubna

O. Dorvaux[1], A. Lopez-Martens[2], K. Hauschild[2], A.V. Yeremin[3], A.V. Belozerov[3], Ch. Briançon[2], M.L. Chelnokov[3], V.I. Chepigin[3], D. Curien[1], P. Désesquelles[2], B. Gall[1], V.A. Gorshkov[3], M. Guttormsen[4], F. Hanappe[5], A.P. Kabachenko[3], F. Khalfallah[1], A. Korichi[2], A.C. Larsen[4], O.N. Malyshev[3], A. Minkova[6], Yu. Ts. Oganessian[3], A.G. Popeko[3], M. Rousseau[1], N. Rowley[1], R.N. Sagaidak[3], S. Sharo[7], A.V. Shutov[3], S. Siem[4], V.I. L. Stuttgé[1], A.I.Svirikhin,[3], N.U.H. Syed[4], and Ch. Theisen[8]

[1]IPHC-DRS/ULP, IN_2P_3-CNRS, UMR 7178, F-67037 Strasbourg, France.
[2]CSNSM, IN_2P_3-CNRS, UMR 8609, F-91405 Orsay, France .
[3]FLNR, JINR, Dubna, Russia.
[4]Department of Physics, Oslo University, 0316 Oslo, Norway.
[5]Université Libre de Bruxelles, 1650 Bruxelles, Belgium.
[6]Faculty of Physics, University of Sofia, 1164 Sofia and INRNE, Bas, Bulgaria.
[7]Department of Physics, Comenius Unversity, SK-84215, Bratislava, Slovakia.
[8]CEA_Saclay, DSM/DAPNIA/SPhN, 91191 gif-sur-Yvette, France.

Since year 2004, the GABRIELA (Gamma Alpha Beta Recoil Investigations with the Electromagnetic Analyzer VASSILISSA) collaboration has started the investigation of the transfermium elements spectroscopy at Dubna. A powerful setup [1] dedicated to gamma and electron spectroscopy has been developed in the focal plane of the separator VASSILISSA implanted at the FLNR laboratory in Dubna and optimized campaign after campaign. Taking advantage of the unique possibility of using radioactive actinide targets available in Dubna, we therefore focused on a twofold experimental approach: (a) the systematic study of the behaviour of single particle states within isotopic and isotonic chains with Z=100-104 as N varies from 152 to 162 and (b) the study of isotopes for which very little spectroscopic information is known.

After discussing the Physics motivations, we will present some new results [2-4], in particular on the isotones $^{249}Fm_{151}$ and $^{251}No_{151}$, and some preliminary results on ^{217}Pa decay.

[1] K. Hauschild *et al*., NIM **A560**, 388 (2006)
[2] A. Lopez-Martens *et al*., Phys. Rev. **C74**, 044303 (2006)
[3] A. Lopez-Martens *et al*., accepted to EPJA
[4] A. Khouaja *et al.*, in progress