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Alpha decay of ^{257}Rf J. QIAN, A. HEINZ, R. WINKLER, J. VINSON, Yale Univ., R.V.F. JANSSENS, D. PETERSON, D. SEWERYNIAK, B. BACK, M.P. CARPENTER, G. SAVARD, A.A. HECHT, C.L. JIANG, T.L. KHOO, F.G. KONDEV, T. LAURITSEN, C.J. LISTER, A. ROBINSON, X. WANG, S. ZHU, ANL, A.B. GANSWORTHY, Surrey Univ., M. ASAI, Japan Atomic Energy Agency
— The excited states of heavy odd-even nuclei allow for the measurement of the single-particle energies of orbitals which play a major role in the shell stabilization of superheavy nuclei. Because production cross sections decrease with increasing mass and proton number, in-beam spectroscopy becomes increasingly difficult and the structure information becomes scarce. Here, we report on decay spectroscopy of ^{257}Rf. The excited states of ^{257}Rf and its daughter ^{253}No can provide information on the single-particle structure near the deformed neutron shell $N = 152$. ^{257}Rf was produced in the fusion-evaporation reaction ^{50}Ti + ^{208}Pb at the Argonne Tandem Linac Accelerator System, using the Fragment Mass Analyzer. The mass/charge ratio of the recoils was used for the identification of the evaporation residues. The α decays together with $\alpha - \gamma$ coincidence in ^{257}Rf and ^{253}No were studied. The results will be compared with $N = 151$ isotones. These data can test predictions of various models often used to predict the location of the next proton shell closure in the heaviest nuclei. This work was supported by the U.S. DOE under contract No. DE–AC02– 06CH11357 and DE-FG02-91ER-40609.

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