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Isomers and Enhanced Stability of Superheavy Elements[1] FILIP KONDEV, Argonne National Laboratory, ANL, LBNL, ANU, CSNSM, LLNL, USNA, U. OF EDINBURGH, U. OF JYVÄSKYLÄ, U. OF MASSACHUSETTS, LOWELL COLLABORATION — There has been continuing activity addressing the complex question of whether excited isomeric states would lead to enhanced stability of superheavy nuclei, given changes in the fission barriers, α-decay probabilities and the effects of nuclear structure (such as K-hindrance). Recently, we have carried out new studies of the ^{254}Rf isotope using the ^{50}Ti+^{206}Pb reaction at Argonne National Laboratory and Lawrence Berkeley National Laboratory. A digital data acquisition system was deployed in both experiments, which allowed the identification of implant and decay events that were separated by time as short as hundreds of nanoseconds. Two isomeric states were discovered in ^{254}Rf with half-lives of $\sim$4 μs and $\sim$300 μs, the latter being an order of magnitude longer lived than the ground state. In addition, K-isomers in ^{244}Cm and ^{246}Cm were also studied following β^- decays of ^{244}Am ($K^\pi=6^+$) and ^{246}Am ($K^\pi=7^-$) mass-separated sources, respectively. The emphasis was on elucidating details of the level schemes, which allowed reliable values for the strength of the K-forbidden transitions to be determined and compared with systematics in other regions of the nuclear chart.

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