Gamma Ray Spectroscopy of ^{250}Fm

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Studies of nuclei beyond the Z=100 region are unique as they are stabilised by shell effects, therefore information on their structure, lifetimes and shapes is highly dependent upon nuclear models. Current theory predicts an island of spherical stability at either Z=114, Z=120 or around Z=126. With current experimental setups studies of the superheavy nuclei within this region are elusive due to the minute cross sections for producing such nuclei. However studies of slightly lower mass deformed nuclei, whose single particle orbitals are important in the shell stabilisation are more accessible, with cross sections of the order of 100 nb – 10 μb.

We report on systematic studies of the fermium isotopes ^{248}Fm and ^{250}Fm using both in beam gamma and conversion electron spectroscopy. New transitions feeding the ground state band in ^{250}Fm have been detected which point to the existence of a K=2 band. The results are compared to similar studies in the nobelium isotopes ^{252,254}No.