Structure Assignment Methods For K-Isomers in N=150 nuclei

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Abstract

K-isomer states of nuclei around the deformed shell gaps at Z = 102 and N = 152 provide us with an opportunity to study single particle energy levels in this region. Some of these energy levels are also present around the next predicted spherical shell gaps. Experimental results for the energy and ordering of these levels therefore provide us with crucial information in helping predict the position of the so called 'Island of stability'.

K-isomeric states were studied in both ^{252}No and ^{250}Fm [1] at the University of Jyväskylä in Finland. In-beam data was taken using the JUROGAM array and nuclei produced in an isomeric state were identified using recoil-decay tagging methods [2] from decays in the GREAT focal plane detector. Rotational band spectra built upon the isomeric states are used to determine their single particle structural assignment, however low statistics meant conventional methods were inconclusive.

A new approach was therefore used and will be presented here for the assignment of two 8^- K-isomeric states in ^{252}No and ^{250}Fm.

[1] G D Jones, Nucl. Inst. Meth: Phys. Res. A 488, 471 (2002).
[2] D Rostron, PhD Thesis, The University of Liverpool (2009).