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INSTITUT DES SCIENCES NUCLÉAIRES DE GRENOBLE

53, avenue des Martyrs – GRENOBLE

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SYSTEMATICS OF THE ISOMERIC RATIOS IN NUCLEI CLOSE TO N = 82

J. JASTRZEBSKI[1], S. ANDRE[2], J. GENEVEY[2], A. GIZON[2], J. GIZON[2], R. KOSSAKOWSKI[1], Z. PREJBISZ[1], W. SKULSKI[1]

[1]Institute for Nuclear Research, Swierk, Poland.
[2]Institut des Sciences Nucléaires, Grenoble, France.

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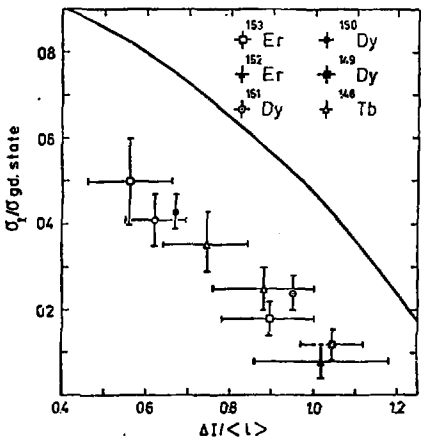
J. Jastrzębski, [x] S. André, [+] J. Genevey, [+] A. Gizon, [+] J. Gizon, [+]
R. Kossakowski, [x] Z. Preibisz, [x] and W. Skulski [x]

[x] Institute for Nuclear Research, Świerk, Poland
[+] Institut des Sciences Nucléaires (IN2P3), Grenoble, France

The isomeric ratios have been determined for a number of high spin isomers produced in ^{12}C and ^{14}N bombardment of targets close to N = 82. The presently available data seem to fall on a common curve (see figure) if the isomeric ratios are plotted vs. $\Delta I/\langle l \rangle$ where ΔI is the difference between the isomer and ground state spin and $\langle l \rangle$ is the average entry angular momentum. The latter quantity was determined from the prompt multiplicity for the lowest lying gamma transitions in the reaction channel in which the isomer was observed. The relation $\langle l \rangle = 2(\langle M \rangle - 4)$ was assumed. The validity of this assumption for nuclei in the region close to N = 82 was preliminary checked for the reaction $^{12}C + ^{144}Sm$ where the total fusion cross sections [1] and the gamma ray multiplicities were measured.



The continuous line on the figure is calculated from a subroutine of the evaporation code ALICE assuming that the particle emission does not change the angular momenta distribution of the compound nucleus and that the gamma transitions from the entry line to the yrast line also preserve the l distribution. With the assumption that the isomers lie on the yrast line, the difference between calculated and observed populations may reflect the "tilting" of the gamma flow (in the E - I plane) from the entry line to the yrast line.

The relation between the isomeric ratios and the average angular momentum reported here implies that in the search of the yrast traps of a very high spin in this region, the ΔI value close to $\langle l \rangle$ should be considered as the practical experimental limit.

1. J. Jastrzębski, R. Kossakowski, J. Łukasiak, M. Moszyński, Z. Preibisz, P. Rymuza, S. André, J. Genevey, A. Gizon, J. Gizon, Abst. Int. Conf. on nuclear behaviour at high angular momentum, Strasbourg, 1980.