

INTRUDER STATES IN THE Pb REGION

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By studying the β^+ /EC and α decay of mass-separated neutron-deficient Bi and Po nuclei, the spectroscopy group at the Leuven Isotope Separator On Line project collected in recent years an extensive systematics of shell-model intruder states in the Pb region (see fig. 1 and ref. 1-5).

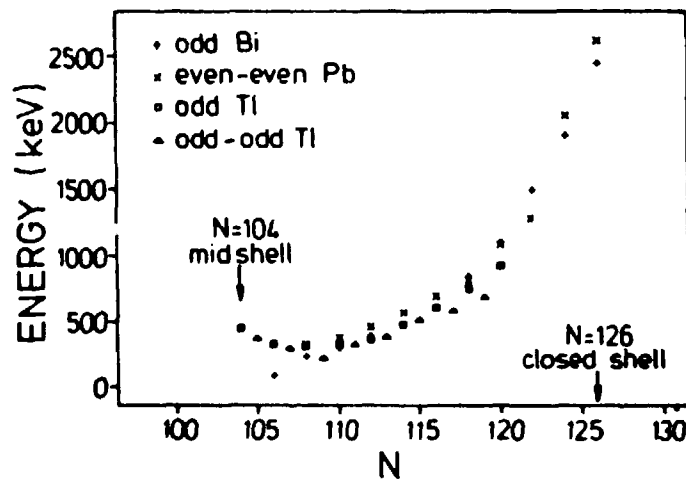


Fig. 1. Systematics of the intruder-state excitation energies. The excitation energy of the 0^+ intruder states in the even-even Pb nuclei is divided by two. References to others work can be found in ref. 5.

A remarkable similar systematic behaviour of the excitation energy of the intruder-based states as a function of the neutron number is evident for the odd Bi, odd Tl, odd-odd Tl and even-even Pb nuclei. This has led to several theoretical descriptions (ref. 6-10).

Last year a second generation of experiments has been started up at LISOL: by collecting the α -e-t coincidence events in the α decay of $^{194,196,198}\text{Po}$, it was possible to deduce the half life of the 0^+ intruder states in $^{190,192,194}\text{Pb}$.

Also the hindrance factor of the α decay to the intruder state, relative to the α decay to the ground state, was studied.

The mixing of the intruder states with the groundstate in Po and Pb can be deduced and the influence on the mean square radius of the groundstate will be discussed.

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