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DEPENDENCE OF THE CONVERSION WIDTHS ON THE FINE STRUCTURE OF THE ELECTRON SHELL

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**Usually internal conversion (IC), and IC coefficients (ICC) in particular, are considered under the assumption of a closed shell of the initial atom. Its angular momentum is then zero. As a rule, this approximation is sufficient for the purposes of experiment in neutral atoms or ions of low multiplicity. However, modern experiments on storage rings, for example, in GSI or Lanzhou, are carried out with few-electron ions, for example, with helium (He)- or lithium (Li)-like ones. In this case, the electron shell has an angular momentum other than zero, which will certainly affect the probability and coefficient of the IC. To illustrate, consider as an example a E2 transition of a nucleus from the initial excited state with spin I1 = 2 to the final state with spin I2 = 0 in a beryllium-like ion 1s22s2p1/2. Then the total momentum of the electron shell J1 can take on the values J1 = 0 or 1, and the conversion probability on the 2p electron will be proportional to 2J1+1. A similar conclusion can be drawn in the case of the Li-like initial configuration 1s22p1/2. As a result, the conversion probabilities and, accordingly, the ICC in these states will be related as $1 : 3 : 2$, respectively. The issue of total angular momentum is of fundamental importance in the case of a reverse IC (NEECxe [1]). The report develops the theory of the question as applied to the conventional and inverse IC.

1. F. F. Karpeshin, M. B. Trzhaskovskaya, C. Brandau. Reverse Conversion in ^{161}Dy Ions as an Extension of Dielectronic Recombination. Izv. RAN, Ser. Fiz., 78, 891 (2014) [Bull. Russian Acad. Sci., Physics, {\bf 78}, 672 (2014)]. **

The speaker is a student or young scientist

No

Section

1. Nuclear structure: theory and experiment

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