**ROTATIONAL SPECTRA OF EVEN-EVEN ACTINIDE AND RARE-EARTH NUCLEI**

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An approach based on the idea that the spinning nucleus being stretched out along the symmetry axis under the influence of some sort of centrifugal force has been proposed. Our approach led to the modified formula to describe the dependence of the moment of inertia on the angular momentum. This formula has shown a good fitting up to I=16 for all even-even nuclei in the atomic mass range 150<A<190 and 228 <A<248 whose energy ratio range between 2.9 and 3.33.

In the strong coupling adiabatic model, Bohr and Mottelson [1] showed that the rotational spectrum is given by the simple formula

. 1

Two different explanations to interpret such deviations were proposed; in one of them such deviations were assumed to be produced from the rotation-vibration interaction. The authors in this group suggest  to be written in terms in powers of as [2]:

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where A, B, C D,… are parameters, which can be determined by fitting this equation with the experimental data. The ground rotational bands of actinide and of rare–earth even-even nuclei were analyzed using the first four terms of Eq. (2) in reference [3], where the parameters A, B, C, and D were obtained using the least–squares method.

The rotational energy of actinide and of rare–earth even-even nuclei have been calculated by

, (3)

we will call this Eq. (3) quantized  stretching equation. The simple expression Eq. (3), has been used to evaluate the level energies up to spin I=16. The parameters A and B have been determined by the least square fitting method involving the first three experimentally measured energy levels (i.e., I=2, 4, 6) in the ground state band.

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