Properties of the Superdeformed Bands in The mass region A≈130

Thesis submitted in partial fulfillment of the requirements
for the Degree of Master of Science
in the
Physics Department, Faculty of Science, Ain Shams University

By

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B.Sc. 2007

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Abstract

Abstract

In the present work, the nuclear structure study of some even-even isotopes in the mass region A≈130 has been performed. According to this work, the ground state bands in some even-mass Ce and Nd isotopes were systematically analysed by using a simple modified version of previously proposed approach based on the collective model predictions. The model successfully describes the backbending phenomena in even- mass Ce and Nd isotopes and fits remarkably well to the experimental observations with a few parameters.

The base line spins I_0 of superdeformed (SD) bands in some even-even Ce and Nd isotopes have been determined by a very accurate method. Also, the transition energies E_γ of the SD band in even-mass Ce and Nd isotopes have been calculated and compared with the corresponding experimental values.

Summary