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OCTUPOLE EXCITATIONS IN 238U

Tuesday, 12 July 2022 18:10 (10 minutes)

Currently, one of the topical research areas in the field of the nuclear structure experimental and theoretical studies is the experimental and theoretical study of the negative parity states in the actinide nuclei [1]. In the 238U nucleus, rotational bands based on the ground and octupole vibrational states are known. Most of the experimental data were obtained using Coulomb excitation [2] and in reactions with heavy ions [3,4]. In the gamma transition probabilities from the octupole bands to the levels of the ground state band, noticeable deviations from the Alaga rules which are valid in the adiabatic approximation reveal.
The experimental data were analyzed within the framework of microscopic and phenomenological models [5,6]. Results of the microscopic model [5] disagree with the experiment. In [6], within the framework of the cluster model, a number of levels with odd spins belonging to the band were predicted, which was confirmed by experiment [1].
In this work, within the framework of the phenomenological model [7] considering the Coriolis mixing of octupole bands with , and the energies, state structures, and reduced E1 transition probabilities from negative parity states to the ground state band and to the states of β- and γ- bands with and are calculated. The theoretical results agree satisfactorily with the experimental data.

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The speaker is a student or young scientist

Section

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