Contribution ID: **191** Type: **Poster**

B(E2) value of even-even 124-130Barium transitional nuclei with cubic terms from Casimir invariant operators and IBM-1

Thursday, 23 September 2021 15:30 (2 hours)

Abstract
Several properties of nuclear structure for even- even 124-130Barium nuclei have been explored with Interacting Boson Model. This work studies the systematic reduced transition probabilities B(E2) ↓ of Ba isotopes with even neutrons from N=68 to 74. The values of parameters have been determined with the formation of cubic terms by Casimir invariant operators and addition of these terms by breaking O(6) symmetry of IBM Hamiltonian .We have studied systematically the transition rate R=B(E2: L+⟶(L-2)+)/ B(E2: 2+⟶0+) of some of the low-lying quadrupole collective states in comparison with available experimental data. The results of this calculation are in good agreement with available experimental data. The even- even 124-130Barium isotopes show O(6) symmetry.
Keywords: B(E2), Interacting Boson Model, 124-130Barium isotopes

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Session Classification: Poster Session 2

Track Classification: Nuclear Structure, Reactions and Dynamics