

Title: Yrast states and electromagnetic reduced transition properties of ^{122}Te by means of interacting boson model-1

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Abstract: In this paper, the yrast states and the electric reduced transition probabilities $B(E2)$ from gamma transition 8^+ to 6^+ , 6^+ to 4^+ , 4^+ to 2^+ and 2^+ to 0^+ states of neutron rich ^{122}Te nucleus in the frame work of Interacting Boson Model-I (IBM-I) have carried out. The calculated results have been compared with the available experimental values. The ratio of the excitation energies of first 4^+ and 2^+ excited states ($R_{4/2}$), have also been calculated for this nucleus. An acceptable degree of agreement between the predictions of IBM-I model and experiment is achieved. Moreover, as a measure to quantify evolution, we studied the transition rate $R = B(E2 : L^+ \rightarrow (L - 2)^+) / B(E2 : 2^+ \rightarrow 0^+)$ of some of the low-lying quadrupole collective states in comparison to the available experimental data. The IBM-I formula for energy levels and the reduced transition probabilities $B(E2)$ have been analytically deduced in the $U(5)$ limit for a few yrast states transitions in ^{122}Te isotope.