

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

Author/Authors: Shelley A., Imam Hossain, F. I. Sharrad, Hewa Yasen Abdullah, Mohammad Alam Saeed

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 ($R4/2$), 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.