

Evolution of Collectivity in ^{66}Zn

Excited high spin states in ^{66}Zn , populated in the fusion evaporation reaction $^{52}\text{Cr}(^{18}\text{O}, 2\text{p}2\text{n})$, have been studied using in-beam γ -spectroscopic methods. The Indian National Gamma-ray Array (INGA) equipped with fourteen Compton suppressed Hp-Ge clover detectors was used to detect the gamma-rays emitted by the de-exciting nucleus. The ^{18}O beam at 72.5 MeV was supplied by the 15UD Pelletron Accelerator of the Inter University Accelerator Center (IUAC), New Delhi. The level scheme of the ^{66}Zn nucleus, previously studied long back with modest detection systems, has been extended in this work significantly by the addition of eighteen new transitions and ten new levels. The ground state band has been found to be crossed by the two quasiparticle band based on $\nu g_{9/2}$ orbital at a spin value of $6\hbar$. The evolution of collectivity in this nucleus has been discussed in the framework of Total Routhian Surface Calculation (TRS) and in comparison with the neighbouring $^{68}\text{Ge}(N=36)$ and $^{70,72}\text{Ge}$.

Primary author: Mr S. RAI^{1,2}, B. MUKHERJEE², U.S. GHOSH², A. BISWAS², A. CHAKRABORTY², A.K. MONDAL², S. CHAKRABORTY³, G. MUKHERJEE⁴, I. BALA⁵, S. MURALITHAR⁵, AND R.P. SINGH⁵ (1Department of Physics, Salesian College, Siliguri Campus, Siliguri - 734001, India. 2Department of Physics, Siksha-Bhavana, Visva-Bharati, Santiniketan, Bolpur - 731235, India. 3Department of Physics, Institute of Science, Banaras Hindu University, Varanasi - 221005, India. 4Variable Energy Cyclotron Centre, 1/AF Bidhannagar, Kolkata - 700064, India. 5Inter University Accelerator Centre, Aruna Asaf Ali Marg, New Delhi - 110067, India.)

Presenter: Mr S. RAI^{1,2}, B. MUKHERJEE², U.S. GHOSH², A. BISWAS², A. CHAKRABORTY², A.K. MONDAL², S. CHAKRABORTY³, G. MUKHERJEE⁴, I. BALA⁵, S. MURALITHAR⁵, AND R.P. SINGH⁵ (1Department of Physics, Salesian College, Siliguri Campus, Siliguri - 734001, India. 2Department of Physics, Siksha-Bhavana, Visva-Bharati, Santiniketan, Bolpur - 731235, India. 3Department of Physics, Institute of Science, Banaras Hindu University, Varanasi - 221005, India. 4Variable Energy Cyclotron Centre, 1/AF Bidhannagar, Kolkata - 700064, India. 5Inter University Accelerator Centre, Aruna Asaf Ali Marg, New Delhi - 110067, India.)