

Hot Giant Dipole Resonance studies at VECC and future perspectives

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The high energy photons originating from the decay of the Giant Dipole Resonance (GDR) built on excited states provide an excellent probe for studying hot and fast rotating nuclei. A highly efficient scintillation detector array with fast timing property make only such studies feasible. At VECC, we have designed and developed a Large Area Modular BaF₂ Detector Array (LAMBDA) having 162 elements in a planar geometry along with a 50-element Gamma Multiplicity Filter for measuring the angular momentum populated in hot nuclear systems. We have performed a series of experiments using light & heavy ion beams from the K-130 room temperature cyclotron and investigated some important areas in the field of hot GDR properties and its applications (such as Jacobi Shape transition, evolution of GDR width at low temperature, Isospin mixing in self conjugate nuclei, alpha clustering, η/s in finite nuclear matter etc.). The upcoming accelerator facilities in this centre will further enable us to extend such studies upto very high excitation energies and exotic mass regions. In this meeting, an overview of our high-energy gamma ray physics program indicating some important results (relevant to the aims of the collaboration) and the future experimental plans using PARIS Phoswich detectors will be presented.