

Overview of experiments on the fine structure of isoscalar giant quadrupole resonance at iThemba LABS

The K600 Magnetic Spectrometer of iThemba LABS is a unique facility world-wide for the study of nuclear structure and reactions mechanisms at intermediate energies using light-ion projectiles. In particular, high energy-resolution experiments on nuclei in the region of giant resonances present a powerful tool to extract information about the dominant processes leading to equilibration. Proton inelastic scattering on nuclei spanning the periodic table from light to heavy-mass nuclei (^{12}C to ^{208}Pb) has established fine structure as a global phenomenon for the Isoscalar Giant Quadrupole Resonance (ISGQR). In addition, it has been possible to extract level densities in the nuclear continuum very reliably for use in astrophysical calculations. Experimental results and recent developments in maximising the capability of this unique facility will be presented.

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