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# Fine Structure of the Isovector Giant Dipole Resonance: a survey with (p,p') scattering at zero degrees

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<p>A survey of the fine structure phenomenon of the Isovector Giant Dipole Resonance (IVGDR) was investigated, using the newly commissioned Zero-degree Facility of the K = 600 magnetic spectrometer of iThemba LABS. Measurements were performed for inelastic proton scattering at an incident energy of 200 MeV for targets ranging from <sup>

27</sup>Al to <sup>208</sup>Pb. Targets of areal density of 1 – 2 mg/cm<sup>2</sup> gave an energy resolution of 45 keV Full Width at Half Maximum (FWHM) after utilising the faint-beam dispersion-matching technique. A reasonable background subtraction procedure allowed for the extraction of excitation energy spectra with low background. The data from the survey promise to give a unique insight into the competition of the various damping mechanisms contributing to the decay of the IVGDR. Furthermore, level densities of J<sup>π</sup> = 1<sup>−</sup> states can be extracted in a model-independent way, which serves as an important input to models applied in astrophysics. Finally, this survey will simultaneously provide bench-marks on the capabilities and limitations of the new Zero-degree Facility important for planning of the future experimental work. The experimental techniques, experimental results and preliminary theoretical calculations for the measurement of 0<sup>o</sup> proton scattering will be presented.

## Level (Hons, MSc, <br>   PhD, other)?

PhD

## Consider for a student <br>   award (Yes / No)?

Yes

## Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

Yes

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