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## Fine structure of the Isovector Giant Dipole Resonance of neutron-rich calcium isotopes using the (p,p') reaction at zero-degrees

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**Abstract content**   
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High energy-resolution proton inelastic scattering measurements were carried out on  $^{40,42,44,48}\text{Ca}$  using the cyclotron facility of iThemba LABS together with the K600 magnetic spectrometer in zero-degree mode. Fine structure was observed in the excitation energy range of the Isovector Giant Dipole Resonance (IVGDR) which lies between 11 – 25 MeV. In a bid to account for the dominant mechanisms responsible for the spreading of the IVGDR in these isotopes, wavelet analysis was applied to the measured experimental data with the results being in excellent agreement with those of theoretical calculations based on the Relativistic Quasi-particle Time Blocking Approximation (RQTBA). In addition, the results of level density of the  $J^\pi = 1^-$  states extracted from the experimental excitation energy spectra by means of fluctuation analysis agree well with the parameterisation of existing microscopic models.

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PhD

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Yes

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