



Contribution ID: 369

Type: Oral Presentation

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

Friday, 8 July 2016 10:00 (20 minutes)

Abstract content (Max 300 words) Formatting & Special chars

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.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

PhD

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

No

Please indicate whether this abstract may be published online (Yes / No)

Yes

Primary author: Mr LATIF, Mouftahou (School of Physics, University of the Witwatersrand)

Co-authors: Prof. RICHTER, Achim (Technische Universitaet Darmstadt, Germany); Prof. SIDERAS-HADDAD, Elias (University of the Witwatersrand); Dr SMIT, Frederick David (iThemba LABS); Prof. COOPER, Gordon (University of the Witwatersrand); Dr FUJITA, Hirohiko (RCNP, Osaka); Dr USMAN, Iyabo (University of the Witwatersrand, Johannesburg.); Mr SWARTZ, Jacobus (Stellenbosch University); Prof. CARTER, John (University of the Witwatersrand); Ms DONALDSON, Lindsay (University of the Witwatersrand); Dr JINGO, Maxwell (University of the Witwatersrand); Dr KUREBA, Oscar (University of the Witwatersrand); Prof. PAPKA, Paul (Stellenbosch University); Prof. VON NEUMANN-COSEL, Peter (Technische Universitaet Darmstadt, Germany); Dr NEVELING, Retief (iThemba LABS); Prof. PONOMAREV, Vladimir (Technische Universitaet Darmstadt, Germany); Dr NEMULODI, fhumulani (iThemba LABS)

Presenter: Dr USMAN, Iyabo (University of the Witwatersrand, Johannesburg.)

Session Classification: Nuclear, Particle and Radiation Physics (1)

Track Classification: Track B - Nuclear, Particle and Radiation Physics