Contribution ID: **229** Type: **Oral Presentation**

Fine structure of the IsoScalar Giant Monopole Resonance (ISGMR) in 40,42,44,48Ca using alpha inelastic scattering at zero degrees

Tuesday, 26 June 2018 11:20 (20 minutes)

Previous studies have shown that fine structure in the excitation energy spectra of nuclear giant resonances can be attributed to different physical processes. For example, characteristic energy scales of the fine structure for the IsoScalar Giant Quadrupole Resonance (ISGQR) arise mainly from the collective coupling of the ISGQR to low-lying surface vibrations, while on the other hand it has been shown that Landau damping is the main mechanism leading to the fine structure phenomenon in the IsoVector Giant Dipole Resonance (IVGDR). It is important to determine which processes are responsible for the fine structure in the ISGMR, particularly in the 40,42,44,48Ca isotope chain with its systematic increase in neutron number. Moreover, study of the ISGMR is of special significance because knowledge of its excitation energy provides direct information on nuclear incompressibility. Experiments were performed using the Separated Sector Cyclotron of iThemba LABS, together with the K600 magnetic spectrometer using inelastic scattering of 200 MeV alpha particles at zero degrees from 40,42,44,48Ca for measurements in the region of ISGMR with a good energy resolution of 86 keV (FWHM). In addition, following the application of Autocorrelation analysis, J π = 0+ level densities can be extracted also. Preliminary results will be presented.

Please confirm that you
have carefully read the
abstract submission instructions
under the menu item
”Call for Abstracts”
(Yes / No)

Yes

Consideration for
student awards
Choose one option
from those below.
N/A
Hons
MSc
PhD

PhD

Supervisor details
If not a student, type N/A.
Student abstract submision
requires supervisor permission:
please give their name,
 institution and email address.

Dr. Usman Iyabo, Iyabo.Usman@wits.ac.za. School of Physics, University of the Witwatersrand, Johannesburg. iyabo.usman@wits.ac.za

Primary authors: Ms MOODLEY, Chane (School of Physics, University of the Witwatersrand, Johannesburg.); Prof. SIDERAS-HADDAD, ELIAS (University of the Witwatersrand); Dr SMIT, Frederick David (iThemba LABS); Ms JIVAN, Harshna (University of the Witwatersrand); Dr FUJITA, Hiro (RCNP Osakka); Dr USMAN, Iyabo

(University of the Witwatersrand, Johannesburg.); Mr BRUMMER, J (Stellenbosch University, iThemba LABS); Prof. CARTER, John (School of Physics, University of the Witwatersrand, Johannesburg); Mr LI, Kelvin (Stellenbosch University, iThemba LABS); Dr DONALDSON, Lindsay (iThemba Laboratory for Accelerator Based Sciences); Dr PELLEGRI, Luna (University of Witwatersrand and iThemba LABs); Dr PIETRALLA, N (TU Darmstadt); Dr PAPKA, Paul (Stellenbosch University); Prof. VON NEUMANN-COSEL, Peter (TU Darmstadt); Dr ADSLEY, Philip (University of Stellenbosch/iThemba LABS); Dr NEVELING, Retief (iThemba LABS); Mr OLORUNFUNMI, Sunday (School of Physics, University of the Witwatersrand, Johannesburg.); Ms PHELADY, Topsy (School of Physics, Universiy of the Witersrand / iThemba LABS); Prof. FUJITA, Y (University of Osaka)

Presenter: Mr OLORUNFUNMI, Sunday (School of Physics, University of the Witwatersrand, Johannesburg.)

Session Classification: Nuclear, Particle and Radiation Physics

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