



Contribution ID: 171

Type: Oral Presentation

Structure of ^{33}Si , ^{35}S and ^{36}S nuclei and the $N=20$ shell gap

Thursday, 28 June 2018 11:40 (20 minutes)

The project focuses on studying the evolution of the $N=20$ shell gap. The shell gaps have been previously investigated through studies of nuclear levels, using various experimental approaches namely: Coulomb excitation, knockout reactions, transfer reactions and g -factor measurements. In exotic nuclei with an imbalanced number of neutrons and protons, significant modifications of the nuclear structure have been observed. A detailed study of the evolution of the shell gaps will lead to a comprehensive understanding of the structure of atomic nuclei. In order to investigate the evolving shell structure it is necessary to determine single particle observables such as spectroscopic factors of the states involving the active orbitals at these shells gaps. A knockout reaction is the first set of data for this project, the experiment was performed at MSU/NSCL laboratory using the GRETTINA gamma-ray tracking array and S800 spectrometer. The knockout reaction was performed using inverse kinematics with a ^{36}S secondary beam incident on a ^9Be target. The nuclei of interest studied are ^{33}Si , ^{35}S and ^{36}S . Various transitions in these nuclei have been identified from the analysis of add-back Doppler corrected spectra and a level scheme has been built from the resulting analysis. In addition parallel momentum distributions have been constructed to investigate the possible nature of the different states.

This work is supported by the National Research Foundation of South Africa .

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 submission requires supervisor permission: please give their name, institution and email address.**

Mathis Wiedeking,
wiedeking@tlabs.ac.za
iThemba LABS

Primary authors: Dr LEMASSON, Antoine (GANIL); Dr WIEDEKING, Mathis (iThemba LABS); Dr SORLIN, Olivier (GANIL); Prof. PAPKA, Paul (Stellenbosch/ iThemba LABS); Ms JONGILE, Sandile (Stellenbosch/ iThemba

LABS)

Presenter: Ms JONGILE, Sandile (Stellenbosch/ iThemba LABS)

Session Classification: Nuclear, Particle and Radiation Physics

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