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Type: Oral Presentation

Towards implementation/development of the state-of- the-art electron spectrometer capability at iThemba LABS

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An electron spectrometer that implement a Si(Li) detector for the detection of internal conversion electrons and a combination of LaBr₃ detectors for the detection of coincident decays is undergoing development at iThemba LABS, South Africa. For optimization of measurements with the electron spectrometer, electron calibration sources (²⁰⁷Bi and ¹³³Ba) are used in the measurements of energy and momentum resolution of the Si(Li) detectors. Other parameters such as transmission and efficiency which are used in describing the performance of electron spectrometer, are also determined during the characterization measurements. Lifetime measurements which provide crucial information needed for the measurement of E0 matrix elements will be performed using LaBr₃ detectors. Electron energy versus magnet current calibration was done by varying the lens current repeatedly to ensure reproducibility. Characterization measurements are presented and discussed for the purpose of commissioning the electron spectrometer for the study of 0⁺ states at iThemba LABS.

Keywords: Electron spectrometer, internal conversion electrons, coincident decays, electron energy, magnetic current.

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

Yes

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

PhD

Main supervisor (name and email) and his / her institution

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

No

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