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LaBr₃ detector array for fast timing measurements

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Measurements of lifetime and transition moments for excited nuclear levels are fundamentally important in experimental nuclear physics since they reveal crucial properties of nuclear structure.

Recently a fast timing array has been assembled at iThemba LABS, Cape Town consisting of eight 2" by 2" LaBr₃ (Ce) detectors. Several experimental runs have been done with ²²Na and ⁶⁰Co sources to effect calibration and efficiency measurements.

A radioactive ⁶⁷Ga source, produced at iThemba LABS, was placed at the centre 240mm equidistant from each detector in our fast timing array. The data collected was used to better understand fast timing techniques.

We present the present the results of efficiency measurements and some lifetime measurements for the ⁶⁷Ga radioactive source.

More exciting work will done through the fast timing array in a quest to comprehend the population mechanism of excited 0⁺ states. Among the work to be carried out through this array, includes 0-degree measurements that are beneficial in suppression of high angular momentum values and selection of low spin states. All these endeavours will seek to unveil the quadrupole moment of nuclei and their intrinsic behavior

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

YES

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

PhD

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

Yes

Primary author: Mr LUMKILE, Msebi ((University of Westren Cape))

Co-authors: Mr VETLE, Ingeberg (University of Oslo); Dr PETE, Jones (iThemba Labs); Dr JOHN, Sharpey-Schafer (University of Western Cape)

Presenter: Mr LUMKILE, Msebi ((University of Westren Cape))

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