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Challenges in the simulations of the iThemba LABS segmented clover detector

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Abstract content
 (Max 300 words)

In June 2012, iThemba LABS acquired a Multi Geometry Simulation (MGS) code [1] from France. This code is capable of simulating the field and the response of the segmented detector from an arbitrary gamma-ray interaction in the detector active volume. With this code, the sensitivity of our iThemba LABS segmented clover detector to the exact position of the gamma-ray interaction was determined and it is the topic of another presentation [2]. In this presentation we evaluate how realistic are the obtained, so far, simulations with MGS code are in comparisons with simulations performed with other simulation packages such as FEMLAB on TIGRESS [3] detector. In additions simulations of other segmented detector such as AGATA performed with MGS and ADL code [4] will also be discussed. Taking into account all the presented data, the way forward for obtaining the realistic pulse shapes with the iThemba LABS segmented clover detector will be formulated

REFERENCES

- [1] A simple method for the characterisation of HPGe detectors, P. Medina, C. Santos, Di Villaume, Instr. Meas. Tech. Conf (2004)
- [2] Simulation of the position sensitivity of the segmented iThemba LABS HPGe detector, S.P. Noncolela et. al, SAIP 2013.
- [3] Pulse shape characterization and simulation of TIGRESS gamma-ray detector, R. Prest, Bachelor of Applied Science degree thesis, Simon Fraser University, 2005.
- [4] Space charge reconstruction in highly segmented HPGe detectors through capacitance-voltage measurements, B. Bruyneel, B. Birkenbach, P. Reiter, Nucl. Instr. Meth. A, 641, 92-100, 2011

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