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Experimentally measured pulse shape signals of the iThemba LABS segmented clover detector.

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Abstract content
   (Max 300 words)
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The iThemba LABS detector is made up of four end-closed coaxial, front tapered, electrically segmented n-type germanium crystals, packed closely together in one cryostat. The dimensions of each crystal are: 60 mm width before shaping and 90 mm long. The cathode of each crystal is electrically segmented into 8 contacts with depth segmentation at 35 mm, implying that the back segments are 55 mm long. This results in a total of 36 electronic channels of which 32 are associated with the outer contacts and 4 with the inner core contacts of the detector. The core contacts provide high resolution measurements of gamma-ray energy whilst the outer contacts yield information about the location of the gamma-ray interaction inside the detector.
Trace data showing the shape of the signals on the 36 contacts of the iThemba LABS segmented clover detector can now be acquired using the Pixie 16 digital data acquisition system. A computer program is developed at iThemba LABS to read these complex data. It utilises CERN ROOT [1] environment to visualize traces from the core and segment contacts. Interesting data, showing traces that correspond to different types of gamma-ray interactions will be shown and discussed in this presentation. For example, single-hit events produce charge collection signals, induced signals and cross-talk. The double-hit events though generate signals with more complex features. These signals are often a convolution of charge collection and induced signals in addition to the modification due to the cross talk. In this presentation interesting examples of such measured traces will be discussed.

1. Rene Brun and Fons Rademakers, ROOT - An Object Oriented Data Analysis Framework, Proceedings AIHENP'96 Workshop, Lausanne, Sep. 1996, Nucl. Inst. & Meth. in Phys. Res. A 389 (1997) 81-86. See also http://root.cern.ch/

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