## FRONTIER DETECTORS FOR FRONTIER PHYSICS <br>> 13th Pisa Meeting on Advanced Detectors <br>>



Contribution ID: 375

Type: Poster

## A direction sensitive sapphire detector for single particle detection

Thursday, 28 May 2015 09:00 (0 minutes)

A multichannel detector designed for single minimum ionising particle detection using a stack of sapphire plates is presented.

The performance of the detector was studied in a 5 GeV electron beam at DESY-II. The detector was operated together

with the EUDET beam telescope, which allowed the reconstruction of the position of the impact point at the detector. For each sapphire

plate the charge collection efficiency was measured as a function of the bias voltage and the signal size as a function of the hit

position with respect to the metal electrodes. The charge collection efficiency rises with the voltage, reaching about 10% at

950V. Also evidence for the presence of a polarization field was observed. The data confirms the prediction that mainly electrons

contribute to the signal. Based on these results the next generation sapphire detector will be designed

## Collaboration

FCAL

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Session Classification: Solid State Detectors - Poster Session

Track Classification: S6 - Solid State Detectors