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Imaging performances of the DRAGO gamma camera

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In this work, we present the results of the experimental characterization of the DRAGO gamma camera, developed within an Italian INFN project. This camera, based on the Anger camera topology, is based on a monolithic array of 77 Silicon Drift Detectors (SDDs), with an active area of 6.7 cm2, coupled to a single CsI(Tl) scintillator crystal, 5mm thick. The use of an array of SDDs allows to achieve a high quantum efficiency with respect to photomultiplier tubes and a very low electronics noise compared with respect to other conventional silicon photodetectors. The performances achieved in gamma-ray imaging using this camera are reported in this work. When imaging a 0.2mm collimated Co-57 source (122keV) a spatial resolution ranging between 0.25mm to 0.5mm has been measured. The depth-of-interaction capability of the detector, thanks also to a maximum likelihood reconstruction algorithm, has been also investigated by imaging a collimated beam tilted to an angle of 45° with respect to the scintillator surface.

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