

10th Anniversary "Trento" Workshop on Advanced Silicon Radiation Detectors

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Test Beam Results of a 3D Diamond Detector

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A prototype of a novel detector using single-crystal chemical vapor deposited diamond and resistive electrodes in the bulk forming a 3D diamond device will be presented. The electrodes of the device were fabricated with laser assisted phase change of diamond into a combination of diamond-like-carbon, amorphous carbon and graphite. The connections to the electrodes of the 3D device were made using a photo-lithographic process. A prototype detector system consisting of the 3D device connected to a multi-channel readout was successfully tested with 120GeV protons proving the feasibility of the 3D diamond detector concept for particle tracking applications. The electrical and particle detection properties of the prototype device will be presented.

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