

SINGLE LAYER 3D TRACKING SEMICONDUCTOR DETECTOR

AREA OF EXPERTISE

- Microelectronics.
- Silicon detectors.

IP STATUS

- Patent filed (filing date: 21 September 2011).

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This technology is a pixel detector composed of a semiconductor sensor layer in which charges are generated by the interaction with charged particles and an array of read-out circuits (pixels) for detecting signals indicative of charges generated in the corresponding volume of the sensor. The time difference information between neighbouring pixels is used to determine the particle direction.

This information combined with the two-dimensional information obtained in the pixelated array makes it possible to reconstruct a three-dimensional image of the particle track.

APPLICATIONS

- Particle tracking and dose deposition for hadron therapy.
- Compton camera applications such as PET.
- X-ray polarimetry.

ADVANTAGES

- This invention provides a three-dimensional image of a charged particle using a single semiconductor detector layer with low power consumption

LIMITATIONS

- This invention does not provide precise absolute time stamp information.

