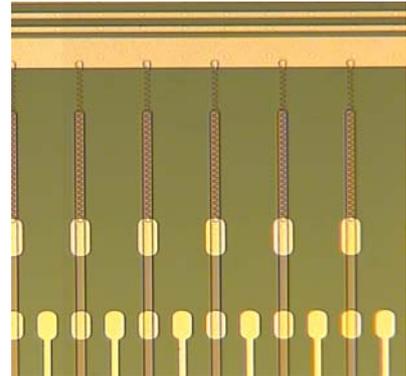


Semiconductor 2D position sensitive detector

CSIC has developed a two-dimensional position-sensitive semiconductor detector for ionizing particles. It is built by a microstrip detector, with the strip electrodes covered with a layer of resistive material. The device is fabricated by a simple single-sided process of planar microelectronic technology process, and it can be coupled with common read-out electronics used for microstrip detectors. Industrial partners interested in a patent license are sought.

Ionizing radiation: a giveaway for particle position

Detection of ionizing radiation on their way through matter, a subject of great importance in many technological fields, has achieved high precision standards thanks to semiconductor devices developed in the last 30 years. Semiconductor detectors, capable of localizing the position of particles in one and two dimensions, can comply with the requirements of good operation efficiency, high compactness, and low cost of the components.



Microphotograph of the microstripes in the position detector

Resistivity is not futile

Researchers at CSIC have taken a significant advance by substituting in a simple microstrip detector the metallic layer on the strip electrodes by a resistive material and connecting both ends of each strip to two independent readout circuits. To calculate the position along a microstrip, the amplitude or the delay of the signals is registered and compared at different times. The other coordinate is obtained by the traverse distribution of strips.

Main applications and advantages

- 2D localization of ionizing radiation can be applied in fields as diverse as high energy physics, instrumentation of space experiments, medical imaging or surveillance of industrial processes.
- The use of a resistive material on the electrodes of a microstrip detector allows calculating the position of an ionization event along the strip length, thus making possible its localization in a specific point of a 2D plan.
- The fabrication of this type of detector is achieved by a low cost, simple single-sided process of planar technology.
- The device does not need any particular read-out circuit: it can be coupled to any read-out electronics used for microstrip detectors.

Patent Status

Spanish patent and PCT filed

For further information please contact

Miguel Rey, PhD
Material Sciences Area
Deputy Vice-Presidency
for Knowledge Transfer

Tfn: +34 – 91 568 15 19
Fax: +34 – 91 568 15 21 / 15 51
E-mail: miguel.rey@orgc.csic.es