Contribution ID: **31** Type: **Oral Presentation**

Developement of a novel 2D position-sensitive microstrip detector concept.

Wednesday 14 September 2011 12:30 (20 minutes)

We have developed a novel 2D position-sensitive semiconductor detector manufactured using the conventional planar technology used in the production of single-side AC-coupled microstrips sensors. In the new device the coupling electrode
is made of a slightly resistive material being read out at both ends. The balance between the recorded charges at both electrode ends is used to define an estimate of the position along the strip where the charge was created. A proof-of-concept sensor has been manufactured using strongly doped polycrystalline silicon as resistive material. The sensor response was characterized using a microspot infrared laser and a radioactive 90Sr source. Experimental results were compared against an electronic simulation of the sensor equivalent circuit. The spatial resolution achieved with these first sensors is of about 30 um (laser test-stand) and a Signal-to-noise ratio of around fifteen was determined using the radioactive source. We have demonstrated for the first time, the feasibility of this technological implementation of the charge-division concept in a real microstrip detector. New prototypes have been produced and tested and different test beams have been carried out in the 120 GeV/c pion line at the SPS testbeam area. The new experimental results will be presented as well as the results of the last simulation study for the production of a new generation of sensors.

Preferred medium (Oral/poster)

Oral

Author: Ms BASSIGNANA, Daniela (IMB-CNM CSIC)

Co-authors: Dr QUIRION, David (IMB-CNM CSIC); Ms MUNOZ, Francisca (IFCA (CSIC-UC)); Dr PELLEGRINI, Giulio (IMB-CNM CSIC); Dr VILA, Iván (IFCA (CSIC-UC)); Dr LOZANO, Manuel (IMB-CNM CSIC); Dr FERNÁNDEZ, Marcos (IFCA (CSIC-UC)); Dr JARAMILLO, Richard (IFCA (CSIC-UC))

Presenter: Ms BASSIGNANA, Daniela (IMB-CNM CSIC)

Session Classification: Detectors for Particle Physics

Track Classification: Applications in Particle Physics