



Contribution ID: 198

Type: Poster

Embedded Pitch Adapters for the ATLAS Tracker Upgrade

In the ATLAS SCT modules there is a large pitch dissimilarity between detector and chip pads. The adaptation is made via glass plates with metal tracks named pitch adapters (PA). Our new approach for the ATLAS Tracker Upgrade prototypes is using a second metal layer in the sensor fabrication to implement PA built in the detector to overcome the pitch dissimilarity and avoid the use of a separated PA.

The main technological challenges are based on the impossibility of high temperature processing steps after the deposition of the first metal layer. This difficulty is overcome by the use of Plasma Enhanced Chemical Vapour Deposition (PECVD) for the inter-layer oxide. Device challenges are related to the possible crosstalk, which would degrade the noise, and the possible signal pick-up from the bulk, with the consequence of signal reduction. There is also a possible degradation of sensor channel yield due to statistical defects on the embedded PA tracks. In order to minimize crosstalk and reduce yield degradation, the design optimization criteria consist of obtaining minimum track length and maximum crossing angle between PA tracks and the strips.

The embedded PA have been fabricated on large sensors for the ATLAS-Upgrade Endcap Tracker to test their performance and suitability. Initial tests confirm proper fabrication of the second metal tracks. Detailed results on the device performance will be shown in the conference.

quote your primary experiment

ATLAS

Primary author: Dr ULLAN COMES, Miguel (Universidad de Valencia (ES))

Co-authors: LACASTA LLACER, Carlos (IFIC-Valencia); Dr FLETA CORRAL, Celeste (Universidad de Valencia (ES)); PELLEGRINI, Giulio (Universidad de Valencia (ES)); LOZANO FANTOBA, Manuel (Universidad de Valencia (ES)); BENITEZ CASMA, Victor Hugo (Universidad de Valencia (ES))

Presenter: Dr ULLAN COMES, Miguel (Universidad de Valencia (ES))

Track Classification: Semiconductor Detectors