



Contribution ID: 165

Type: Poster

Silicon sensor alliance: radiation detector development for the LHC upgrade

Thursday, 24 May 2012 13:31 (0 minutes)

Silicon Sensor Alliance (SSA) gathers European institutes together to answer for the large need of silicon sensors for CERN's LHC upgrade. Currently more than 90% of the LHC's sensors were fabricated outside European countries. The aim of the SSA is to be a qualified and reliable union in Europe to manufacture and provide uniform and high quality radiation detectors to meet the requirement of LHC upgrade. The partners participating in the first fabrication demonstration are VTT (Finland), CiS (Germany), FBK (Italy), CNM (Spain), Acreo (Sweden). The wafer material is selected to be n-type MCz silicon with crystal orientation $\langle 100 \rangle$. To be ready and successful in the first market survey of CERN, it is necessary that all participants are able to provide uniform sensor quality at different foundries and have a reference of this result. It is the first time that a number of SSA partners have initialized a joint demonstration to fabricate radiation hard AC-coupled silicon sensors at different European foundries and planned unbiased testing of them to obtain reference and publicity among the LHC's experiments.

The presentation introduces the SSA sensor fabrication at VTT and its electrical characterization. The comparison curves will be made with available results from other SSA partners to evaluate fabrication uniformity. The presentation will include TCAD simulation and beam test results, if they are ready before the meeting.

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Session Classification: Solid State Detectors - Poster Session

Track Classification: P5 - Solid State Detectors