Contribution ID: **170** Type: **Poster**

Radiation-Hard Silicon Strip Sensors for the ATLAS Phase-2 Upgrade

Monday 25 May 2020 20:12 (18 minutes)

The ATLAS upgrade for HL-LHC operations includes an entirely new all-silicon Inner Tracker (ITk). The silicon strip region comprises 165 m^2 of instrumented area, made possible by mass production of silicon strip sensors. This area is covered in a nearly hermetic way. Slim edge technology is used to minimize inefficiency gaps between adjacent devices. Multiple shapes with curved edges are utilized to provide a continuous coverage of the disc surface in the endcap. As a result, there are 8 different strip sensor types in the system. They all feature AC-coupled n-in-p strips with polysilicon biasing, developed for 1.6e15 neq/cm^2 fluence and 66 Mrad dose.

Following many years of R&D and 4 prototype submissions and evaluations, the project transitioned into pre-production, where 5% of the total volume is produced in all 10 designs. Deliveries are scheduled for early 2020. We will report on the evaluation program, test results, and experience with the pre-production sensors.

Funding information

Primary author: PARZEFALL, Ulrich (Albert Ludwigs Universitaet Freiburg (DE))

Session Classification: Poster

Track Classification: Sensors