International Conference on the Advancement of Silicon Photomultipliers



Contribution ID: 69

Type: Talk

Large Scale Characterization of Si-APDs @ FAIR/GSI

Tuesday, 12 June 2018 14:50 (30 minutes)

During the last decades, large area APDs (Avalanche Photo Diodes) reached more and more popularity as readout devices e.g. for calorimeters in various high energy- and nuclear physics experiments. In many cases the APD characteristics need to be individually known to allow for a careful match of the operating parameters to the particular experimental needs and conditions like temperature, expected irradiation dose, desired gain etc.. As a consequence, the experiment dependent requirements on the sensor performance have to be reflected in the large scale characterization process. Potentially occurring variations in designated sensor parameters within large scale production should be identified and classified during this process. For this purpose a modularly usable large scale characterization facility for APDs and eventually also Si photo sensors in general has been established at FAIR/GSI. Motivated from the experience of the large volume characterization work, several R&D topics are being pursued as e.g. a varying behavior under different irradiation conditions.

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Session Classification: Large Scale Characterization and Reliability

Track Classification: Large Scale Characterization and Reliability