Contribution ID: **14** Type: **WG5 - Characterization techniques - facilities**

FAST3-Amplifier –Project update

Thursday, 13 November 2025 11:50 (20 minutes)

In this contribution, I will present the status of the RD50/DRD3 project "16-channel amplifier for thin Low Gain Avalanche Diodes based on the FAST3 ASIC."
The objective of the project is to design and produce 16-channel amplification boards for LGAD sensors, based on the packaged FAST3 ASIC.

The project involves: (i) the design and fabrication of a custom FAST3 package using Multi-Chip Module (MCM) technology, and (ii) its integration onto a dedicated readout board through a Ball Grid Array (BGA) interface.

A total of 35 boards are foreseen in two production batches; the first batch of 10 boards has been fabricated, delivered, and is currently undergoing testing.

The ongoing characterization campaign aims to validate the basic performance of the packaged ASIC in terms of noise, channel gain, and temporal jitter. A pulser setup is used to inject a well-defined charge into the FAST3 input channels for these measurements. Subsequently, the timing performance of the amplifier will be evaluated in combination with a well-characterized LGAD sensor using a β-source setup.

The results from this characterization will be compared with the expected temporal jitter and resolution targets of approximately 15 ps and 35 ps, respectively.

Type of presentation (in-person/online)

in-person presentation

Type of presentation (I. scientific results or II. project proposal)

III. other (please specify in comment field)

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Session Classification: WG5 - Characterization techniques, facilities