Contribution ID: **673**   Type: **Parallel session talk**

Comprehensive technology study of radiation hard LGADs

Thursday 27 May 2021 10:24 (18 minutes)

Towards radiation tolerant sensors for pico-second timing, several dopants are explored. Using a common mask, CNM produced LGADs with Boron, Boron+Carbon and Gallium implanted gain layers are studied under neutron and proton irradiation. With fluences ranging from 1e14 to 6e15 n_{eq}/cm^2 on both species, reported results focus on breakdown voltage-mode, acceptor removal and gain reduction via electrical characterization. Timing performance, charge collection, gain and relative efficiency are treated through charged particle measurements, including signal Fourier analysis and noise characterization. An accent is placed on stability, via dark rate and operating voltage studies while, radiation related gain reduction mechanisms are examined comparing gain estimations using different approaches. Finally, With data at -10C, -20C and -30C, temperature dependence is assessed while investigating sensor failure modes under different conditions, including macro- and microscopic inspection.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

Funding information

Author: Dr GKOUGKOUSIS, Vagelis (CERN)

Co-authors: GRINSTEIN, Sebastian (IFAE - Barcelona (ES)); CASTILLO GARCIA, Lucia (The Barcelona Institute of Science and Technology (BIST) (ES)); COCO, Victor (CERN)

Presenter: Dr GKOUGKOUSIS, Vagelis (CERN)

Session Classification: Sensors: Solid-state sensors for tracking

Track Classification: Sensors: Sensors: Solid-state position sensors