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First Results from the Second Planar Run of the RD50-SiC-LGAD Common Project

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The second production of planar 4H-SiC device wafers (CNM 17560) from the RD50 SiC LGAD common project was completed in summer 2025 at CNM Barcelona, consisting of two wafers —one with a 50µm and one with a 100µm epitaxial layer. The high yield of PAD diodes from this production now enables statistically robust, cross-institutional studies of radiation damage effects in 4H-SiC. In addition, the inclusion of specialized structures such as MOSCAPs and DC-coupled resistive detectors allow for advanced detector studies and material characterization.

We report on the activities at MBI (formerly HEPHY) related to this production, including completed, ongoing, and planned device characterization and irradiation campaigns. The presented results include electrical characterization of PAD diodes at both wafer and device level, capacitance–voltage (C–V) measurements on MOSCAPs, and laser-based studies of DC-coupled resistive detectors to assess position resolution. Furthermore, we discuss observed production issues affecting the passivation, which have rendered a subset of structures, such as Van der Pauw structures, non-functional. Irradiation campaigns at low to high fluences with protons and neutrons are currently ongoing.

Type of presentation (in-person/online)

in-person presentation

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

I. Presentation on scientific results

Author: ONDER, Sebastian (Austrian Academy of Sciences (AT))

Co-authors: GSPONER, Andreas (Austrian Academy of Sciences (AT)); RADMANOVAC, Daniel (Austrian Academy of Sciences (AT)); KNOPF, Matthias; WAID, Simon Emanuel (Austrian Academy of Sciences (AT)); GUNDACKER, Stefan (Austrian Academy of Sciences (AT)); BERGAUER, Thomas (Austrian Academy of Sciences (AT))

Presenter: ONDER, Sebastian (Austrian Academy of Sciences (AT))

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