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Radiation resistance of Carbon-shield LGADs and comparison with standard carbonated LGADs

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LGAD sensors with a carbon-enriched multiplication layer are the state-of-the-art in terms of radiation resistance, concerning this specific sensor technology. The presence of carbon allows LGADs to operate, while maintaining unchanged temporal resolution, even after irradiation fluences of $1-2 \times 10^{15}$ neq/cm².

Carbonated LGADs have been successfully produced by FBK, CNM and IHEP-IEM. FBK, in EXFLU1 production, has recently produced LGADs with a carbon shield implanted below the gain layer, with the aim to protect the gain layer from bulk defect migration and to further improving their radiation resistance.

In this contribution, the first results obtained on Irradiated Carbon-shield LGADs are presented and compared with those of standard Carbonated LGADs.

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