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Time Resolution Studies of Low Gain Avalanche Detectors Fabricated at Micron Semiconductor Ltd.

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Low Gain Avalanche Detectors (LGADs) are a promising technology for high energy physics experiments, since they can potentially offer spatial resolution down to sub $100 \mu m$ and temporal resolution below $100 ps$ simultaneously. Thanks to these properties, these devices are considered for the upgrades of the ATLAS, CMS, and LHCb experiment at CERN.

This work will focus on timing resolution studies of recent devices produced by the University of Glasgow and Micron Semiconductor Ltd. These devices will be compared to those produced at CNM Barcelona. Specifically, details of the produced devices will be introduced and the Sr-90 experimental setup to measure the timing resolution will be described. Time resolution for Micron-Glasgow devices in the region of $55 ps$ was achieved. Specifically, the measurement results for both CNM and Micron-Glasgow devices show temperature and bias voltage dependence of timing resolution and the details will be discussed. Finally, the outlook for future developments and studies will be presented.

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