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Timing Results of LGADs from Teledyne e2v using an Sr-90 Beta Source

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The University of Birmingham, University of Oxford, the Rutherford Appleton Laboratory and the Open University are developing and testing new LGAD sensors. This project, aims at developing Ultra-Fast Silicon Detectors (UFSD) of characteristics and performance suitable for use at HL-LHC High Granularity Timing Detectors (HGTDs) in collaboration with a company having significant long-standing production capabilities for scientific imaging sensors, Teledyne e2v Ltd.

The first fabricated batch of 22 six-inch wafers, featuring 50 µm thick high resistivity epi layer with different gain layer implants was completed successfully and I-V and C-V characteristics presented previously to RD50. Here we discuss the commissioning of the Strontium-90 source set-up and first measurements of timing resolution with these LGADs which are already in the 30ps range. We also discuss some improvements to our laser TCT setup with additional gain measurements. Lastly we present the plans for further improvements to the timing system and testing of devices after proton irradiation at the MC40 facility.

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