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Performance of 6cmx6cm MCP-based picosecond photo-detectors JINGBO WANG, JUNQI XIE, ROBERT WAGNER, DEAN WALTERS, KAREN BYRUM, LEI XIA, ALLEN ZHAO, EDWARD MAY, MARCEL DEMARTEAU, Argonne National Laboratory, ANLPD TEAM — Microchannel plate (MCP)-based photo-detectors are capable of micron-level spatial imaging and picosecond-level timing resolution, making them a promising candidate for the next generation high-precision photo-detectors. Argonne National Laboratory (ANL) is currently producing 6x6 cm², cost-effective, thin planar, glass-body, MCP-based photo-detectors at a newly constructed production system. An indium sealing technique was successfully developed for a permanent detector seal and a several photo-detectors have been produced. The performance of the photo-detectors were characterized with a pulsed laser facility, showing a 60 ps Transit Time Spread (TTS) resolution and $<\!500~\mu\mathrm{m}$ spatial resolution. The test setup, data acquisition, data analysis and the experimental results will be presented and discussed.

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