Gain, Time and Spatial Resolution Measurements for 8”×8” MCP-based Photo-Detectors ALEXANDER VOSTRIKOV, University of Chicago, LAPPD COLLABORATION — Microchannel plates (MCP) are capable of picosecond-level time resolution and micron-level spatial resolution. Thin planar glass-body detectors based on 8”×8” MCPs as the gain stage are being developed by the Large-Area Picosecond Photo-Detector Collaboration (LAPPD). In this detector photons hitting a photo-cathode produce photo-electrons, which are accelerated by high voltage and produce an avalanche of secondary electrons in the pores of a pair of MCPs. The avalanche is collected by a 30-strip anode, read out at both ends with a fully integrated 60-channel electronics system based on the PSEC4 ASIC that connects directly to the anode striplines. An ALD-based high voltage distribution design does not require penetrations of pins through the glass package. The modular design allows covering large areas while keeping the number of electronics channels low. A complete detector system close to the final detector design has been built to characterize MCPs. Gain of MCPs up to $2 \cdot 10^7$, single photon time-of-flight resolution of $\sim 60$ psec, differential time resolution of $\sim 6$ psec, and spatial resolution better than 1 mm in both longitudinal and transverse directions have been measured.