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Simulating the growth of an charge cloud for a microchannel plate detector[1] DAVINDER SIWAL, BLAKE WIGGINS, ROMUALDO DESOUZA, Indiana University — Position sensitive microchannel plate (MCP) detectors have a variety of applications in the fields of astronomy, medical imaging, neutron imaging, and ion beam tracking. Recently, a novel approach has been implemented to detect the position of an incident particle. The charge cloud produced by the MCP induces a signal on a wire harp placed between the MCP and an anode. On qualitative grounds it is clear that in this detector the induced signal shape depends on the size of the electron cloud. A detailed study has therefore been performed to investigate the size of the charge cloud within the MCP and its growth as it propagates from the MCP to the anode. A simple model has been developed to calculate the impact of charge repulsion on the growth of the electron cloud. Both the details of the model and its predictions will be presented.

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