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Exploring the spatial resolution of position-sensitive microchannel plate detectors[1] BLAKE WIGGINS, DAVINDER SIWAL, ROMUALDO DESOUZA , Indiana Univ - Bloomington — High amplification and excellent timing make microchannel plate (MCP) detectors excellent devices for detection of photons, electrons, and ions. In addition to providing sub-nanosecond time resolution MCP detectors can also provide spatial resolution, thus making them useful in imaging applications. Use of a resistive anode (RA) is a routinely used approach to make an MCP position-sensitive. The spatial resolution of the RA associated with detection of a single incident electron was determined. Factors impacting the spatial resolution obtained with the RA will be discussed and the achieved spatial resolution of 64 μm (FWHM) will be presented. Recently, a novel approach has been developed to provide position-sensitivity for an MCP detector. In this approach, namely the induced signal approach, the position of the incident particle is determined by sensing the electron cloud emanating from a MCP stack. By utilizing the zero-crossing point of the inherently bipolar signals, a spatial resolution of 466 μm (FWHM) has been achieved. Work to improve the spatial resolution of the induced signal approach further will be presented.

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