

Abstract Submitted
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An efficient and cost-effective microchannel plate detector for slow neutron radiography¹ R.T. DESOUZA, B.B. WIGGINS, J. VADAS, D. BANCROFT, Z.O. DESOUZA, J. HUSTON, S. HUDAN, D.V. BAXTER, Indiana Univ - Bloomington — A novel approach for efficiently imaging objects with slow neutrons in two dimensions is described. Neutron sensitivity is achieved by use of a boron doped microchannel plate (MCP). The resulting electron avalanche is further amplified with a Z-stack MCP before being sensed by two orthogonally oriented wire planes. Coupling of the wire planes to delay lines efficiently encodes the position information as a time difference. To determine the position resolution, slow neutrons were used to illuminate a Cd-mask placed directly in front of the detector. Peaks in the resulting spectrum exhibited an average peak width of 329 μm FWHM, corresponding to an average intrinsic resolution of 216 μm . The center region of the detector exhibits a significantly better spatial resolution with an intrinsic resolution of < 100 μm observed.

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