

Abstract Submitted
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Position Reconstruction in Plastic Scintillator¹ JOHN RABAEY, WILL FLANAGAN, AIDAN MEDCALF, University of Dallas — The time of flight system of the NOvA Test Beam experiment at Fermi National Accelerator Laboratory in Batavia, IL relies on high-precision particle timing. However, uncertainty with regard to the geometrical location of a particle hit in scintillator limits time resolution. A closed-form mathematical formula has been derived for calculating the position of a particle hit in plastic scintillator, given the timestamps of four separate pulses from photomultipliers placed at the corners of a scintillator square. A Strontium-90 gamma ray source has been used to measure the position resolution of the scintillator under the new formula and determine whether position reconstruction can provide an accurate time-correction to account for geometrical differences between particle hits.

¹Donald A Cowan Physics Institute

John Rabaey
University of Dallas

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