

Abstract Submitted
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High-rate axial-field ionization chamber for particle identification of Radioactive beams¹ ROMUALDO DESOUZA, JUSTIN VADAS, VARINDERJIT SINGH, G. VISSER, A. ALEXANDER, S. HUDAN, J. HUSTON, B. WIGGINS, Indiana Univ - Bloomington, A. CHBIHI, GANIL, M. FAMIANO, M. BISCHAK, Western Michigan University — The design, construction and performance characteristics of a simple axial-field ionization chamber suitable for identifying ions in a radioactive beam are presented. The detector is optimized for use with low-energy radioactive beams ($<$) 5 MeV/A. A fast charge sensitive amplifier (CSA) integrated into the detector design is also described. Coupling this fast CSA to the axial field ionization chamber produces an output pulse with a rise-time of 60 to 70 ns and a fall time of 100 ns, making the detector capable of sustaining a relatively high rate while providing a time resolution of 6 to 8 ns. Tests with an α source establish the detector energy resolution as $\approx 8\%$ for an energy deposit of ≈ 3.5 MeV. Beam tests indicate that the detector is an effective tool for the characterization of low-energy radioactive beams at beam intensities up to 3×10^5 ions/s.

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