

Abstract Submitted
for the APR10 Meeting of
The American Physical Society

A simple charged particle spectrometer for a pion production experiment KONSTANTIN BOROZDIN, Los Alamos National Laboratory, MICHAEL BROCKWELL, KIWHAN CHUNG, ANDREW GREEN, GARY HOGAN, ANDY JASON, FESSEHA MARIAM, HARUO MIYADERA, CHRISTOPHER MORRIS, RANDY SPAULDING, ZHEHUI WANG, PION PRODUCTION TEAM TEAM — Measurement of a charged particle energy is not a new task, but inexpensive ways of such measurement are of interest, in particular as they open new opportunities for advanced charged particle radiography. We describe a magnetic spectrometer we have recently built for pion production measurement experiments at LANSCE (Los Alamos). The spectrometer consists of four modules of drift tubes and a bending magnet. A maximum magnetic field in the bending magnet was about 7500 Gauss. Drift tubes of 2 inches in diameter were made of thin carbon fiber to minimize multiple scattering in their walls. The spectrometer was used in the scattering experiment with primary beam of 800 MeV protons and C or Al target. We present measurements of secondary protons, pions and muons scattered in the reverse direction. Energy deposited in 1 cm thick plastic scintillator and 4" CsI was compared to the energy measured from the particle bending in the magnetic field. Experimental data are compared to GEANT4 modeling. We discuss, how this technology may be applied to the particle identification and to the energy loss measurements.

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Date submitted: 26 Oct 2009

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