Abstract Submitted
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New proton radiography diagnostics. C. L. MORRIS, MATTHEW FREEMAN, LEVI NEUKIRCH, FESSEHA MARIAM, ALEXANDER SAUNDERS, SKY SJUE, ZHAOWEN TANG, ZHEHUI WANG, Los Alamos National Laboratory — Implosion experiments at the Los Alamos proton radiography facility are planned to provide very high pressure equation of state data. 800-MeV proton radiography does not have sufficient transmission and statistics to infer areal density to sufficient precision. Thus, new diagnostics have been developed in order to obtain areal density data with on the order of several 0.1% precision. Initial tests have shown this precision can be provided by using a Cherenkov converter, a vacuum photodiode and a high bandwidth (50-GHz) oscilloscope to record individual 100 ps long proton pulses from the LANSCE 800 MeV accelerator. This detector measures proton time-of-flight to better than 2-ps precision in order to provide both transmission and energy loss information. These results will be presented.

Christopher Morris
Los Alamos National Laboratory

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