Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Charged Particle Detection with CR-39 under High Yield Conditions in ICF Experiments D. OROZCO, M. ROSENBERG, M. GATU JOHNSON, H. SIO, H.G. RINDERKNECHT, A. ZYLSTRA, F.H. SEGUIN, R.D. PETRASSO, MIT — CR-39 is a solid-state nuclear track detector commonly used in Inertial Confinement Fusion (ICF) experiments for detecting individual charged particles. Under high yield conditions at OMEGA and NIF, detecting individual particle tracks becomes very difficult because of track overlap. The fluence on the CR-39 when this becomes a problem is approximately 10^5 tracks/cm^2. A scattering foil behind a pinhole aperture ("scattering pinhole") can be added in front of the CR-39 in order to reduce the fluence on the CR-39 by a factor related to the pinhole size, scattering angle of the foil, distance from the implosion to the foil, and the distance from the foil to the CR-39. This has been. For example, 400 micron foil behind a 300 micron pinhole 9mm in front of a piece of CR-39 can reduce the fluence of 15MeV protons by a factor of ~ 50. The scattering pinhole is also being used at OMEGA in order to detect alphas produced in D + T and D + 3He reactions. This work was supported in part by the U.S. DOE and NLUF. *Rosenberg *et al.* RSI 85, 043302

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Date submitted: 10 Jul 2014 Electronic form version 1.4