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The CR-39 Coincidence Counting Technique for Enhanced Signal-to-Background in a Large Range of Charged-Particle and Neutron Measurements at OMEGA and the NIF D.T. CASEY, J.A. FRENJE, S.C. MCDUFFEE, C.K. LI, J.R. RYGG, F.H. SEGUIN, R.D. PETRASSO, MIT PSFC, V.YU. GLEBOV, D.D. MEYERHOFER, S. ROBERTS, T.C. SANGSTER, UR LLE — CR-39 detectors have been used extensively in several types of nuclear diagnostic applications for diagnosing Inertial Confinement Fusion plasmas produced at the OMEGA laser facility. A coincidence counting technique (CCT) is now being used to identify particle tracks in CR-39 when large background noise levels are present, such as when measuring products of secondary reactions. Two orders of magnitude improvement in the signal to background ratio can be achieved in some applications. In this paper, we describe the effect of the CCT when applied to a large range of charged-particle and neutron data obtained from measurements performed at OMEGA and for proposed work at the NIF. This work was supported in part by the U.S. Department of Energy (Grant No. DE-FG03-03SF22691), LLE (subcontract Grant No. 412160-001G), LLNL (subcontract Grant No. B504974).

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