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A magnetic recoil spectrometer (MRS) for ρR, yield and T_i measurements of implosions at OMEGA and the NIF J.A. FRENJE, D.T. CASEY, C.K. LI, J.R. RYGG, F.H. SEGUIN, S. VOLKMER, R.D. PETRASSO, MIT, V.YU. GLEBOV, D.D. MEYERHOFER, T.C. SANGSTER, C. STOECKL, LLE, S. HAAN, S. HATCHETT, P. AMENDT, D. EDER, N. IZUMI, O. LANDEN, D. LERCHE, LLNL, D.C. WILSON, G. KYRALA, LANL, R. LEEPER, R. OLSON, SNL — Charged-particle diagnostics have been extensively used for determining ρR of several types of implosions, but they will fail for ρR>200 mg/cm^2 and not work for the $\sim$300 mg/cm^2 expected in upcoming OMEGA cryogenic DT implosions or the 700-2000 mg/cm^{2}expected in NIF implosions. We are therefore currently developing a neutron spectrometer for measurements of down-scattered neutrons from which ρR in the 100 to 2000 mg/cm^2 can be inferred. The spectrometer is a Magnetic Recoil Spectrometer (MRS) that covers the energy range 6 to 32 MeV, which enables simultaneous measurements of down-scattered, primary and tertiary neutrons. Due to the MRS principle, measurements of these different neutrons are spatially separated, which is critical for successful ρR measurements. This work was supported in part by UR-LLE, LLNL, the U.S. DoE, and the N.Y. State Energy Research and Development Authority.

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