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First ion temperature measurements with the Magnetic Recoil Spectrometer (MRS) at the National Ignition Facility (NIF) M. GATU JOHNSON, J. FRENJE, D. CASEY, C. LI, F.H. SEGUIN, R. PETRASSO, MIT, R. BIONTA, C. CERJAN, J. EDWARDS, S. GLENZER, S. HATCHETT, O. LANDEN, A. MACKINNON, D. MUNRO, P. SPRINGER, LLNL, J. KILKENNY, R. PAGUIO, GA, V. GLEBOV, T. SANGSTER, LLE — Measuring the plasma ion temperature (T_i) is essential for understanding the performance of capsule implosions at the National Ignition Facility (NIF). Recent improvements in our understanding of the instrument response of the MRS, in operation on the NIF since the fall of 2010, allow for accurate determination of T_i and possibly implosion-drift velocity from the measured MRS spectrum. In this presentation, we discuss the accuracy of the measured T_i, compare the results to data obtained from other neutron diagnostics, and look at what additional information can be determined from the MRS data, given the improved understanding of the instrument response. A potentially important observable in the neutron spectrum is the peak energy shift, which may provide a measurement of the collective implosion-drift velocity. This work was supported in part by the U.S. DOE, LLNL and LLE.

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