

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

The Magnetic Recoil Spectrometer for time-resolved neutron measurements (MRSt) at the NIF C.E. PARKER, J.A. FRENJE, C.W. WINK, M. GATU JOHNSON, B. LAHMANN, C.K. LI, F.H. SEGUIN, R.D. PETRASSO, MIT, T.J. HILSABECK, J.D. KILKENNY, GA, R. BIONTA, D.T. CASEY, H.Y. KHATER, LLNL, C.J. FORREST, V.YU. GLEBOV, C. SORCE, LLE, J.D. HARES, Kentech Instruments, O.H.W. SIEGMUND, Sensor Sciences — The next-generation Magnetic Recoil Spectrometer, called MRSt, will provide time-resolved measurements of the DT-neutron spectrum. These measurements will provide critical information about the time evolution of the fuel assembly, hot-spot formation, and nuclear burn in Inertial Confinement Fusion (ICF) implosions at the National Ignition Facility (NIF). The neutron spectrum in the energy range 12-16 MeV will be measured with high accuracy ($\sim 5\%$), unprecedented energy resolution (~ 100 keV) and, for the first time ever, time resolution (~ 20 ps). An overview of the physics motivation, conceptual design for meeting these performance requirements, and the status of the offline tests for critical components will be presented. This work was supported in part by the U.S. DOE, LLNL, and LLE.

Fredrick Seguin
Massachusetts Institute of Technology

Date submitted: 18 Jul 2017

Electronic form version 1.4