

Abstract Submitted
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Development of a High Resolution X-Ray Spectrometer for the National Ignition Facility (NIF)¹ K. W. HILL, M. BITTER, L. DELGADO-APARICIO, P.C. EFTHIMION, R. ELLIS, L. GAO, J. MADDOX, N.A. PABLANT, PPPL, M.B. SCHNEIDER, H. CHEN, S. AYERS, R.L. KAUFFMAN, A.G. MACPHEE, P. BEIERSDORFER, T. MA, R.C. NORA, H.A. SCOTT, D.B. THORN, LLNL, J.D. KILKENNY, General Atomics, D. NELSON, M. SHOUP III, LLE, Y. MARON, Weizmann Institute of Science — A high resolution ($E/\Delta E \sim 2000$) Bragg crystal x-ray spectrometer is being developed to measure plasma parameters in NIF experiments. The instrument will be a positioner insertable cassette designed to infer electron density in compressed capsules from Stark broadening of the helium- β ($1s^2-1s3p$) lines of krypton, and electron temperature from the relative intensities of dielectronic satellites. Two conically shaped crystals will diffract and sagittally focus (1) the Kr He β complex and (2) the He α and Ly α complexes onto a streak camera photocathode for time resolved measurement. A third cylindrical crystal will focus the full He α to He β spectrum onto an image plate for a time integrated calibration spectrum. Performance estimates and design status will be presented.

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