

Abstract Submitted  
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**Objectives and Design Parameters of a High-Resolution X-ray Imaging Crystal Spectrometer for the Large Helical Device (LHD)**<sup>1</sup> MANFRED BITTER, L. DELGADO-APARICIO, D. GATES, K.W. HILL, D. MONTICELLO, H. NEILSON, N. PABLANT, A. REIMAN, A.L. ROQUEMORE, Princeton Plasma Physics Laboratory, Princeton, New Jersey 08543, USA, S. MORITA, M. GOTO, H. YAMADA, National Institute for Fusion Science, Toki 509-5292, Gifu, Japan, J.E. RICE, Plasma Fusion Center, MIT, Cambridge, Massachusetts 02139-4307, USA — A high-resolution X-ray imaging crystal spectrometer, whose concept was tested on NSTX and Alcator C-Mod, is being designed for LHD. The instrument will record spatially resolved spectra of helium-like Ar<sup>16+</sup> and provide ion temperature profiles with spatial and temporal resolutions of < 2 cm and > 10 ms. The stellarator equilibrium reconstruction codes, STELLOPT and PIES, will be used for the tomographic inversion of the spectral data. The layout of this spectrometer and instrumental features, which are largely determined by the complicated magnetic field structure of LHD, will be described.

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