

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Thomson Scattering on the HBT-EP Tokamak¹ J.P. LEVESQUE, K.D. LITZNER, J.M. HANSON, R. JAMES, D.A. MAURER, M.E. MAUEL, G.A. NAVRATIL, T.S. PEDERSEN, Columbia University — Thomson scattering can be used as a non-invasive method for measuring local electron density and temperature in plasmas. We describe the HBT-EP Thomson Scattering diagnostic, which is based on a design in use at DIII-D [1]. A five-channel interference filter polychrometer measures incoherent scattered light from an 8ns, 800mJ, 1064nm Nd:YAG laser pulse. A set of pre-amplification circuits designed by Princeton Scientific Instruments [2] has recently been installed for signal detection using avalanche photodiodes. System layout, alignment, and straylight level reduction techniques will be outlined. Rayleigh and Raman scattering calibration procedures have been used to absolutely calibrate the collection optics and detection system. Recent progress on diagnosing different HBT-EP plasmas using the Thomson scattering diagnostic will be presented.

[1] T. N. Carlstrom, *et al*, Rev. Sci. Instr. 61, 2858, 1990.

[2] D. Johnson, *et al*, Rev. Sci. Instr. 72, 1, 1129, 2001.

¹Supported by U.S. DOE Grant DE-FG02-86ER53222.

J. P. Levesque
Columbia University

Date submitted: 23 Jul 2007

Electronic form version 1.4