

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

A new Schwarzschild optical system for two-dimensional EUV imaging of MRX plasmas¹ P. BOLGERT, M. BITTER, P. EFTHIMION, K.W. HILL, H. JI, C.E. MYERS, M. YAMADA, J. YOO, S. ZWEBEN, Princeton Plasma Physics Laboratory, Princeton, NJ 08543 — This poster describes the design and construction of a new Schwarzschild optical system for two-dimensional EUV imaging of plasmas. This optical system consists of two concentric spherical mirrors with radii R_1 and R_2 , and is designed to operate with certain angles of incidence θ_1 and θ_2 . The special feature of this system resides in the fact that all the rays passing through the system are tangential to a third concentric circle; it assures that the condition for Bragg reflection is simultaneously fulfilled at each point on the two reflecting surfaces if the spherical mirrors are replaced by spherical multi-layer structures. A prototype of this imaging system will be implemented in the Magnetic Reconnection Experiment (MRX) at PPPL to obtain two-dimensional EUV images of the plasma in the energy range from 18 to 62 eV; the relative intensity of the emitted radiation in this energy range was determined from survey measurements with a photodiode. It is thought that the radiation at these energies is due to Bremsstrahlung and line emission caused by suprathermal electrons.

¹This research is supported by DoE Contract Number DE-AC02-09CH11466 and by the Center for Magnetic Self-Organization (CMSO).

Peter Bolgert
Princeton Plasma Physics Laboratory, Princeton, NJ 08543

Date submitted: 12 Jul 2013

Electronic form version 1.4