

Abstract Submitted
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WHAM Electron Density Reconstruction via inversion of Interferometer and soft x-ray data¹ MICHAEL JOHNSON, University of Dayton — A new axisymmetric magnetic mirror (WHAM) is currently under construction at the University of Wisconsin. An essential measurement in magnetic mirrors is determination of the electron density profile. In conjunction with design of a multi-chord interferometer, a modified Abel inversion technique is developed for fitting experimental data. A four free-parameter fit is performed on an anticipated six chord measurement of line-integrated density. Refinement of the reconstructed density profile will be conducted by analysis of soft x-ray emissivity measured on a multi-chord pinhole camera geometry. Synthetic signals from the CQL3D code are used to optimize diagnostic geometry and sensitive energy range prior to implementation. While the interferometer will measure density at the center of the device, accumulation of sloshing fast ions at higher magnetic field positions will lead to a variation of density along the axial direction. Full orbit studies of the fast ion population are utilized to predict the density enhancement and help inform the RF/fast ion resonant interaction.

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