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Plasma Adaptive Optics Characterization using Dispersive FTIR Interferometry BRIAN NEISWANDER, ERIC MATLIS, THOMAS CORKE, University of Notre Dame — Previous work by the authors has investigated the implementation of plasma as an adaptive optic element. Plasma has no moving parts, high frequency response, and an index of refraction that is dependent on the applied voltage potential. The refractive index is a function of the electron density and heavy particle density, and the accurate measurement of these values is critical to the development of plasma optical devices. Traditionally, such measurements are achieved by probing plasma with multiple wavelengths or by imposing specific assumptions on the heavy particle density. This work uses dispersive Fourier transform infrared (FTIR) interferometry to probe a plasma optic element and measure its optical properties across a wide range of wavelengths. This approach is based on a least-squares reconstruction of the plasma electron density and heavy particle density values. Both theoretical modeling and experimental validation are presented.

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