

Abstract Submitted  
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**Determination of Plasma Electron Density from Optical Measurements** BRIAN NEISWANDER, ERIC MATLIS, THOMAS CORKE, University of Notre Dame — Plasma has been shown to be effective in many flow control applications, but now may also find use in adaptive optics. Plasma's index of refraction is coupled with its electron density which may be adjusted for adaptive control. An experimental setup to verify the relation between plasma electron density, pressure, and voltage is presented. A non-thermal DBD plasma cell is created by evacuating air and applying a voltage potential between two conducting glass slides. Plasma forms in the chamber between the glass and the applied voltage potential controls the electron density. A HeNe laser is passed through the plasma cell and then focused onto a duo-lateral position sensing device (PSD). The plasma cell is oriented at an angle to the laser's beam and so changes in the plasma's index of refraction produce lateral translations in the beam position. Differences in the PSD output with and without plasma provides for the calculation of the electron density averaged over the beam spot area. The data from this experiment will be used to further develop an adaptive plasma lens for wavefront aberration corrections.

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