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Characterization of pulsed plasma jets by wave front distortion analysis BENJAMIN WANG, FLAVIO POEHLMANN, MARK CAPPELLI, Stanford University — Wave front distortion analysis is a non-perturbing plasma diagnostic technique used to measure the refraction of probing laser beams due to density gradients in the medium. A Shack- Hartmann wave-front sensor consisting of a micro-lenslet array coupled to a CCD sensor was used to characterize a pulsed coaxial discharge plasma jet experiment. A pulsed laser beam was passed through the plasma jet and the refraction angles of the beam as a result of the complex refractive index of the plasma were measured using a Shack-Hartmann wave front sensor. For axially- symmetric plasmas, an Abel inversion of the refraction angle data allows for the calculation of the line-integrated electron density gradient profile of the plasma jet. Wave front distortion measurements were also calculated from the refraction angle data.

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