

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Application of a Fizeau Interferometer to Fast High Resolution Measurements of the Spectral Line Shapes of Plasma Species IAN FALCONER, School of Physics, University of Sydney, ONDREJ NOVÁK, Department of Physics, University of West Bohemia, ROBERTO SANGINÉS, DAVID MCKENZIE, MARCELA BILEK, School of Physics, University of Sydney — An interferometer has been developed for fast, time resolved, high resolution measurements of the shape of spectral lines emitted by ionized and neutral atoms in pulsed plasmas. This system provides a valuable diagnostic tool for measuring the pressure broadening and especially the Doppler broadening – and shift – for emission lines from plasma species. As the primary dispersing element is an interferometer, this instrument has a higher resolution combined with a higher optical throughput than a grating spectrometer of comparable physical dimensions. This instrument is a combination of a Fizeau interferometer, an intensified CCD camera and a grating spectrometer, and has been used to obtain time-resolved spectral line shapes for species emitted from the cathode spots of a high-current cathodic arcs. We will discuss the factors affecting the spectral resolution and optical throughput of this instrument, give examples of spectral line shapes recorded by it, and discuss its calibration to determine the shift of the centre of the line profile.

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Date submitted: 11 Jun 2010

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