

Abstract Submitted
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A multi-wavelength LIF detection system¹ FRED SKIFF, DERETH DRAKE, University of Iowa, TIM GOOD, Gettysburg College — We present preliminary results from a new pair of 16 channel photon-counting LIF detection systems designed for measurements of ion phase-space fluctuations using laser-induced fluorescence in an magnetized singly-ionized Argon plasma column. Conventional LIF detection systems use narrow-bandwidth interference filters to block background light. These filters have limitations in that they are normally limited to a single wavelength and must be of large diameter to work efficiently with light from a low f-number light-collection first-optic. Especially for experiments observing fluorescence on multiple transitions (or where fluorescence may be spread out over several decay paths) it is useful to be able to observe multiple transitions in the light from each light collection system. We describe a system consisting of two movable light-collecting periscopes where the collected light is expanded to 10 cm diameter beams which are analyzed by means of diffraction gratings and imaged onto 16 element photomultiplier tubes. In each of the channels the pulses are discriminated and counted with an adjustable dwell time. Because the light collection system is imaging, the multiple elements can be used to resolve multiple spatial points or multiple spectral lines.

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