

Abstract Submitted
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High Speed Videography on Plasma Periphery in HBT-EP¹ Y. WEI, J.W. BROOKS, J.P. LEVESQUE, A. SAPERSTEIN, I.G. STEWART, M.E. MAUEL, G.A. NAVRATIL, Columbia University — Fast cameras have been widely used in identifying ELM filaments, turbulence structures, divertor strike points, as well as in analyzing MHD mode structures and frequencies in the plasma periphery [1]. A Phantom v7.1 high-speed camera has been installed on the HBT-EP tokamak. This camera operates in the visible range, and by mounting an optical filter it can also be used to study emission from a particular transition – one of special interest is the D-alpha line. Through a zoom lens and a wound fiber bundle the camera observes the poloidal cross section from the inboard limiter to the low field side movable shell at a frequency of 66 kfps and resolution of 128x128 pixels, covering an in-vessel area of 225 square-centimeters at the cross section perpendicular to the central line-of-sight. Using this setup, videos of probe-biased H-mode have been taken and changes in the emission structure at the plasma periphery during L-H mode transition can be identified. In addition, the camera view can also be adjusted to focus on the newly-installed SOL current sensors located on the movable shells, and correlations between SOL current measurements and pixel light intensities have also been investigated. [1] Angelini, et al., Plasma Phys Contr Fusion, 57, 045008 (2015).

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Yumou Wei
Columbia University

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