

Abstract Submitted
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Fast-camera imaging on the W7-X stellarator¹ S.B. BALLINGER, J.L. TERRY, S.G. BAEK, MIT-PSFC, K. TANG, MIT, O. GRULKE, Max Planck Institute for Plasma Physics — Fast cameras recording in the visible range have been used to study filamentary (“blob”) edge turbulence in tokamak plasmas, revealing that emissive filaments aligned with the magnetic field can propagate perpendicular to it at speeds on the order of 1 km/s in the SOL or private flux region. The motion of these filaments has been studied in several tokamaks, including MAST, NSTX, and Alcator C-Mod. Filaments were also observed in the W7-X Stellarator using fast cameras during its initial run campaign [1]. For W7-X’s upcoming 2017–18 run campaign, we have installed a Phantom V710 fast camera with a view of the the machine cross section and part of a divertor module in order to continue studying edge and divertor filaments. The view is coupled to the camera via a coherent fiber bundle. The Phantom camera is able to record at up to 400,000 frames per second and has a spatial resolution of roughly 2 cm in the view. A beam-splitter is used to share the view with a slower machine-protection camera. Stepping-motor actuators tilt the beam-splitter about two orthogonal axes, making it possible to frame user-defined sub-regions anywhere within the view. The diagnostic has been prepared to be remotely controlled via MDSplus. [1] G. Kocsis et al., 44th EPS Conf. (2017).

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