

# **Fast-camera imaging on linear devices for the validation of numerical simulations**

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A Phantom 7.1 fast camera is used on the linear experiments CSDX (UCSD) and VINETA (IPP Greifswald). Pattern-recognition techniques are applied to analyze the turbulent rotation properties of these helicon-wave produced plasmas, including the formation of bursty events such as fingers and blobs, which propagate into the source-free region. An extensive set of object-related observables is measured with excellent statistical accuracy, providing a broad basis for the validation of numerical simulations. On VINETA, an electrostatic octopole exciter can be used to alter the dominant coherent mode in some plasma configurations. Information on the turbulent energy transfer processes is obtained from the relaxation of the imposed initial condition to the natural plasma state. The plasma light measurements are compared with local density measurements from Langmuir probes. Surprisingly low correlations are found especially in the source-free region, indicating a strong role of hidden variables in the plasma light-emission processes.