

Abstract Submitted  
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**Coherence Imaging Spectroscopy Measurements of Ion Flows in the W7-X Scrape-Off Layer**<sup>1</sup> D.M. KRIETE, D.A. ENNIS, D.A. MAURER, Auburn University, V. PERSEO, D. GRADIC, R. KOENIG, Max Planck Institute for Plasma Physics, THE W7-X TEAM TEAM — To investigate island divertor physics, 2D ion velocity measurements are made in the scrape-off layer (SOL) of W7-X using coherence imaging spectroscopy (CIS). The CIS technique encodes information about line-integrated ion velocity and temperature into a spatial interference pattern that is overlaid on an image of the plasma emissivity. CIS has high spatial resolution and optical throughput, enabling detailed study of SOL dynamics in the complex magnetic island topology of W7-X. Flow measurements are presented in the low-iota magnetic configuration, which exhibits a large 5/6 island chain at the plasma edge and is characterized by the longest average connection lengths in W7-X. The structure and direction of the flow changes when the magnetic field direction is reversed, suggesting that particle drifts play an important role in SOL dynamics. A design is also presented for a new CIS system optimized for ion temperature measurements, which will be benchmarked by high-resolution dispersive spectroscopy measurements and complement the existing CIS systems optimized for flow measurements.

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