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2D motional Stark effect imaging on the KSTAR tokamak

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Motional Stark effect polarimetry of D-alpha emission from heating neutral beams is a standard diagnostic for inferring the internal magnetic field pitch angle in toroidal confinement devices. Due to technical limitations, the measurement is restricted to a modest number of independent measurement channels viewing across the machine mid-plane.

We have developed a simple and compact spatial heterodyne polarization interferometer for fully 2D imaging of the polarization properties of the Doppler shifted D-alpha multiplet. First results obtained on the KSTAR tokamak show excellent agreement with forward models of the expected Doppler phase shift and polarization orientation. We will discuss the instrument operating principles, calibration and performance and will consider new areas of investigation that are opened up by the imaging capability.

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Session Classification: Techniques of Analysis of Massive Database