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Initial Results from the D_{α} Photodiode Array on HBT-EP¹ SARAH ANGELINI, P. BYRNE, B. DEBONO, P. HUGHES, J.P. LEVESQUE, D.A. MAURER, M.E. MAUEL, G.A. NAVRATIL, N. RATH, C. STOAFER, D. SHIRAKI, Columbia University — A 20-channel photodiode array diagnostic has recently been assembled for use on HBT-EP. Combining the high-speed measurements of light fluctuations from this photodiode array with HBT-EP's high-resolution magnetic diagnostics creates a method by which the structure of naturally appearing or control coil-induced kink instabilities can be measured. HBT-EP's photodiode array diagnostic is designed to respond to D_{α} emissions at 656nm and to filter light emissions from other sources. Since these D_{α} emissions are proportional to the product of the neutral density and the plasma density, structural information about the plasma response and its instabilities can be reconstructed using the perturbations from the time-averaged emission profile. In this poster, the viewing geometry and calibration method used to transform the chord-integrated measurement into a radial emission profile is described. The emission fluctuations will be analyzed and the correlations with the external magnetic diagnostics will be explored.

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Sarah Angelini

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