

Abstract Submitted
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2-D/3-D ECE imaging data for validation of turbulence simulations¹ MINJUN CHOI, JAEHYUN LEE, GUNSU YUN, POSTECH, WOOCHANG LEE, UNIST, HYEON K. PARK, UNIST, NFRI, YOUNG-SEOK PARK, STEVE A. SABBAGH, Columbia University, WEIXING WANG , PPPL, NEVILLE C. LUHMANN, JR, UC Davis — The 2-D/3-D KSTAR ECEI diagnostic can provide a local 2-D/3-D measurement of ECE intensity. Application of spectral analysis techniques to the ECEI data allows local estimation of frequency spectra $S(f)$, wavenumber spectra $S(k)$, wavenumber and frequency spectra $S(k, f)$, and bispectra $b(f_1, f_2)$ of ECE intensity over the 2-D/3-D space, which can be used to validate turbulence simulations. However, the minimum detectable fluctuation amplitude and the maximum detectable wavenumber are limited by the temporal and spatial resolutions of the diagnostic system, respectively. Also, the finite measurement area of the diagnostic channel could introduce uncertainty in the spectra estimation. The limitations and accuracy of the ECEI estimated spectra have been tested by a synthetic ECEI diagnostic with the model and/or fluctuations calculated by GTS.

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