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Dynamic Method to Study Turbulence and Turbulence Transport

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Here we developed research methods of plasma turbulence transport associated with the non-local features. The ECH modulation experiment and the higher harmonic analysis of the heat wave indicated: (i) propagation of the change of Te at the time of switch-off/on of ECH power is about 5 times faster than that of perturbation itself, (ii) propagation of the higher (7th) harmonic of the Te perturbation is 5 times faster than prediction by the diffusive model. New bi-spectral analysis of fluctuations demonstrated a non-linear coupling of micro-fluctuations at different radial locations. These results are beneficial for control of plasma dynamics in future fusion reactors.

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