# 2D Local turbulence measured by microwave imaging reflectometry in TPE-RX

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Two-dimensional (2D) turbulence measurement by using microwave imaging reflectometry (MIR) has been undertaken in the reversed field pinch (RFP) plasma in TPE-RX. A large aperture optical system is used to make an image of the cutoff surface onto the 4 by 4 2D detectors array located at the imaging plane. The 2D *k*-spectrum obtained by the traditional Fourier method shows poor spectral resolution due to the small detector array whose dimension is smaller than the cross-correlation length of the fluctuation. In this work, the maximum entropy method (MEM) is used to estimate the *k*-spectrum which shows high spectral resolution. This technique is very useful for the turbulence imaging. The turbulences between the pulsed poloidal current drive (PPCD) and the high Θ plasmas are studied. As shown in Fig.1, the low frequency MHD mode (m=1) is dominant in PPCD plasma, while in high Θ plasma the *k* spectrum expands to the high *k* range and the turbulences propagate in the electron drift direction. The preliminary results show that PPCD plasma switches off the turbulence, and the high Θ plasma has strong turbulence with fast velocity.

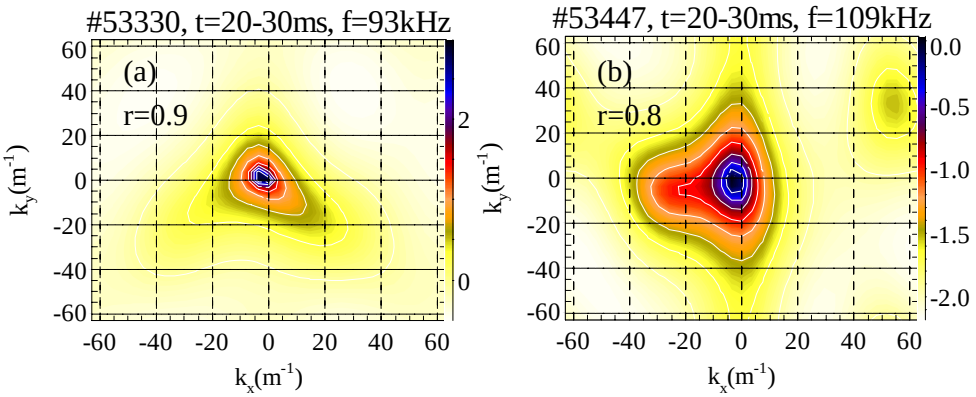


Figure 1: the *k*-spectra log ($S(k_x, k_y)$) of (a) PPCD and (b) high Θ plasma estimated by MEM