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**Statistical studies on two-point correlation length measurement for ion-scale turbulence.**[1] JAEWOOK KIM, Korea Adv Inst of Sci Tech , Y.U. NAM, National Fusion Research Institute, MATE LAMPERT, Wigner RCP, Y.-C. GHIM, Korea Adv Inst of Sci Tech — To understand turbulence in a tokamak, it is essential to measure characteristics of turbulence such as radial, poloidal, and parallel correlation lengths, fluctuation level, and decorrelation time. Parallel correlation length at the hot core plasma has not been measured yet from any tokamaks, but in KSTAR there are two 2D diagnostics measuring density fluctuations on two poloidal cross-sections from different toroidal locations: BES (Beam Emission Spectroscopy) and MIR (Microwave Imaging Reflectometry). Therefore, we have potential to measure the parallel correlation length in KSTAR. As only two measurement points are available, we need to confirm that the correlation length measurement with the two points is reliable. Synthetic data satisfying stationary process and homogeneous state is generated. We find that the reliability of two-points correlation length measurement highly depends on the ratio of the separation distance between the two measurement points to the actual correlation length of the fluctuation. We confirm our quantitative results based on the synthetic data with the measured experimental data.

[1]Turbulence, correlation length, synthetic data, two-point measurement

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