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Characteristics of magnetic and electrostatic turbulence in the edge plasma of HL-2A tokamak

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Simultaneous measurement of magnetic and electrostatic turbulence in the HL-2A tokamak edge plasma under different discharge has been carried out by using a multifunctional reciprocating probe. This probe is able to simultaneously measure the 3-dimensional magnetic fluctuation, toroidal rotation velocity, as well as plasma density, potential, and electron temperature. The measured magnetic fluctuation is broad band and peaks in the frequency ranges 25-60 kHz and 150-300 kHz. The coherence between floating potential and magnetic fluctuation is quite high in 25-60 kHz. The result may indicates that the turbulence is electro-magnetic coupled. More correlation between electrostatic and magnetic parameters has been calculated also. Reynolds stress, Maxwell stress and also the particle and momentum transport induced by them, are calculated and compared in detail. What's more, the characters of filament in scrape of layer in HL-2A will be presented.

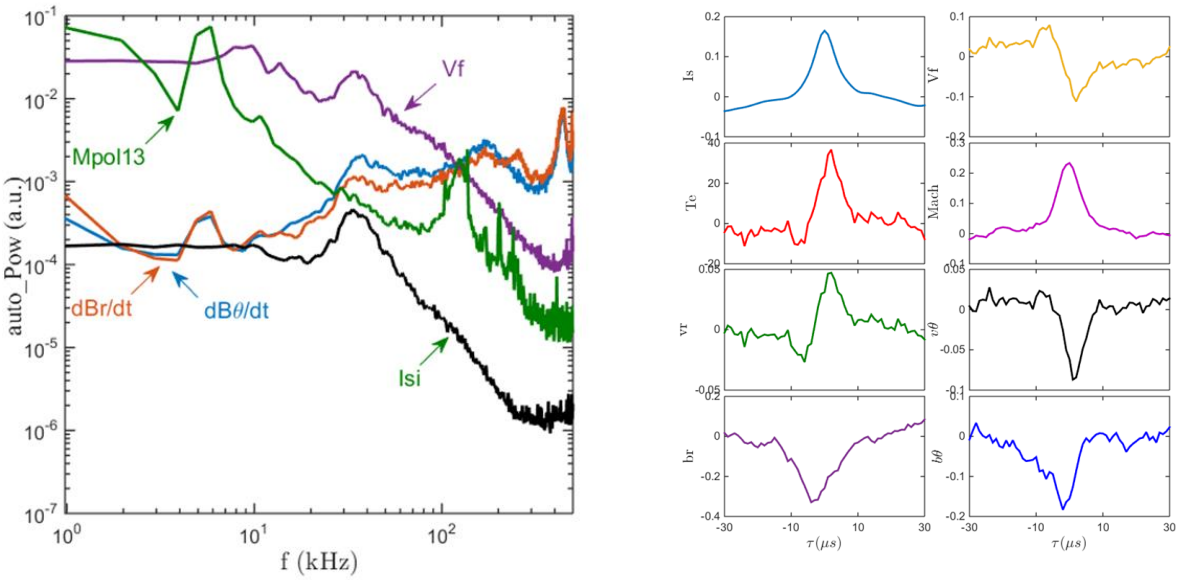

Figure xx