

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

A novel approach to estimate the Doppler shift frequency from quadrature mixer output M.Y. WANG, A.D. LIU, C. ZHOU, J.Q. HU, J. ZHANG, H. LI, T. LAN, J.X. XIE, W.D LIU, C.X. YU, Univ of Sci Tech of China, UNIV OF SCI TECH OF CHINA TEAM — Doppler backscattering system (DBS) has been widely used in Magnetic confinement fusion devices to measure the density fluctuations and propagation velocity of the turbulence. However, the received signals of DBS usual include both forward scattering and backscattering components, which caused interference as calculating the Doppler shift frequency from the backscattering components. A novel method will be introduced here to estimate the Doppler shift frequency by separating the forward scattering and backscattering components through the cross-phase spectrum between I-signal and Q-signal from quadrature mixer, based on the difference of symmetrical characteristic between forward scattering and backscattering signal spectrum. It is proven that this method is more effective than the tradition approached such as the Center of Gravity of the spectrum and the Gaussian fitting method. *Work supported by the Natural Science Foundation of China (NSFC) under 11475173, 11505184, National Magnetic Confinement Fusion Energy Development Program of China under 2013GB106002 and 2014GB109002.

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Date submitted: 14 Jul 2016

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