Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

The distinctions between amplitude and phase modulations in detecting nonlinear coupling[1] TAO LAN, CHANGXUAN YU, USTC, YUHONG XU, SWIP, HUAGANG SHEN, YI YU, USTC, MIN XU, SWIP, JIE WU, AHDI LIU, JINLIN XIE, HONG LI, WANDONG LIU, USTC — The amplitude and phase modulations are basic processing in plasma science. The amplitude modulation reflects the parametric instability. And Doppler shift mainly contributes the phase modulation due to plasma rotation in laboratory frame. The bispectral and envelop analysis are widely-used tools for detecting the nonlinear coupling. In this poster, artificial data and real experiment data are used to calculate both bispectra and envelop. The results show that both amplitude and phase modulations have significant amplitude in the bispectra and envelops. Particularly, the cross-phase between envelop and original signal reveals the distinctions of amplitude and phase modulations. Furthermore, the results discover that the basic bispectral analysis is not suitable for examining the nonlinear coupling in some cases.

[1]Supported by NNSFC (Nos. 10990210, 10990211, 10335060, 10905057 and 11375188), YIF (No. WK2030040019).

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Date submitted: 24 Jul 2015 Electronic form version 1.4