

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

The characteristics of density fluctuations induced by geodesic acoustic modes in the edge of plasmas¹ T. LAN, A.D. LIU, H.L. ZHAO, D.F. KONG, W.D. LIU, C.X. YU, USTC, China, L.W. YAN, W.Y. HONG, K.J. ZHAO, J.Q. DONG, J. CHENG, J. QIAN, Q.W. YANG, X.R. DUAN, SWIP, China, W. ZHANG, J.F. CHANG, X. GAO, B.N. WAN, J.G. LI, IPP, China — The geodesic acoustic mode (GAM) induced density fluctuations were measured by the toroidally and poloidally departed Langmuir triple probe arrays in the edges of HL-2A (Chengdu) and HT-7 (Hefei) tokamaks. Some theoretical predictions about the mode features of GAM density fluctuations are verified in our experiments: the toroidal mode number of GAM density fluctuations is $n = 0$; the amplitude is consistent with the theoretical prediction in a factor of 2; the GAM density and potential fluctuations are in anti-phase at the top of plasma cross-section. The nonlinear interactions between GAM and ambient turbulence (AT) are also investigated. The cross phase between envelope of high frequency AT and GAM density fluctuations is nearly $\pi/2$ radians, which supports the conclusions that the envelope modulation of density fluctuations is due to the GAM shear effect.

¹Supported by NBRPC (No. 2008CB717800), NNSFC (Nos. 10875124, 10335060 and 10905057), CPSF (No. 20080440104) and KIPCAS (No. kjcx-yw-n28).

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Date submitted: 09 Jul 2010

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