Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Geodesic Acoustic Mode Induced by Trapped Energetic Paticles[1]

TIANCHUN ZHOU, HERBERT L. BERK, University of Texas at Austin — Energetic particle driven global geodesic acoustic mode(GGAM) has been observed in JET[1, 2] and DIII-D[3, 4]. The mode is to be treated in fully kinetically. The descriptions of the background electrons and ions are based on standard low and high frequency expansions respectively. However the energetic ions must be treated without any inherent expansion of its bounce frequency to it mode frequency. For the distribution functions, we take the background ions and electrons to be Maxwellian at different temperatures, while for hot ions more general distributions are taken. We construct the quadratic form for the wave amplitude, from which an integro-differential equation is derived. We then investigate the limits, where the mode width is of the same order as the thickness of the energetic particle orbit thickness, and where the mode width is much larger than the orbit thickness. Numerical and analytic results will be presented. The study of passing energetic particles will be compared to the work recently presented by Fu [4]. 1 C.J. Boswell, et al., PHYSICS LETTERS A 358 154-158 (2006) 2 H.L. Berk, et al., Nucl. Fusion 46 S888-S897 (2006) 3 R. Nazikian, et al., submitted to Phys. Rev. Lett. (2008) 4 G.Y. Fu, submitted to Phys.

[1]Supported by DOE.

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Date submitted: 19 Jul 2008 Electronic form version 1.4