

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**A Preliminary Basic Experiment on the Production and Identification of ETG Modes**<sup>1</sup> XIAO WEI, VLADIMIR SOKOLOV, AMIYA K. SEN, Plasma Research Laboratory, Columbia University, New York, New York 10027 — The Electron Temperature Gradient (ETG) mode is believed to be a possible candidate for anomalous electron energy transport. The high frequency (few MHz) and short wave length ( $k_{\perp}\rho_e < 1$ ) make the direct observation of ETG modes difficult in experiments. We have fairly succeeded in producing the parameter regime appropriate for ETG modes in the Columbia Linear Machine (CLM). The requisite electron temperature gradient is obtained via dc acceleration (via a biased screen) and subsequent thermalization in the core of the plasma. The resulting electron temperature of  $\sim 20eV$  in the center and  $\sim 1eV$  in the edge are obtained. This allows us to vary  $\eta_e = d\ln T_e/d\ln N$  from 1 to 6. Fluctuations at  $\sim 2MHz$  correlated with high  $\eta_e$  are seen. Much wider and deeper parametric study of these fluctuations is necessary for its identification as ETG modes.

<sup>1</sup>This research was supported by U.S. Department of Energy grant No. DE-FG02-98ER-54464.

Vladimir Sokolov  
Columbia University

Date submitted: 11 Jul 2006

Electronic form version 1.4