

Abstract Submitted  
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**Diagnostics for Radial Electron Thermal  
Transport Measurements<sup>1</sup>**

VLADIMIR SOKOLOV, XIAO WEI, AMIYA K. SEN, Columbia University — Production and identification of electron temperature gradient (ETG) mode have been successfully demonstrated in a basic experiment in Columbia Linear Machine CLM [1]. ETG mode was excited by heating electrons of the core plasma. For local measurement of radial electron thermal transport we use miniature langmuir probes with special resolution  $< 1mm$  and frequency response  $> 2MHz$ . Triple probes will be used to measure local temperature fluctuations. For significant improvement of the frequency response of the triple probe we used a capacitive probe as a single probe and used capacitive coupling of double probe's positive tip with the measuring circuit. Then cross- correlation of the electron temperature fluctuations and potential fluctuations will yield local thermal flux. A non-local measurement scheme based on a variation of perturbative transport method is attempted. Here we modulate (at  $\sim 20-50kHz$ ) the accelerating bias voltage which produces the electron heating. The resulting modulated  $\tilde{T}_e$  in the plasma core will be conducted / convected to the plasma edge, where it will be measured by a triple probe. [1] X. Wei, V. Sokolov and A.K. Sen, Bulletin of 49th APS DPP, p.110, 2007.

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