Abstract Submitted
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Advances in the measurement of electrostatic fluctuations and inference of particle flux with a Heavy Ion Beam Probe in improved confinement MST plasmas X. CHEN, D.R. DEMERS, P.M. SCHOCH, Rensselaer Polytechnic Institute, P.J. FIMOGNARI, P.W. TERRY, V. TANGRI, University of Wisconsin-Madison — Electrostatic fluctuations may be the dominant transport mechanism in improved confinement MST plasmas when magnetic fluctuations are suppressed. Simultaneous measurements of density and potential fluctuations have been made with a heavy ion beam probe in the plasma interior; spectra are broadband with most power below 100 kHz. A noise reduction method has been developed to reduce UV induced detector noise to a level on the order of other sources. A technique to estimate wavenumbers (k) which assumes a fluid fluctuation frequency Doppler shifted by a plasma flow velocity is being explored; mean k estimates give $k^*\rho_s = 0.14\sim0.21$ which are within a range of ITG modes recently predicted by simulations. The noise reduction and k estimate advances are enabling the inference of electrostatic particle flux and its study relative to estimates from previous work on global particle balance in core of MST. Measurements and comparisons with modeling will be presented. (Work supported by US DOE.)

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