

Abstract Submitted
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A Novel Diagnostic For Ion Temperature Fluctuations VLADIMIR

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The local measurement of radial ion thermal transport is an important issue in all plasma confinement experiments. In principle this requires the measurement of local ion temperature fluctuations. Compact double gridded electrostatic ion energy analyzers (IEA) are routinely used to measure equilibrium ion temperature. However, these cannot be used for fluctuating ($\sim 100kHz$) ion temperature measurements. This has motivated us to develop a new time dependent ion energy analyzer based on feedback. The novel physical idea is to modulate the retarding field synchronously at the fluctuation frequency (50-150 KHz) via feedback. The ion current from Langmuir probe is used as a feedback signal and applied on energy selector grid of IEA. The simultaneous measurement of ion currents of analyzer $I_{IEA}(t)$ and Langmuir probe $I_{LP}(t)$ allow us to determine local fluctuations density $n(t)$, temperature $T_i(t)$, the ion thermal flux and conductivity.

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