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Effect of Electron Temperature Fluctuations on the Anomalous Particle Flux inferred by Electrostatic Triple Probes CELSO RIBEIRO[1] — Plasma anomalous transport severely reduces the economical attractiveness of any possible fusion energy reactor based on magnetically confined thermonuclear plasma. Understanding the major mechanisms of this transport, mainly due to the anomalous particles losses, is vital to ameliorate the potential of such reactor, and plasma edge is a key area for this research. We reported here data of a 4-pin triple probe at TCABR tokamak [R=0.615m, a=0.18m, B_T=1.15T, $I_p \leq$120kA, n_e(bar)$\leq$4x10^{19}m^{-3}, $T_e(0)\leq$600eV, $T_i(0)\leq$400eV, 100ms, circular limiter]. Plasma density (n_e), potential (V_p), electron temperature (T_e), and respectively fluctuations, all were simultaneously measured or inferred with high spatial($\sim$3mm) and temporal (1μs) resolution. Corrections in the fluctuation driven particle flux(Γ) via the poloidal electrical field (E_θ) and n_e are used: real geometry of the tips; V_p (instead of floating potential) between the two tips for inferring E_θ; a correction on n_e due to the finite electrical sheath formed at the probe ion collecting area via an analytical formula based on the Hutchinson model for collisionless plasma. The role of T_e fluctuations in Γ is analyzed and the results are correlated with the dynamic of the global plasma parameters on discharges under auxiliary heating via RF injection (4MHz, 30kW, Alfvén Wave scheme) in which confinement improvement has been observed.

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