

## Emissive Probe Measurements on ISTTOK

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A probe array consisting of three emissive and one cylindrical probe was developed for edge plasma measurements on ISTTOK (see Fig. 1). The emissive probes measure the plasma potential,  $\Phi_{pl}$ , independently of electron drifts and electron temperature fluctuations. The probe array has the advantage to record the density, the poloidal and radial electric field, and their fluctuations simultaneously. Radial plasma profiles were recorded with and without negative edge biasing with an emissive electrode. The statistic properties of the poloidal electric field and of the turbulent particle flux, measured with cold and emissive probes, were

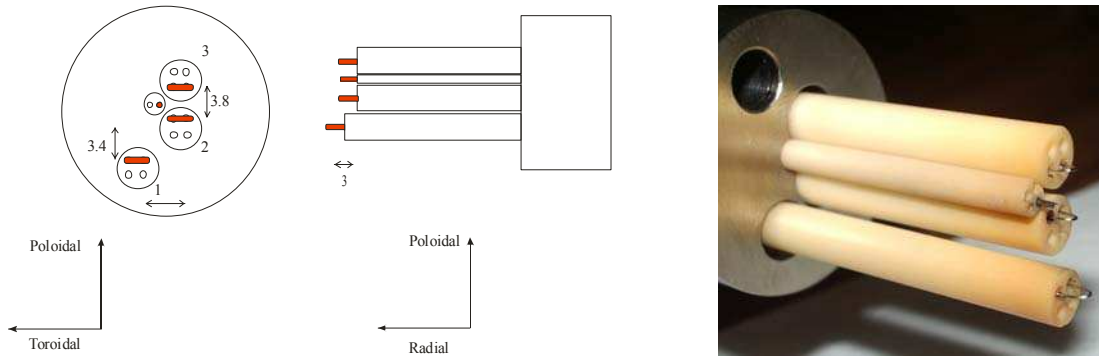


Fig. 1: Schematic drawing and photograph of the probe system used in ISTTOK, consisting of three emissive probes and one cold probe to measure the radial and poloidal electric field and the ion saturation current simultaneously.

compared. Both the root mean square of the poloidal electric field and the fluctuation-induced particle flux were found to be significantly larger when measured with the emissive probes, indicating that temperature fluctuations are important for the particle flux determination. The flux distribution was also found to be more peaked and asymmetric when measured with the emissive probes. A clear reduction of the turbulent particle flux and thus an improvement of the plasma confinement were observed during the negative emissive electrode biasing.