Electron Temperature Gradient (ETG) turbulence is considered as one of the important candidates to understand the physics of anomalous electron thermal loss in fusion devices. The small scale nature of ETG mode \((\Omega_{ci} < \omega \ll \Omega_{ce}, k_{L} \rho_{e} \leq 1\), where \(\Omega_{ci}/\Omega_{ce}\) is ion/electron cyclotron frequency, \(\rho_{e}\) is electron larmor radius, \(\omega\) and \(k_{L}\) are mode frequency and perpendicular wave number, respectively) inhibits its direct measurement in fusion devices and inferences are drawn largely from the indirect measurements and theoretical models. Basic plasma devices come handy in bringing these scales to measurement limits of conventional probe diagnostics. The plasma produced in such devices suffer from the very process of plasma production, this makes unambiguous identification of ETG difficult in such devices. The control of electron temperature gradient are achieved by placing a large Electron Energy Filter (EEF) in the middle of the Large Volume Plasma Device, this makes plasma suitable for carrying out ETG turbulence studies [1].

Experiments are performed in detail on the measurement of ETG turbulence driven particle and heat flux, the results are discussed with theoretical predications. It is observed that the non-adiabatic ion response is responsible for plasma particle transport and the phase velocity opposite to electron diamagnetic drift direction is responsible for inward particle flux [2]. In addition to this, electromagnetic (EM) radial particle flux is also measured. The measured EM flux is small but finite, in contrary to the conventional slab ETG model, \(\frac{F_{em}}{F_{es}} \approx 10^{-5}\). The theoretical estimates for straight homogeneous magnetic field geometry are seen to compare well with the experimental observations of EM flux. Sluggish parallel ion response is identified as the key mechanism for generation of small but finite EM flux [3]. The conductive and convective heat flux is also measured which provide estimation of ETG turbulence induced heat flux in LVPD. It is observed that although convective flux radially inward, the net energy flux remains directed radially outward [4].