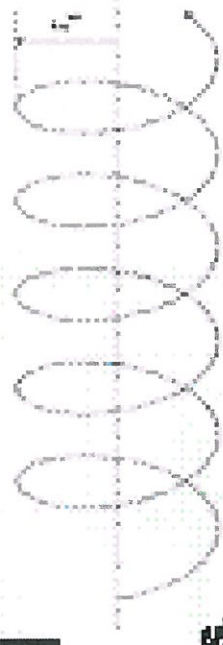


Langmuir probe in a homogeneous

magnetic field



Magnetic field \vec{B} , Lorentz force $\vec{F} = q(\vec{v} \times \vec{B})$

The charged particles move along helical trajectories.

$$r_g = \frac{m_p v}{e_p B} \quad r_g = \frac{1}{eB} \sqrt{\frac{2 m_e k T_e}{2}}$$

Important ratio: $\beta = \frac{r_p}{r_g}$

Probe potential V_p
Electron temperature T_e
Electron current at the
Plasma potential $V_s: I_{p,s}$
Boltzmann constant k_B
Normalised probe voltage:

$$\eta_p = \frac{e(V_p - V_s)}{k_B T_e}$$

