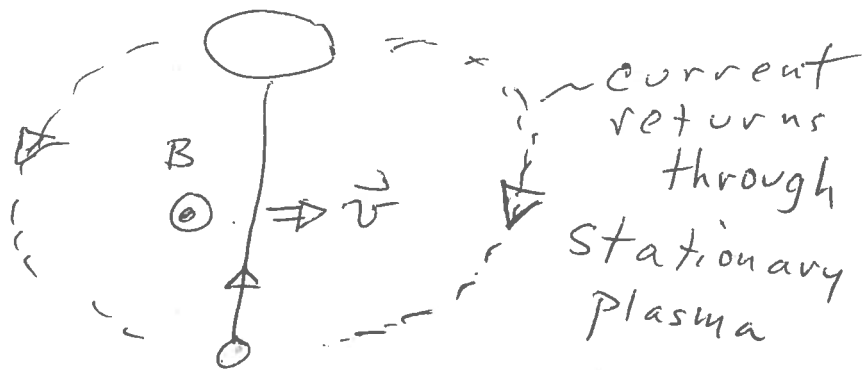


## 23 - Electromagnetic Induction

①



$$E = v \times B = vB \quad \text{emf} = E \cdot l$$

$$\text{emf} = \text{"Voltage"} = vBl$$

$$v = 85 \text{ E3 m/s} \quad B = 56 \text{ E-6 Tesla} \quad l = 29 \text{ E3 m}$$

$$\text{emf} = (85)(56)(29) = \boxed{1.38 \text{ E5 volts}}$$

②

$$\text{emf} = \frac{\Delta \Phi}{\Delta t} = \cancel{N \pi r^2} N \pi r^2 \frac{\Delta B}{\Delta t} \quad \leftarrow 49^\circ \text{ of } B_0$$

$$\text{Since } \Phi = \vec{B} \cdot \vec{\text{Area}} = \pi r^2 B$$

$$N = 25 \quad r = .85 \text{ m} \quad \Delta t = 1.5 \quad B_0 = .58 \text{ Tesla}$$

$$|\Delta B| = B_0 - .49 B_0 = .51 B_0$$

$$\text{emf} = \frac{(25)(\pi)(.85)^2 (.51)(.58)}{1.5} = \boxed{11.19 \text{ volts}}$$

⊗

$$\rightarrow 1.12 \times 10^1 \text{ V}$$