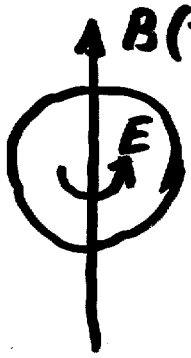


$$\oint E\,dl = \frac{1}{c}\frac{\partial}{\partial t}\int B\,ds \Rightarrow E = \frac{r}{2c}\frac{\partial B}{\partial t}$$

$$j = \sigma E \Rightarrow j = \frac{\sigma r}{2c}\frac{\partial B}{\partial t}$$

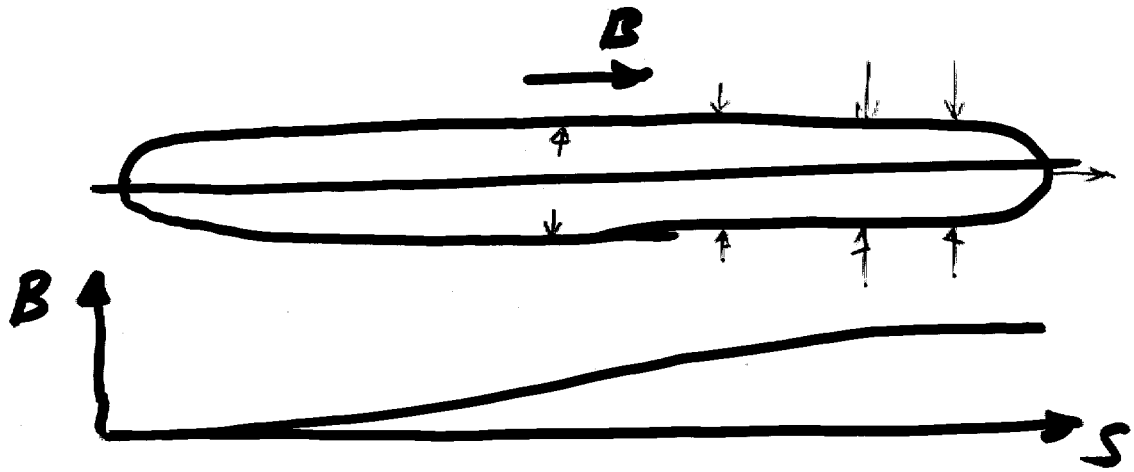
$$\frac{\partial p}{\partial r} = \frac{1}{c} jB = \frac{B}{c}\frac{\sigma r}{2c}\frac{\partial B}{\partial t}$$

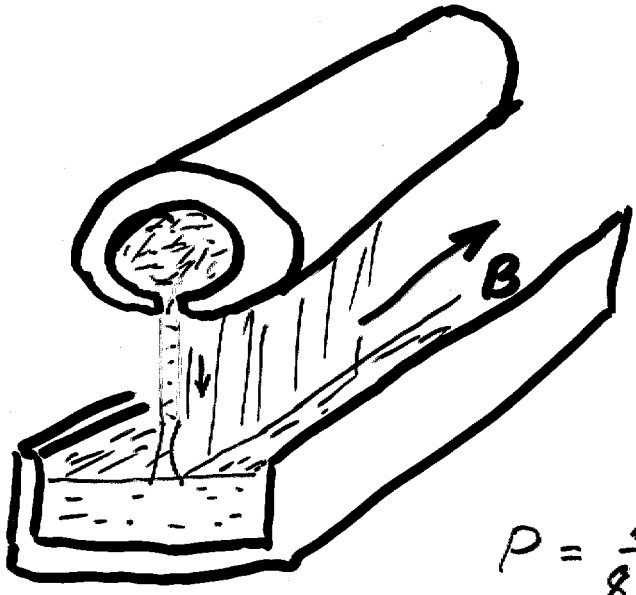
$$\rho \frac{dv}{dt} = \frac{\partial p}{\partial r} \Rightarrow \rho \frac{dv}{dt} = \frac{\sigma r}{4c^2}\frac{\partial B^2}{\partial t}$$

$$\Rightarrow \boxed{v = \frac{\sigma r B^2}{4c^2 \rho}}$$

$\rho = 13\ g/cm^3$, $B = 2\cdot 10^5\ G$, $r = 0.3\ cm$, $\sigma_{Hg} \approx \frac{1}{5}\sigma_{Cu} = 10^{17}\ s^{-1}$

$$v = \frac{10^{17}\cdot 0.3\cdot (2\cdot 10^5)^2}{4\cdot (3\cdot 10^{10})^2 \cdot 13} \approx 2.6\cdot 10^4 \frac{cm}{s} = 260\ \frac{m}{s}$$





$$E = \frac{v}{c} B$$

$$P = \frac{1}{8\pi} \left(E^2 \right) = \frac{1}{8\pi} \frac{v^2}{c^2} B^2$$

$$\Rightarrow P = - 2 \cdot 10^{-14}\, [\text{atm}]\, v^2_{[\text{cm/s}]}$$