\[ e_{\mathrm{ind}} = (v \times B) \cdot \ell \quad \text{and} \quad F_{\mathrm{ind}} = i(\ell \times B) \]

1) **Induced Force**

- Cond 1
- Cond 2
- 1 meter
- 25,000 A
- 30 m

The current in conductor 2 causes a \( \vec{B} \) at conductor 1 of (from E-mag)

\[
\vec{B}_1 = \frac{\mu_0 I_2}{2\pi r} = \frac{(4\pi \times 10^{-7})(25,000)}{2\pi (1\ m)}
\]

\[
= 0.005 \ \text{Tesla}
\]

**Question**: Calculate the magnitude and direction of force induced on conductor 1.

\[
F_{\mathrm{ind}} = 25,000 (30\ m)(0.005\ T)
\]

\[
= 3750 \ \text{N to Left}
\]

2) A conductor of length 0.25 m moves through a \( B \)-field of 0.6 T at a velocity of 100 m/s. Calculate the voltage induced along the length of the wire.

\[
e_{\mathrm{ind}} = (0.25)(0.6)(100) = 15 \ \text{Volts}
\]