1836—1775 אמפר
Andre Ampere

Force between two parallel wires
with electric currents

I_1

I_2

Electric
current

r

I

B
F F
F

B
Magnetic
field

Unit of electric current
Named after him
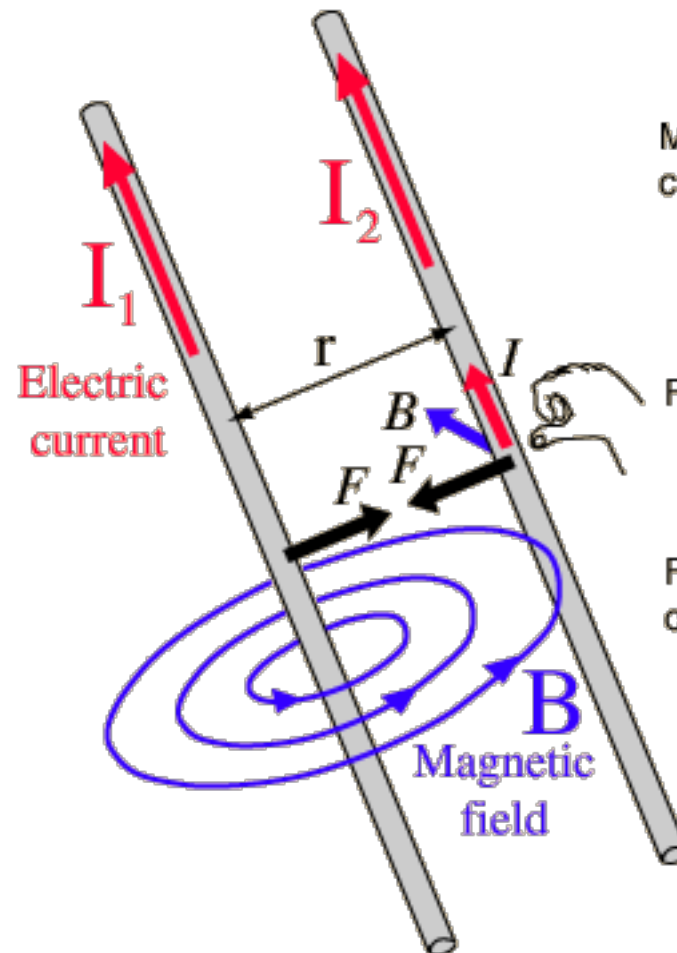
Magnetic field at wire 2 from
current in wire 1:

$$B = \frac{\mu_0 I_1}{2\pi r}$$

Force on a length ΔL of wire 2:

$$F = I_2 \Delta L B$$

Force per unit length in terms
of the currents:

$$\frac{F}{\Delta L} = \frac{\mu_0 I_1 I_2}{2\pi r}$$