

The figure shows two infinite straight line charges  $\lambda = 2 \mu\text{C}/\text{m}$ , a distance  $d = 2 \text{ cm}$  apart, moving along at a constant speed  $v = 10 \text{ m/s}$ .

- Calculate the current in each wire.
- Calculate the electrostatic force per unit length on each wire.
- Calculate the magnetostatic force per unit length on each wire.
- What should  $v$  be in order for the magnetic attraction to balance the electrical repulsion?

