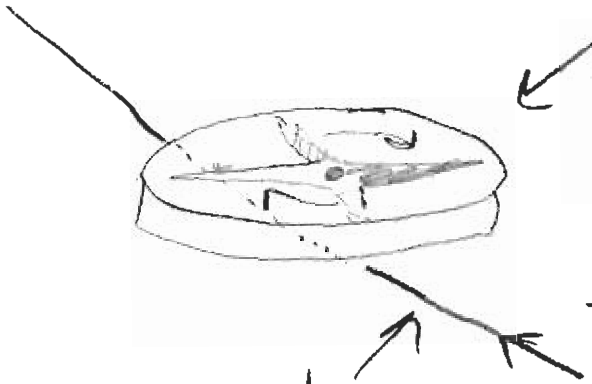
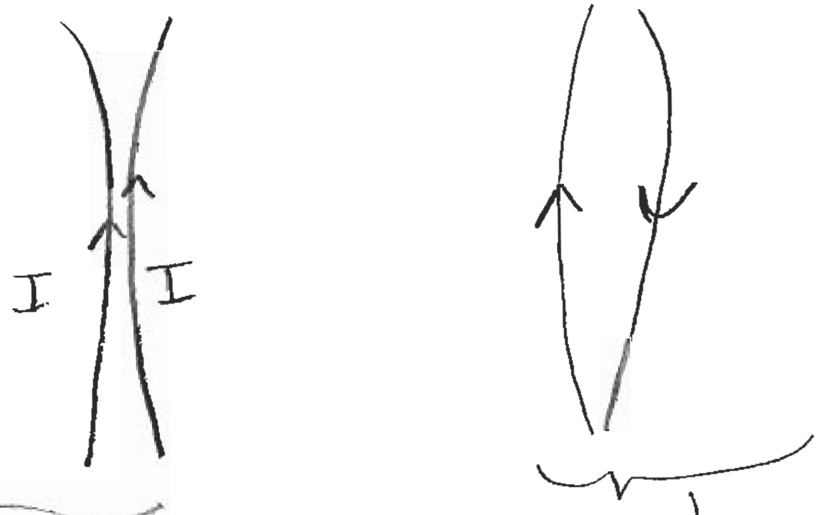
Magnetism

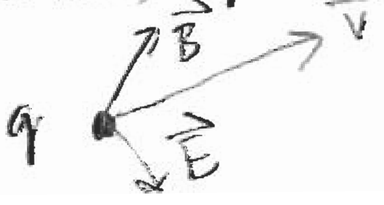


Currents attract



Putting a conducting plate between the wires does not eliminate or reduce the forces!

$\vec{B}$ (magnetic field)

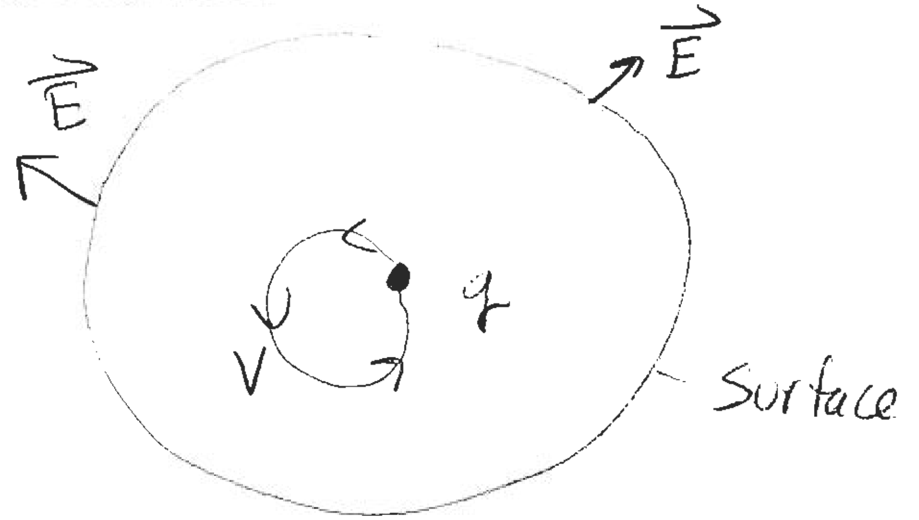


$$\vec{F} = q \cdot \left(\vec{E} + \frac{\vec{v}}{c} \times \vec{B} \right)$$

Electric Charge Independent of $\vec{v}$ (!)

mass was not ! $\frac{m_0}{\sqrt{1-(\frac{v}{c})^2}}$

use Gauss' Law:



$$\int \vec{E} \cdot d\vec{A} = 4\pi q$$

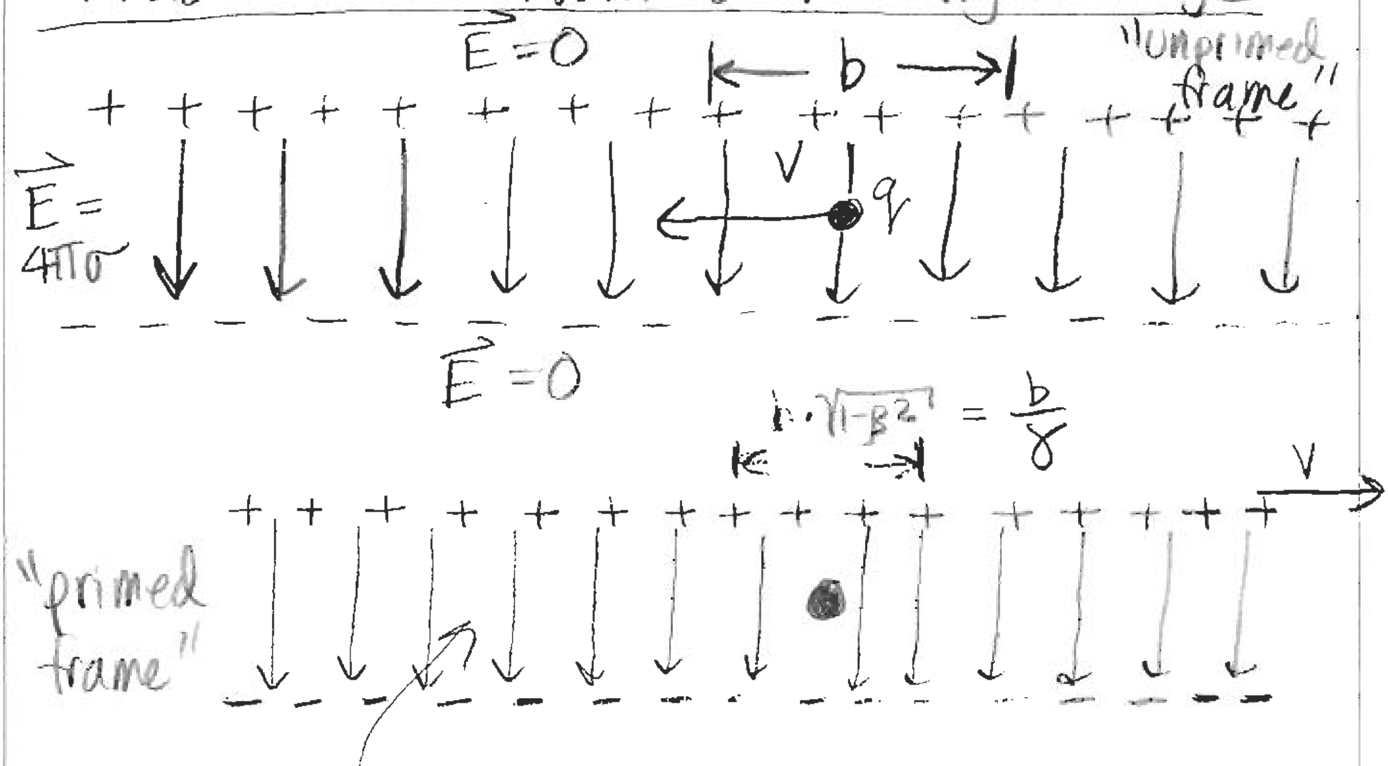
even if charge moving at speed of light !

<u>Note</u>: (x,t) of surface is actually different as viewed in different frame: (x',t'). But

$$\int_S \vec{E} \cdot d\vec{A} = \int_{S'} \vec{E}' \cdot d\vec{A}' \quad (!)$$

since charge is enclosed in both cases

Field Viewed From a Moving Charge

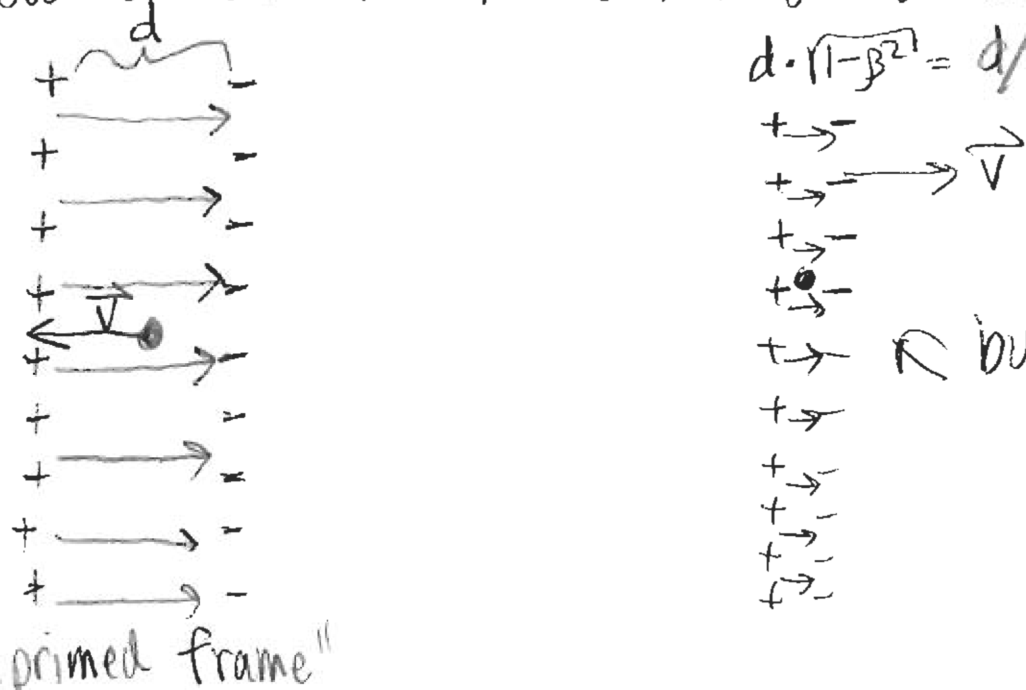


stronger: $\sigma' = \gamma\sigma$

$$\vec{E}' = \gamma\vec{E}$$

more generally, $\vec{E}'_{\perp} = \gamma\vec{E}_{\perp}$ → ⊥ to direction of motion

How about ∥ to direction of motion



but, $\vec{E}'_{\parallel} = \vec{E}_{\parallel}$