A charge q is moving with velocity ${\bf u}$ in a uniform magnetic field ${\bf B}$.

$$\mathbf{F} = q\mathbf{u} \times \mathbf{B} = m\mathbf{a}$$

If we switch to a different Galilean frame (a low speed Lorentz transform), is the acceleration **a** different?

A. Yes

B. No

A charge q is moving with velocity \mathbf{u} in a uniform magnetic field \mathbf{B} .

$$\mathbf{F} = q\mathbf{u} \times \mathbf{B} = m\mathbf{a}$$

If we switch to a different Galilean frame (a low speed Lorentz transform), is the magnetic field **B** different?

A. Yes

B. No

A charge q is moving with velocity \mathbf{u} in a uniform magnetic field \mathbf{B} .

$$\mathbf{F} = q\mathbf{u} \times \mathbf{B} = m\mathbf{a}$$

If we switch to a different Galilean frame (a low speed Lorentz transform), is the particle velocity **u** different?

A. Yes

B. No

A charge q is moving with velocity \mathbf{u} in a uniform magnetic field \mathbf{B} .

$$\mathbf{F} = q\mathbf{u} \times \mathbf{B} = m\mathbf{a}$$

Suppose we switch to frame with $\mathbf{v}=\mathbf{u}$, so that in the primed frame, $\mathbf{u}'=0$ (the particle is instantaneously at rest). Does the particle feel a force from an E-field in this frame?

A. Yes

B. No

C. depends on details

ANNOUNCEMENTS

- Extra credit assessment (Wednesday)
 - Replaces second-lowest HW grade
- Last class (Friday)
 - Wrap up and discussion
- Poster presentations (Monday, May 1 from 3-5pm in 1400 BPS)
 - Hand out list of posters to review
 - Hand out review sheets to complete

Switch from frame S to frame \bar{S} :

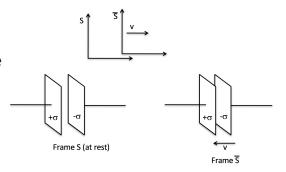
How does E_x compare

to
$$\bar{E}_{x}^{x}$$
?

A.
$$\bar{E}_x = E_x$$

B.
$$\bar{E}_x > E_x$$

$$\mathsf{C}.\, \bar{E}_x < E_x$$



Minkowski suggested a better way to write K^{μ} is in terms of the field tensor, $F^{\mu\nu}$,

$$K^{\mu} = \frac{dp^{\mu}}{d\tau} = q\eta_{\nu}F^{\mu\nu}$$

What are the units of the components of the field tensor?

A.
$$\frac{N}{m}$$
 B. T

C.
$$\frac{Ns}{Cm}$$

D.
$$\frac{V}{m}$$

E. None or more than one of these