Are energy and rest mass conserved quantities?

A. Both energy and mass are conserved
B. Only energy is conserved
C. Only rest mass is conserved
D. Neither energy or mass are conserved

Do you see a problem do you see with $\mathbf{F} = \frac{d\mathbf{p}}{dt}$ with regard to relativity? We still define $\mathbf{p} \equiv \gamma m \mathbf{v}$.

A. There's no problem at all
B. Yup there's a problem, and I know what it is.
C. There's probably a problem, but I don't know what it is.

Can we define a 4-force via the 4-momentum?

$$\frac{dp^\mu}{dt} = K^\mu$$

Is K^μ, so defined, a 4-vector?

A. Yes, and I can say why.
B. No, and I can say why.
C. None of the above.

To match the behavior of non-relativistic classical mechanics, we might tentatively assign which of the following values to $\mathbf{K} = K^{1,2,3}$:

A. $\mathbf{K} = \mathbf{F}$
B. $\mathbf{K} = \mathbf{F}/\gamma$
C. $\mathbf{K} = \gamma\mathbf{F}$
D. Something else