

Relativistic Mass and Momentum

SPH4U

The _____ of an object is its _____ mass:

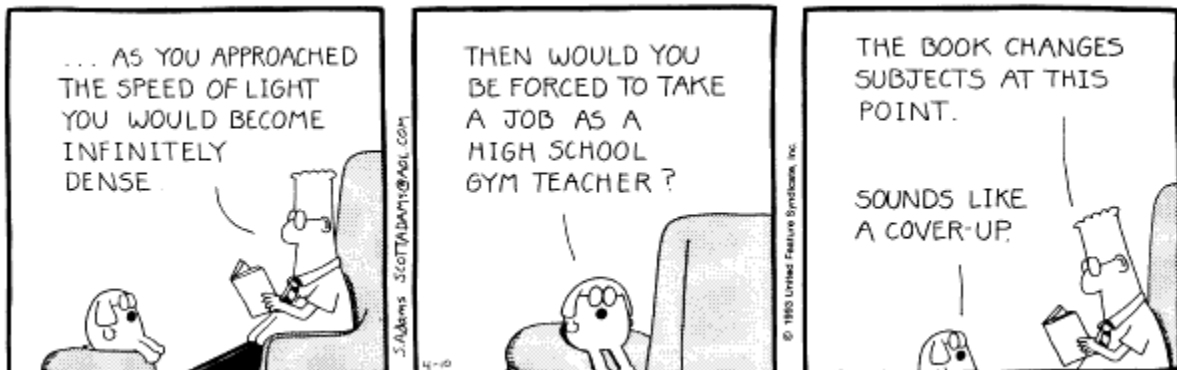
However, the mass of an object as defined by:

will be _____ if the object is _____ with respect to a given frame of reference
since the object will also have _____ energy.

Einstein suggested that the relativistic energy of an object may be given by:

The relativistic mass is therefore:

And the kinetic energy of the object is:



Example: An electron moves at $0.860c$ in a laboratory. Calculate the electron's (a) rest energy, (b) total energy, and (c) kinetic energy in electron volts.

(a)

(b)

(c)

The momentum of an object is also relativistic:

Textbook questions p. 583 #1, 3, 4
p. 578 #10, 11



"Now that desk looks better. Everything's squared away, yessir, squaaaaared away."