Joseph Specht

Homework 3

1a)

Since these quantities are equal, the original statement is true.

b)

This is the quantity we were trying to get, so at low speeds, β is approximately sqrt(2ϵ)

2) Classical speed, 43.74e6 m/s

Relativistic speed, 43.39e6 m/s

Percent error, 0.79%

3) Kinetic Energy, 93.956 MeV

Relativistic speed, 124.893e6 m/s

4) Scattering Angle, 29.279 degrees

5) E max, 0.255 MeV

6) 10 eV wavelength, 3.878e-10 m

1000 eV wavelength, 3.878e-11 m

10e7 eV wavelength, 1.226e-13 m

7) Water wavelength, 9.229e-12 m

Cheese wavelength, 5.522e-34 m