Take Home Exam III
Kinematics

1)a) In the solid state lab, there is a decription of Compton scattering, and then later a picture of what you see in your solid state detector.
Please describe qualitatively what is happening in the picture. (Do you see any mistakes?)(10 pts)
Please derive the mathematical expression for the energy of the "horns" caused by the backscattered photon and the forward scattered electron. Be sure you described how these enhancements in the spectra can occur.(15 pts)
For the 511 KeV photon shown in the lab write up, calculate the likely positions of the "horns" below the 511KeV peak.(5pts)

1b) Please derive the expression for the energy of particle B in the decay $A \rightarrow B + C$ when the particle A is at rest. Be sure to include all the steps and show that:(20 pts)

$$E_B/c^2 = \frac{M_A^2 + M_B^2 - M_C^2}{2M_A}$$