

1. In Compton scattering, an x-ray photon with energy of 0.5MeV scatters with a rest electron. The scattered electron has a kinetic energy of 0.1MeV. What is the wavelength of the scattered x-ray and what is its angle?
2. In Compton scattering, if the scattered x-ray photon can generate an electron-positron pair, what is the maximum angle of the scattered x-ray photon?
3. An electron with 5Mev energy annihilates with a rest positron and generates 2 photons. One photon moves along the direction of the incident electron. Calculate the energy of the 2 photons.
4. How many positrons can a 200MeV photon generate?
5. In attenuating light, how thick of aluminum ($\mu_{AL}=0.044 \text{ mm}^{-1}$) is as effective as 6mm of lead ($\mu_{pb}=5.8 \text{ mm}^{-1}$)?