

HW1

1. Look up (*e.g.* in the *CRC Manual of Chemistry and Physics*—www.hbcnetbase.com) the X-ray atomic energy levels of copper, a common material used in X-ray tube anodes. Where relevant, consider only levels with subscript I. Draw an energy level diagram in units of eV. What are the wavelengths associated with the K_{α} , K_{β} , and L_{α} transitions? Label these transitions on the energy level diagram you have drawn.
2. A 20 keV photon and a 2 MeV photon are scattered in separate Compton interactions. What are the maximum energies transferred to the recoil electrons in each case? If both photons transfer maximum energy, what are their final wavelengths?