Week 69 (1/5/04)

Compton scattering

A photon collides with a stationary electron. If the photon scatters at an angle θ, show that the resulting wavelength, λ', is given in terms of the original wavelength, λ, by

$$\lambda' = \lambda + \frac{h}{mc}(1 - \cos\theta),$$

where m is the mass of the electron. Note: The energy of a photon is $E = h\nu = hc/\lambda$.