

Compton Scattering

This experiment really shows photon momentum!

Electron at rest \

Experiment: Outgoing photon has longer wavelength λ'

Incoming photon has momentum p, and wavelength λ

Recoil electron carries some momentum and KE

Photon energy

$$E = hf = \frac{hc}{\lambda}$$

Photon momentum

$$p = \frac{h}{\lambda}$$
 $\Rightarrow E = pc$