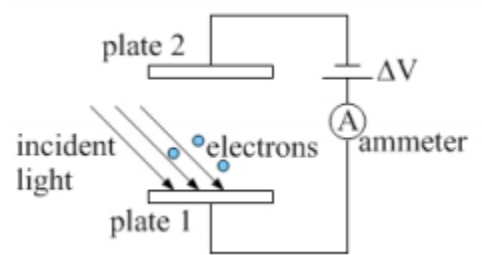


Modern Physics Recap Questions from Day 1

- 1) a) How fast would you have to fire an electron from 0V, so it would just reach a negative plate of -55 V?
b) What is the deBroglie wavelength of the electron at launch?
c) Sketch a graph of deBroglie wavelength as a function of time as the electron moves through the electric field.

- 2) Using the experimental apparatus shown, when radiation with a wavelength of 240 nm shines on a particular metal plate, electrons are emitted from plate 1, crossing the gap to plate 2 and causing a current to flow through the wire connecting the two plates. The battery voltage is gradually increased until the current in the ammeter drops to zero, at which point the battery voltage is 1.40 V.



- (a) What is the energy of the photons in the beam of light, in eV?
- (b) What is the maximum kinetic energy of the emitted electrons, in eV?
- (c) What is the work function of the metal, in eV?
- (d) What is the cutoff wavelength that would cause electrons to be emitted, for this particular metal?
- (e) Is this wavelength in the visible spectrum? If not, in what part of the spectrum is this light found?

- 3) What are the KEY points of Compton Scattering?