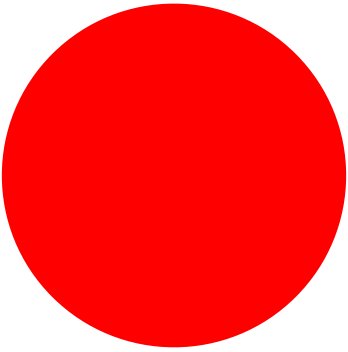
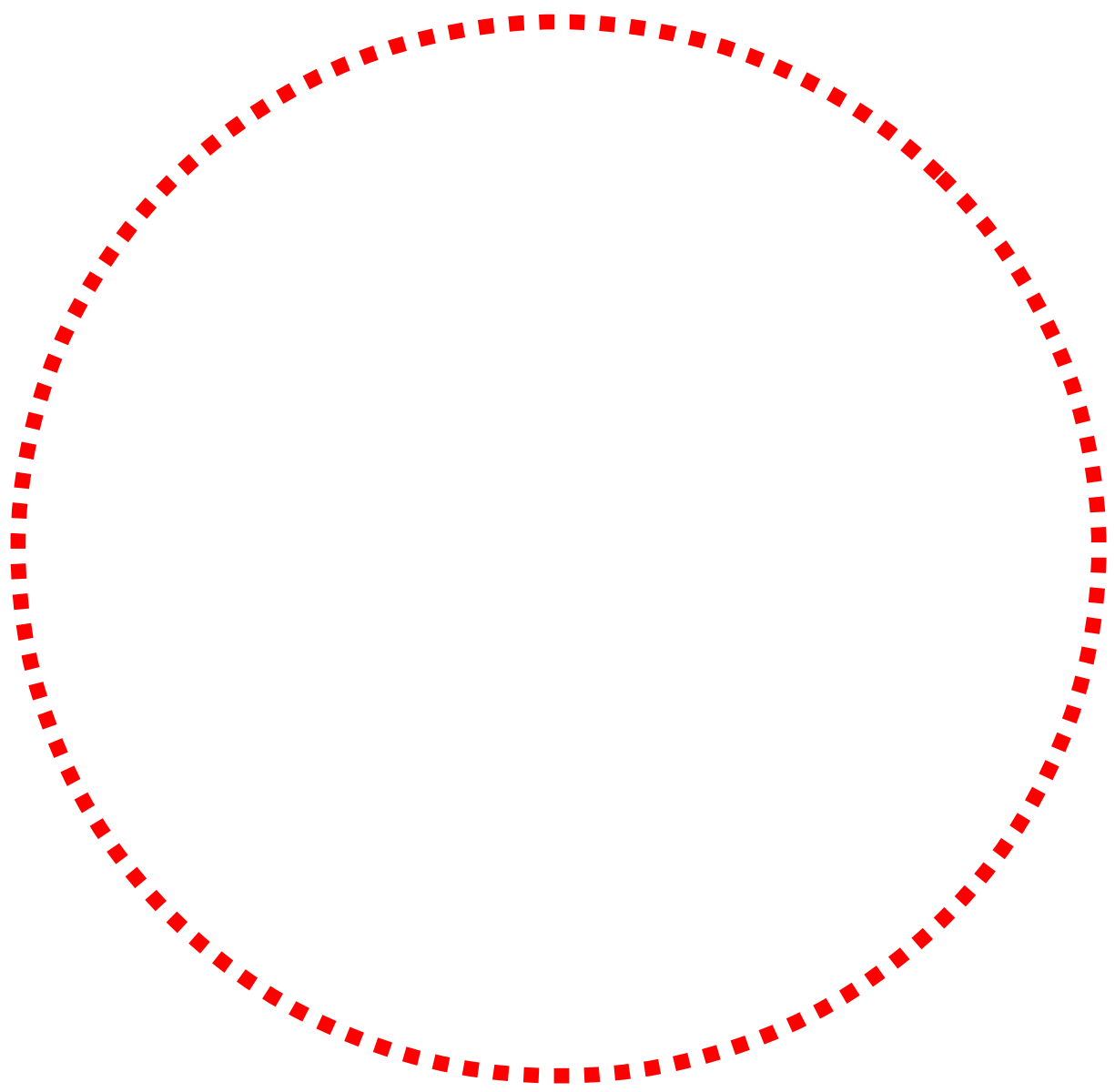
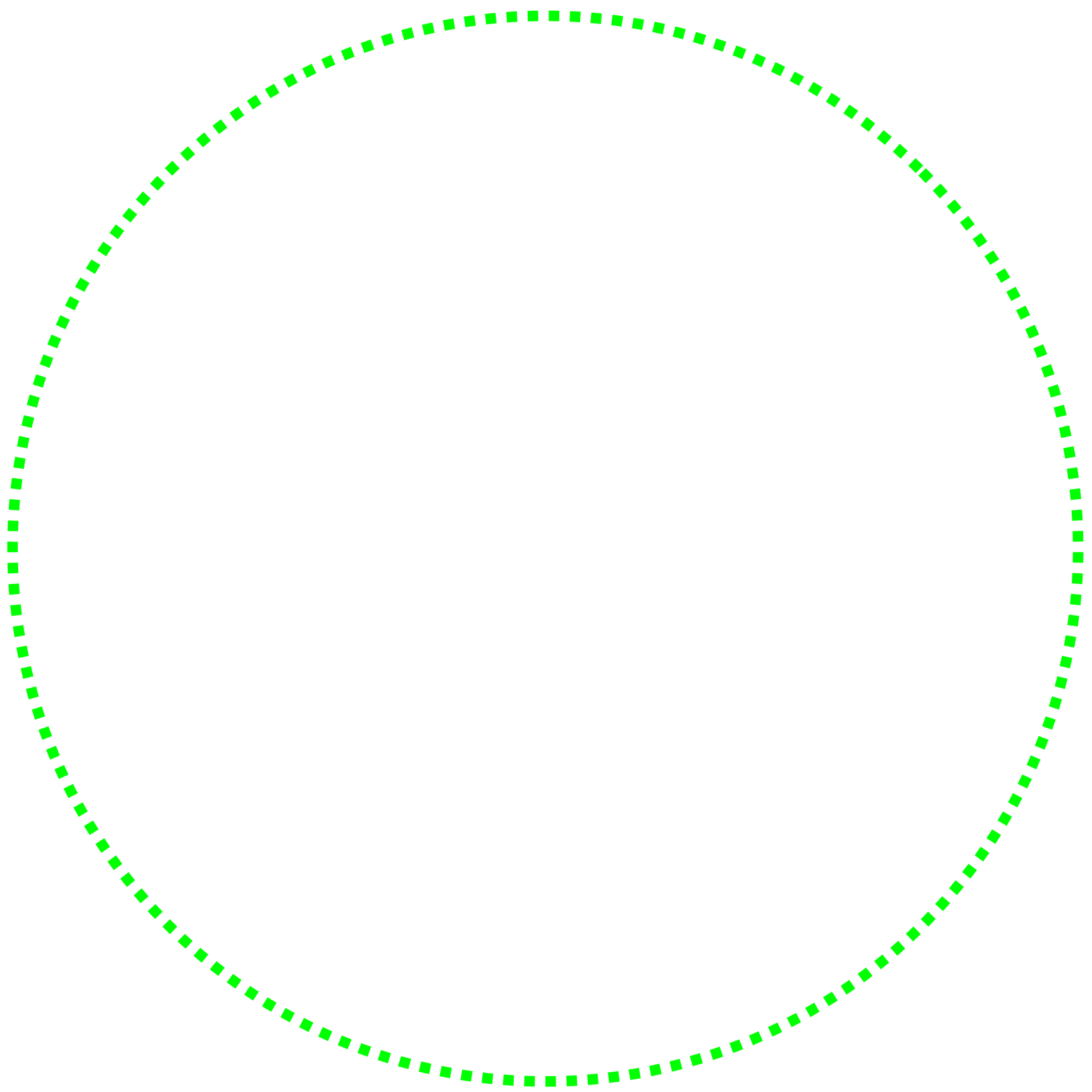
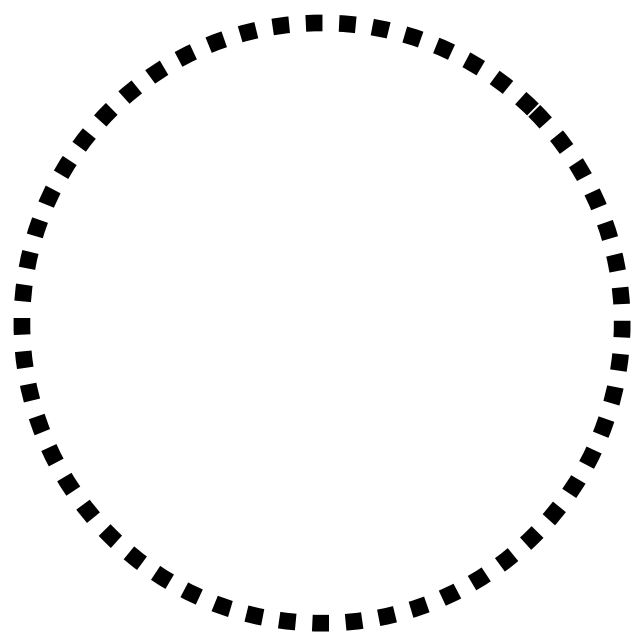
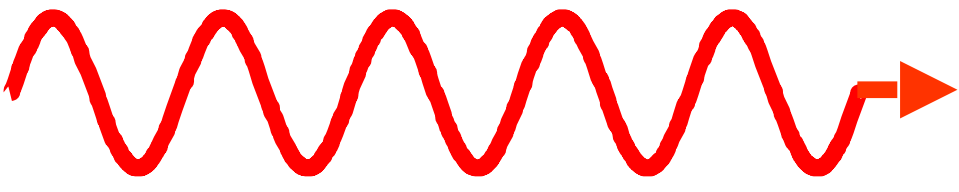
$E=h\nu$

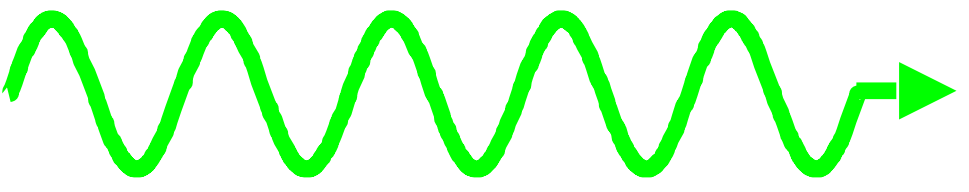


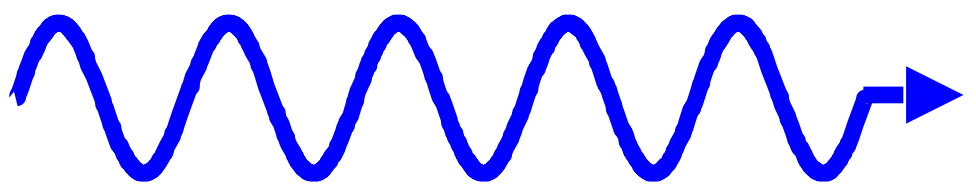






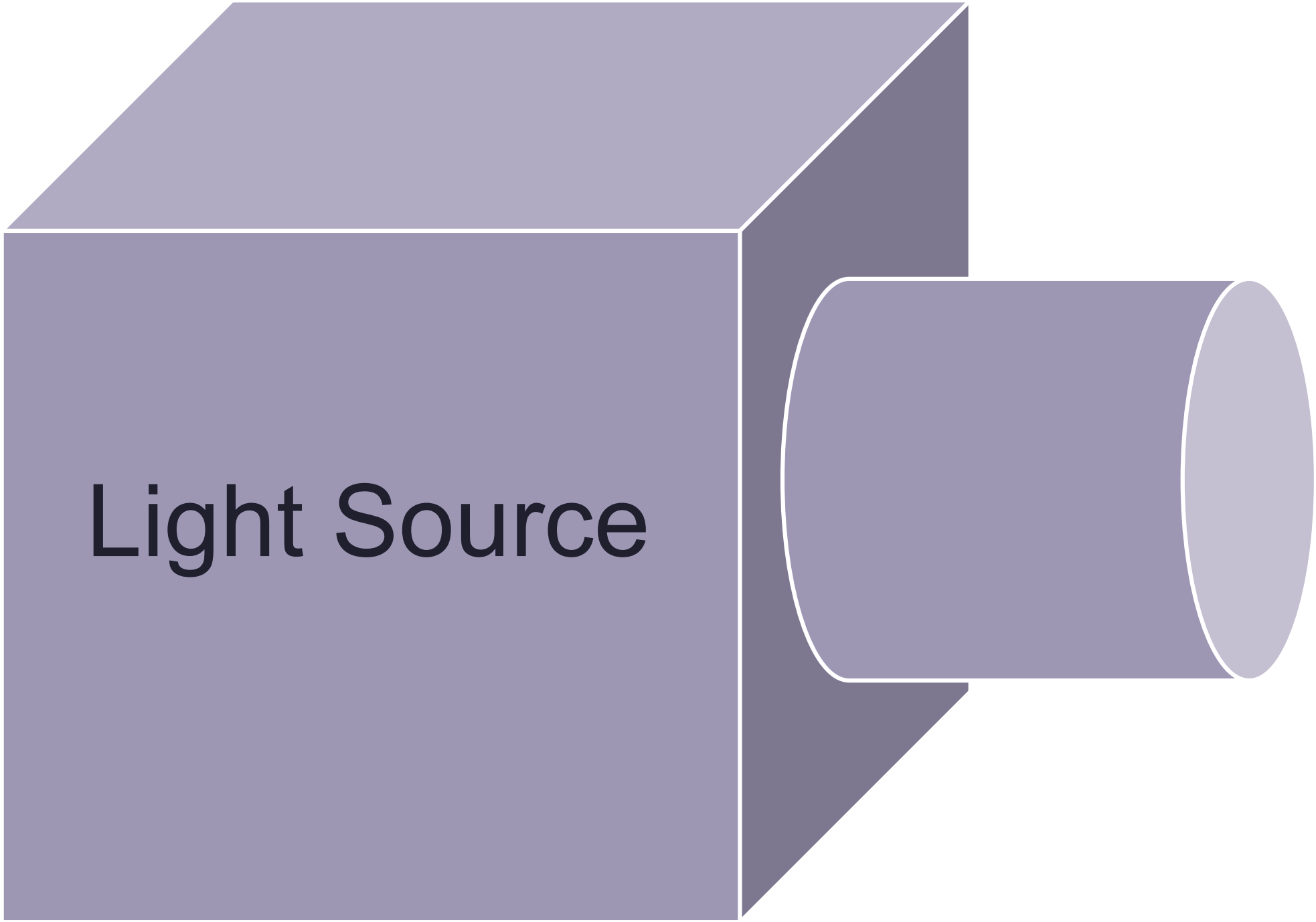






Transition!

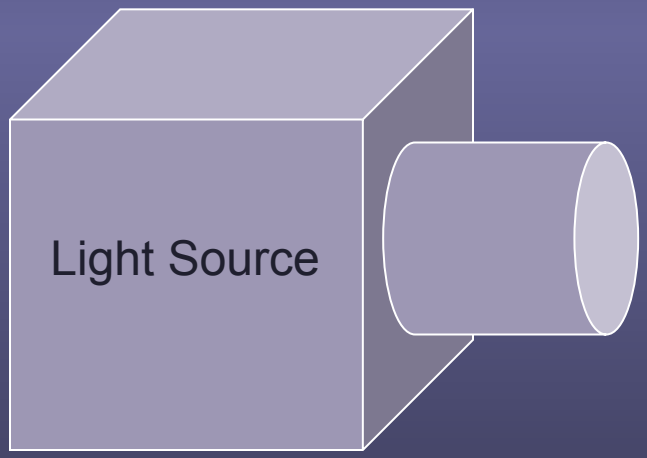
No Transition

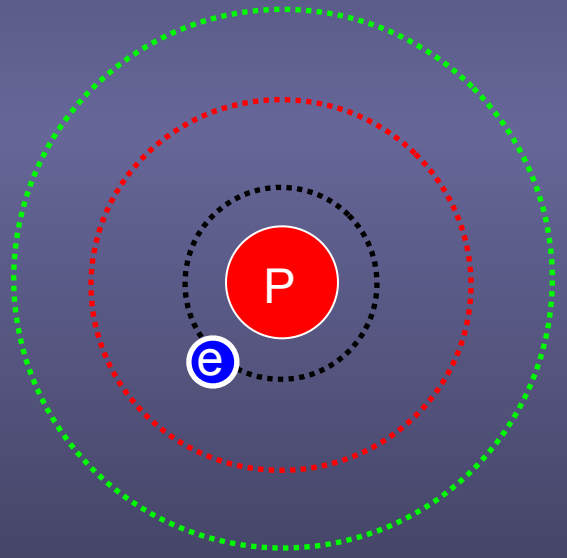

Light Source


e

How do we study atoms?

- Spectroscopy – the use of light emission and absorption to study matter
- First, we excite an atom using light
- Energy of a photon proportional to frequency (color); $E=hv$





Light must have the right frequency to result in a transition

How do we study atoms?

- An atom in the excited state then decays, producing fluorescence
- We detect the light using a photomultiplier tube (PMT)
- Intensity of the light indicates the population of atoms in the excited state