**Lasers**

Light Amplification by Stimulated Emission of Radiation

* The laser gets energy from electrons, which are transformed, into light.
* How does an electron accept energy?
  + Illuminate the atom with light radiation of suitable color (frequency)
  + Stimulated absorption
  + The energy of the photon E2 – E1 = hf
* What happens after absorption?
  + Spontaneous emission
  + Fluorescence
* Stimulated emission
  + Increased energy
  + Basic principle of laser
  + Small input, large output
* Why is a laser very powerful?
  + A laser can produce a narrow beam of coherent light of identical frequency, phase, and colorization
  + Laser light is generally a monochromatic light; yet, there are lasers that emit different wavelengths of light simultaneously
* Random Source
  + Waves emitted from the source have random phase
  + Ex. Flash light
* Coherent source
  + Waves emitted from the source have zero or constant phase
  + Ex. Lasers
* The photon is not absorbed but triggers the emission of a photon if the atom is in an excited state.
* How does a laser work?
  + The two parallel mirrors enclosing the amplifying medium constitute the laser cavity