**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