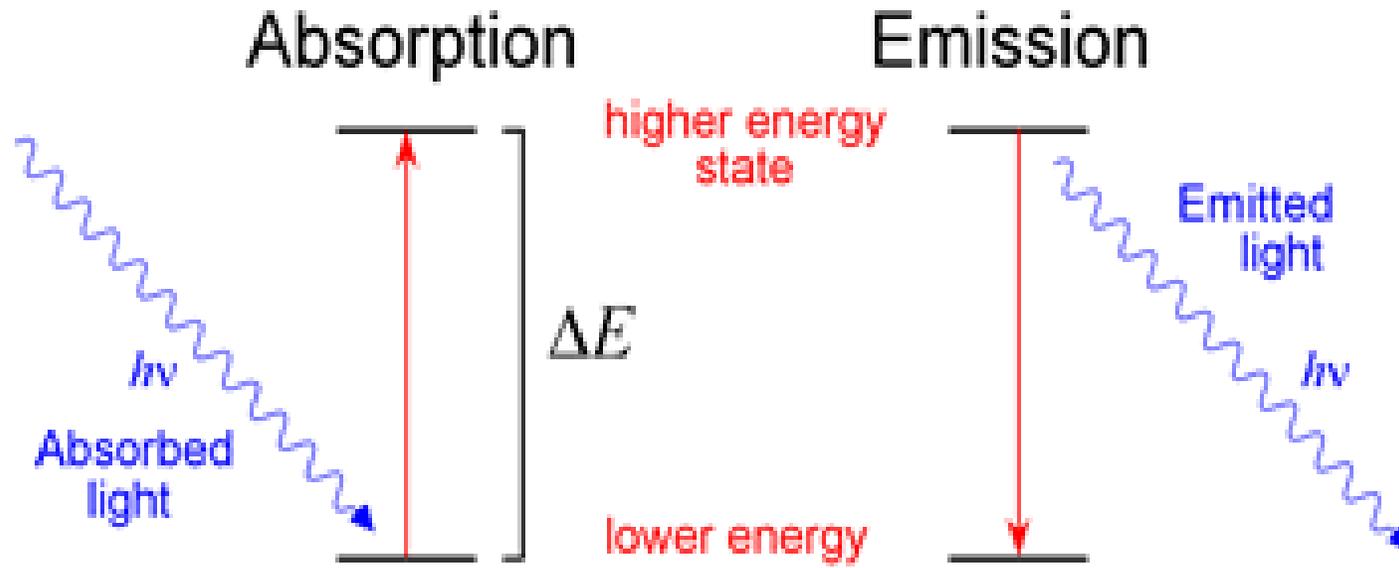


Optical Transitions



Absorption

Emission

$$E_2 - E_1 = h\nu_{12}$$

Rate of Optical Transition

- Rate of absorption = $-dN_1/dt$

here N_1 = population of ground state.

$$-dN_1/dt \propto N_1 \rho(h\nu_{12})$$

$$-dN_1/dt = B_{12} N_1 \rho(h\nu_{12})$$

where B_{12} is constant of proportionality called as rate constant of absorption

- Rate of spontaneous emission = $d N_2/dt$
where N_2 = population of the excited state .

$$dN_2/dt \propto N_2$$

$$dN_2/dt = A_{21}N_2$$

where A_{21} is constant of proportionality called as rate constant for spontaneous emission, 21 indicates transition from state 2 to 1.