

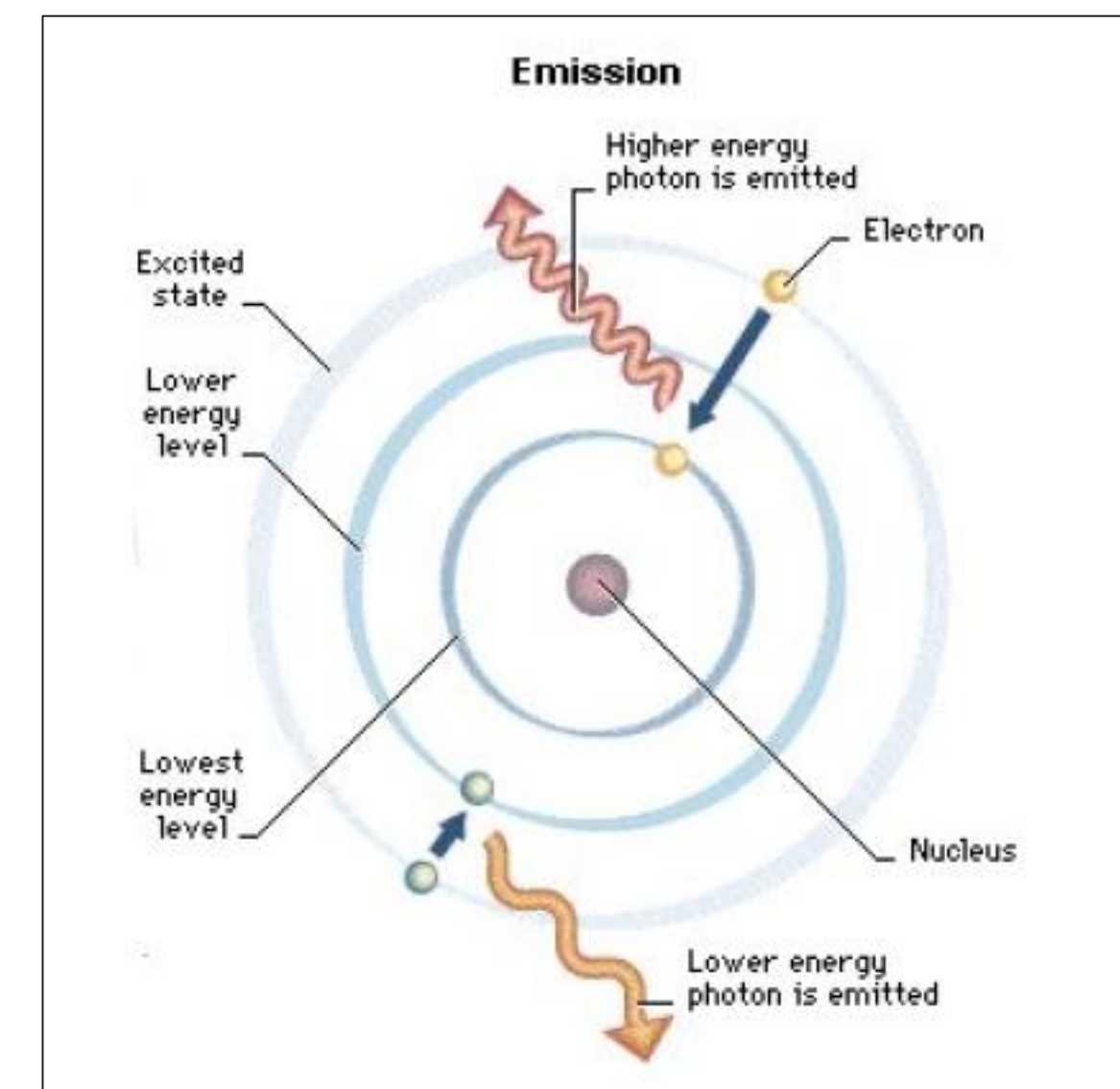
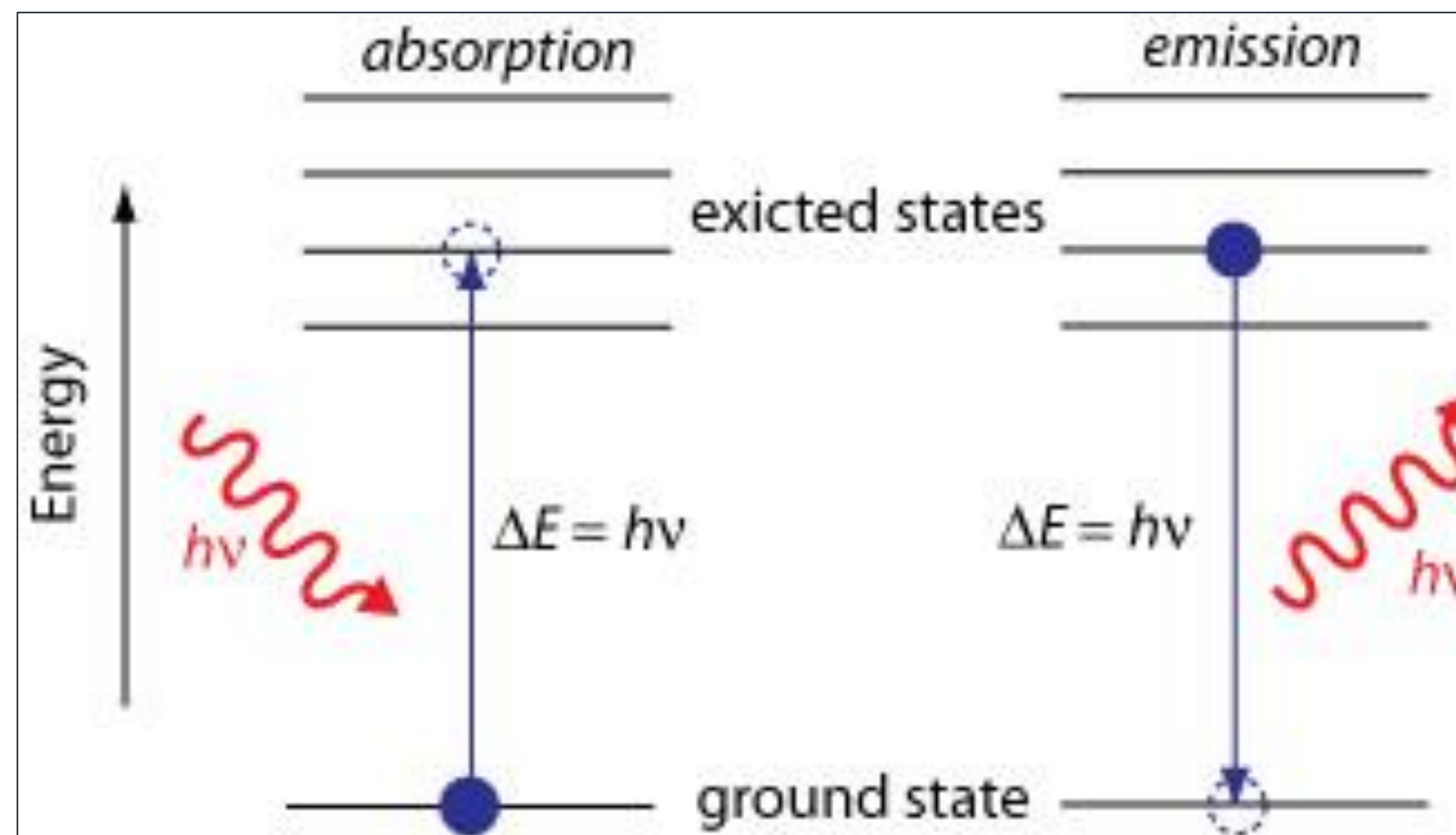
SISTEM KOMUNIKASI OPTIK

MATERI 6 EMISI CAHAYA

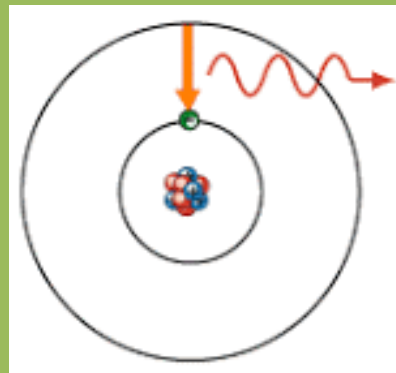


D3 Teknologi Telekomunikasi – Fakultas Ilmu Terapan

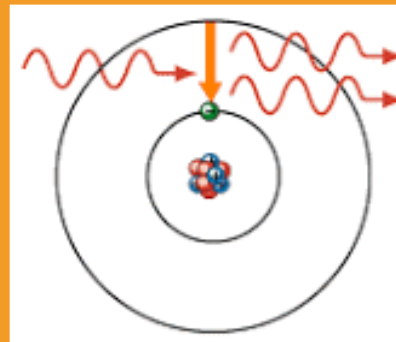
EMISI CAHAYA



Sumber Referensi : <https://community.asdlib.org/imageandvideoexchangeforum/2013/07/26/absorbance-and-emission-spectroscopy/>
Gerd, Keiser., 2010, *Optical Fiber Communications*, 4th edition, McGraw Hill, International Edition



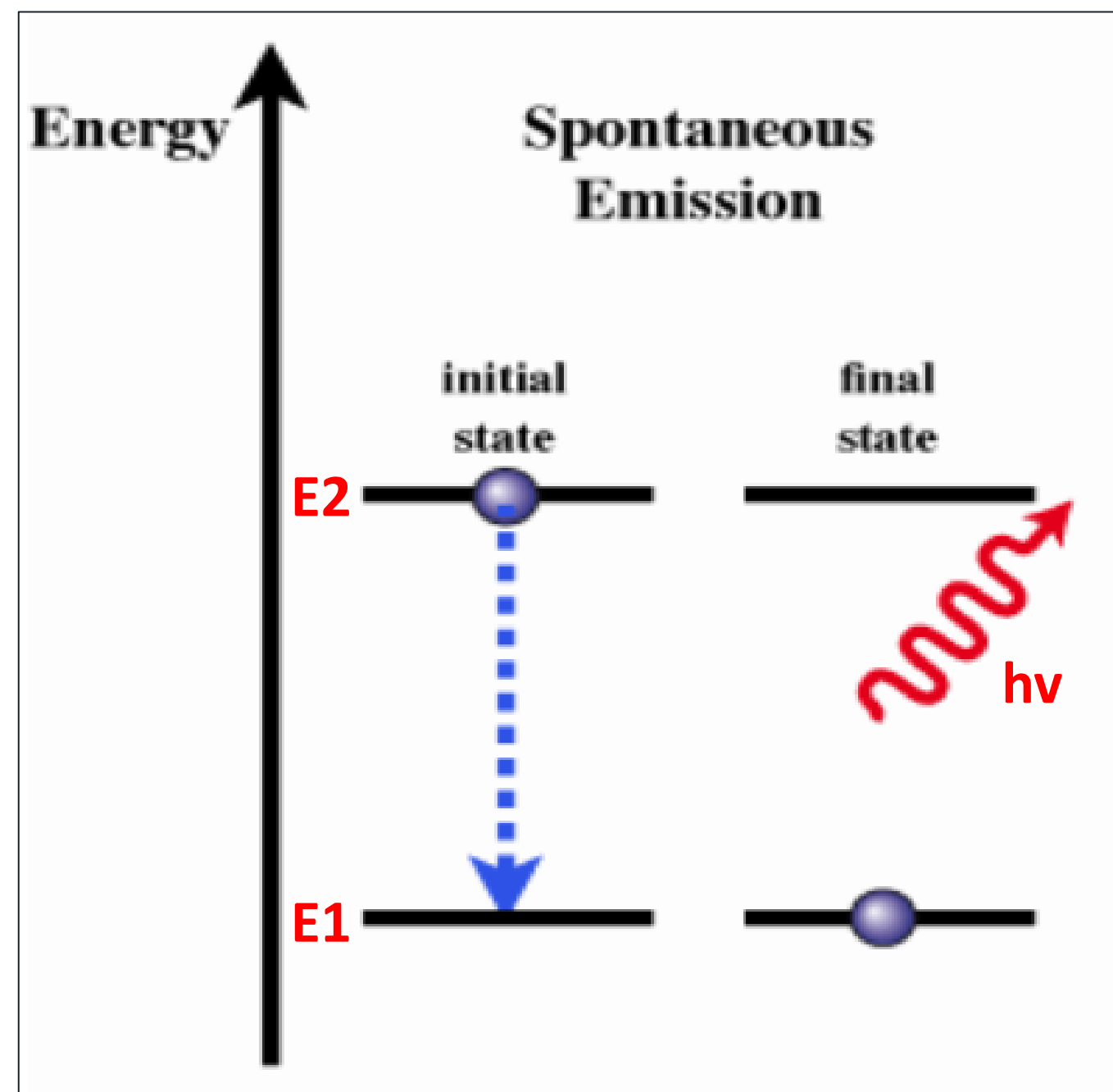
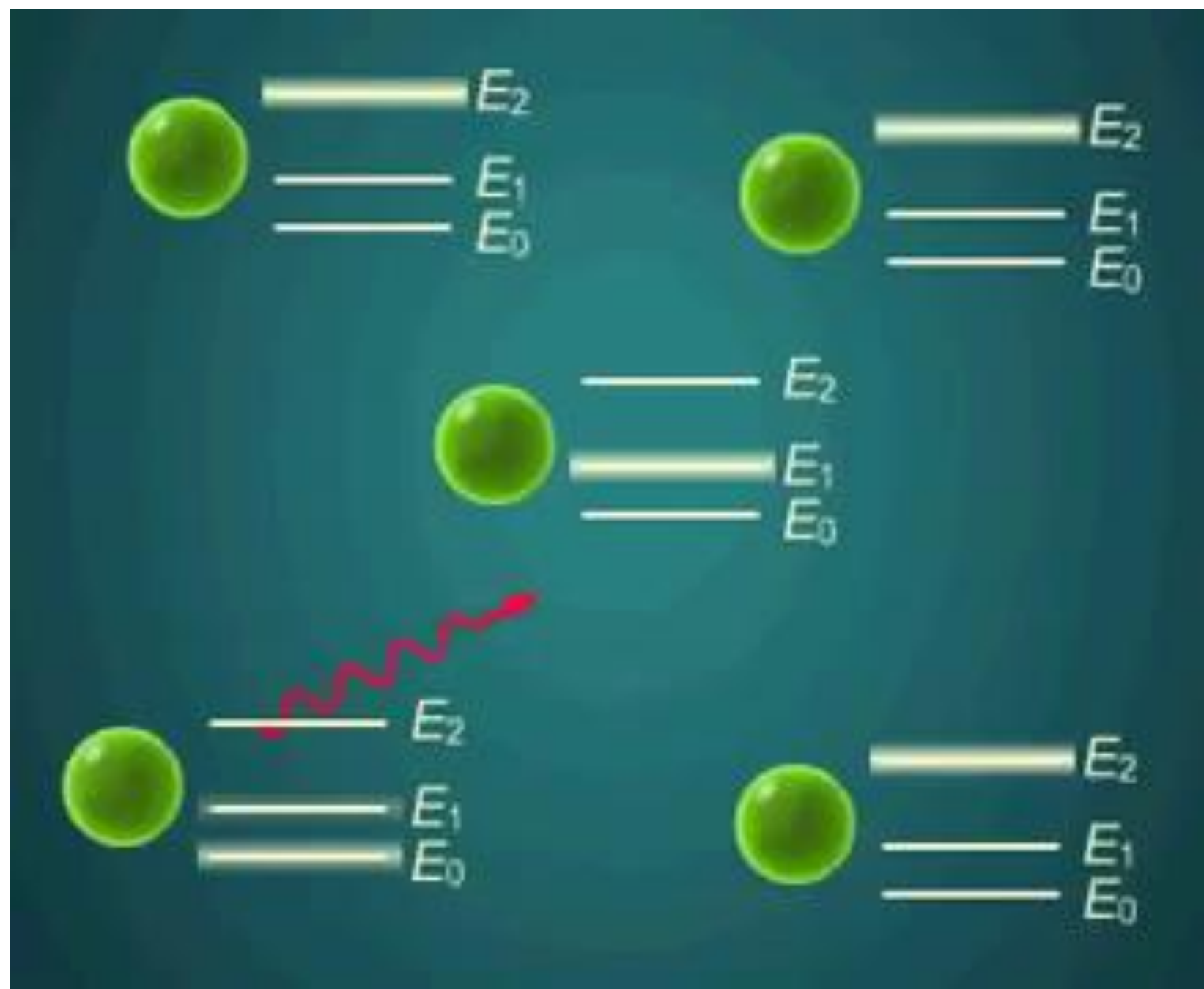
• **Emisi Spontan**



• **Emisi Terstimulasi**

**EMISI
CAHAYA**

EMISI SPONTAN

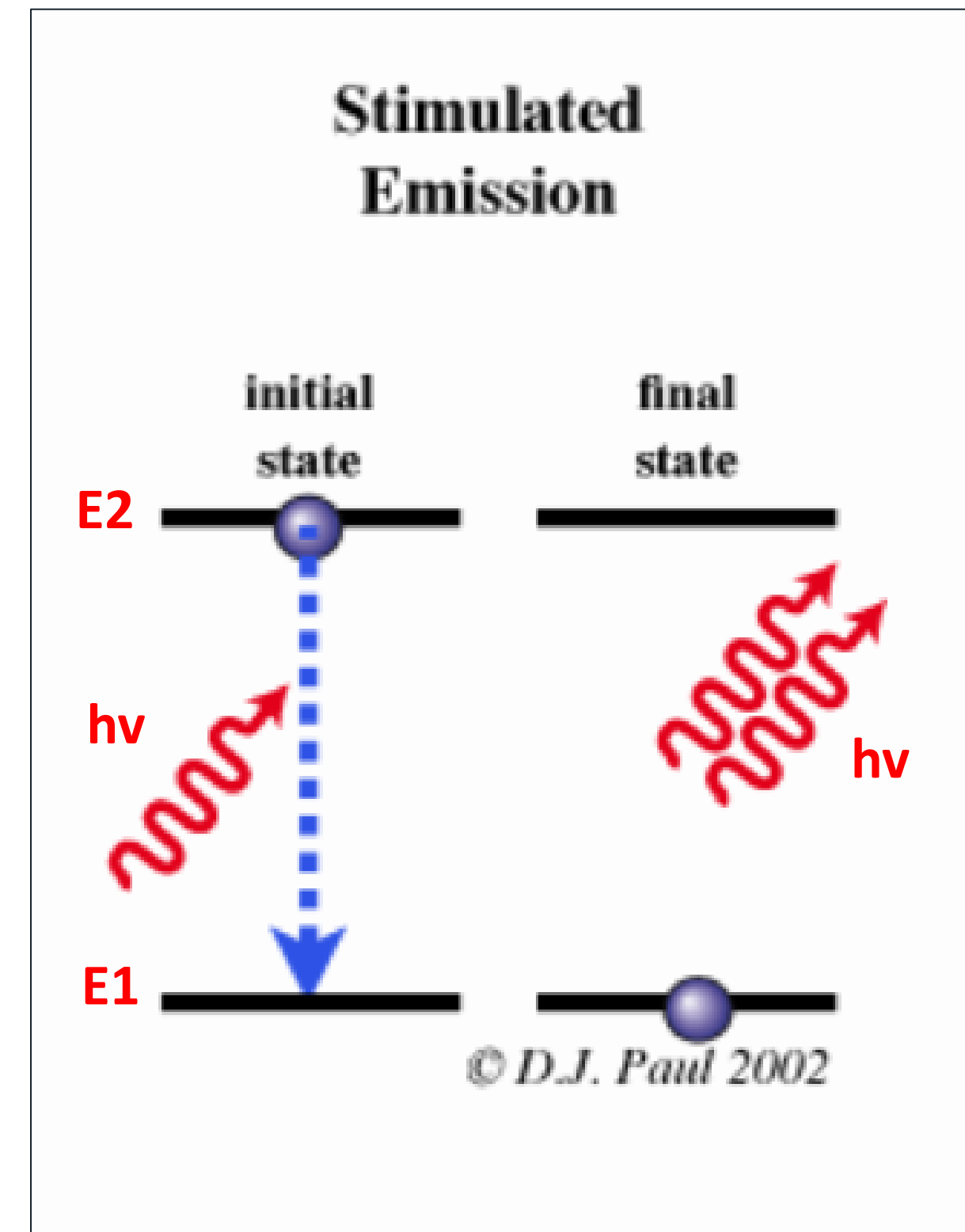
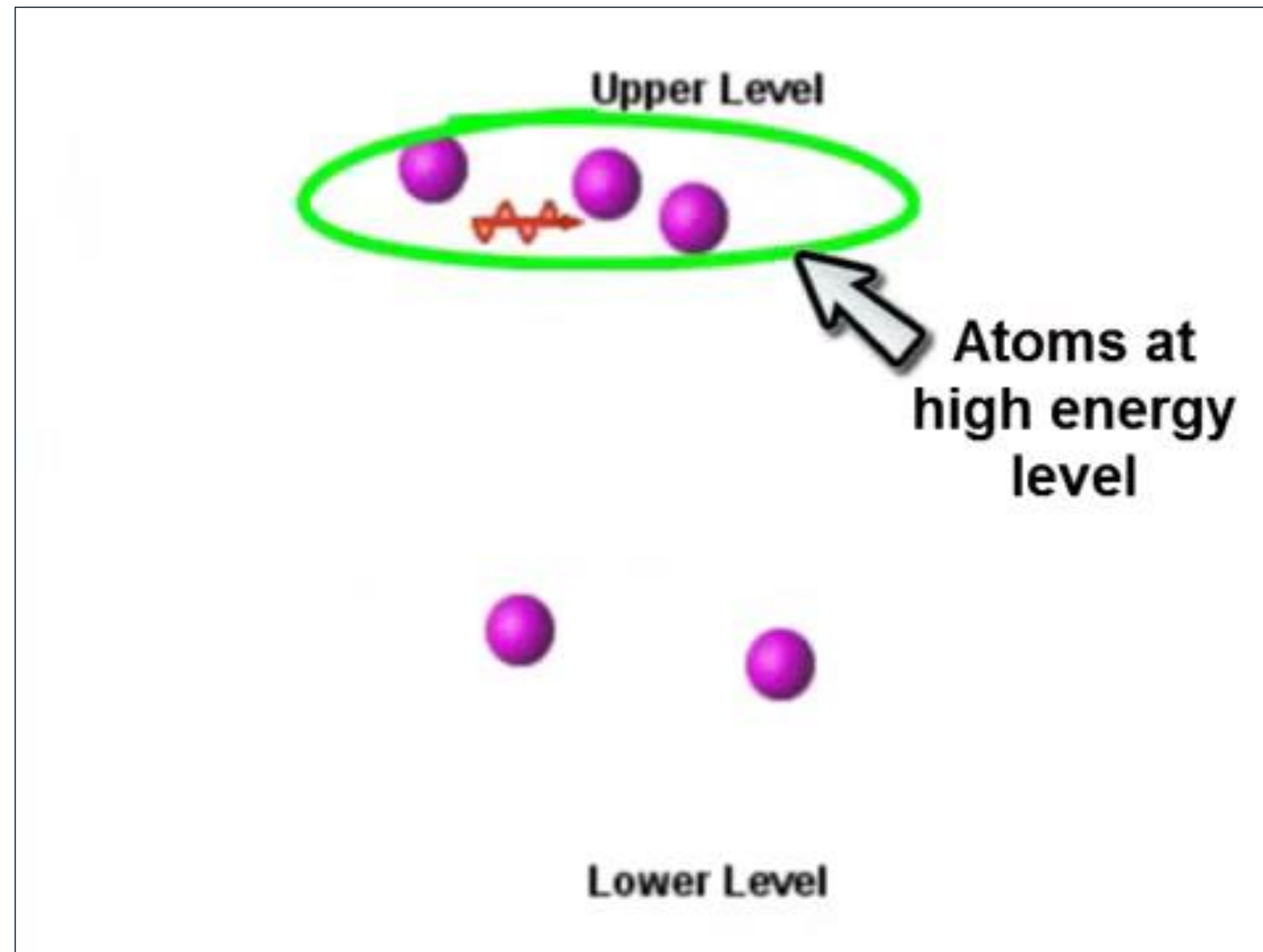


$$\left(\frac{dN_2}{dt}\right)_{sp} = -AN_2 = -\frac{N_2}{\tau_{sp}} \quad (\text{Pers. 1})$$

$\tau_{sp} = A^{-1} = \text{life time emisi spontan (det)}$

$A = \text{laju emisi spontan atau koefisien Einstein } \left(\frac{1}{\text{det}}\right)$

EMISI TERSTIMULASI



EMISI TERSTIMULASI

$$\left(\frac{dN_2}{dt}\right)_{st} = -W_{21}N_2 \quad (\text{Pers. 2})$$

Laju Emisi Terstimulasi :

$$W_{21} = \sigma_{21}F \quad (\text{Pers. 3})$$

σ_{21} = Penampang emisi terstimulasi
F = Fluks Foton ($\text{cm}^{-2}\text{det}^{-1}$)

$$g_2W_{21} = g_1W_{12} \quad (\text{Pers. 4})$$
$$g_2\sigma_{21} = g_1\sigma_{12}$$

g1 = Jumlah degenerasi di tingkatan energi-1,
g2 = Jumlah degenerasi di tingkatan energi-2.



TERIMA KASIH
