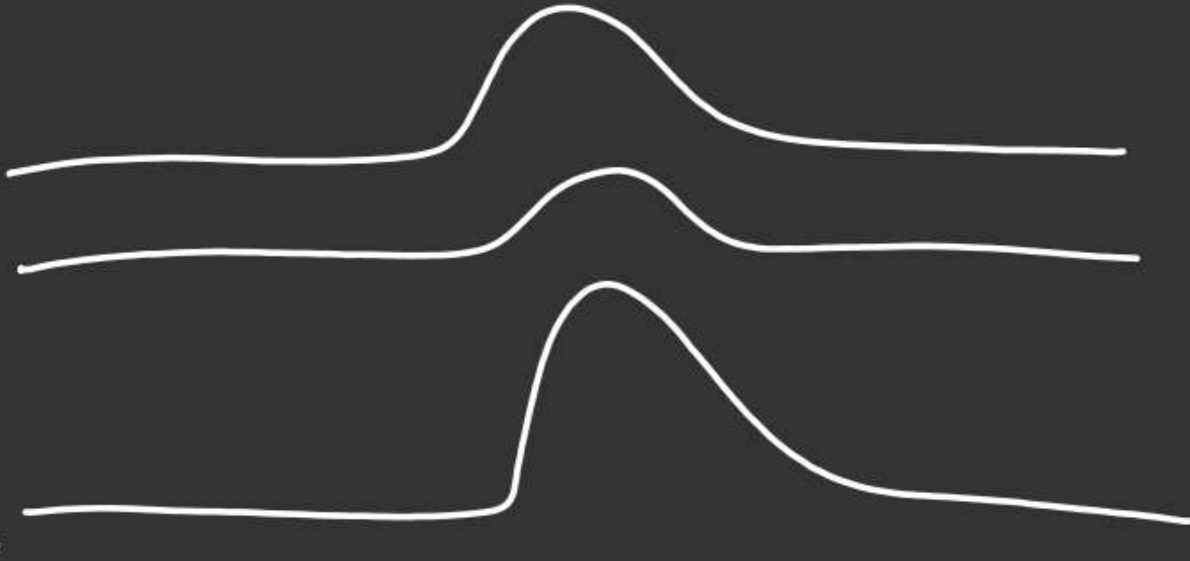


Interference

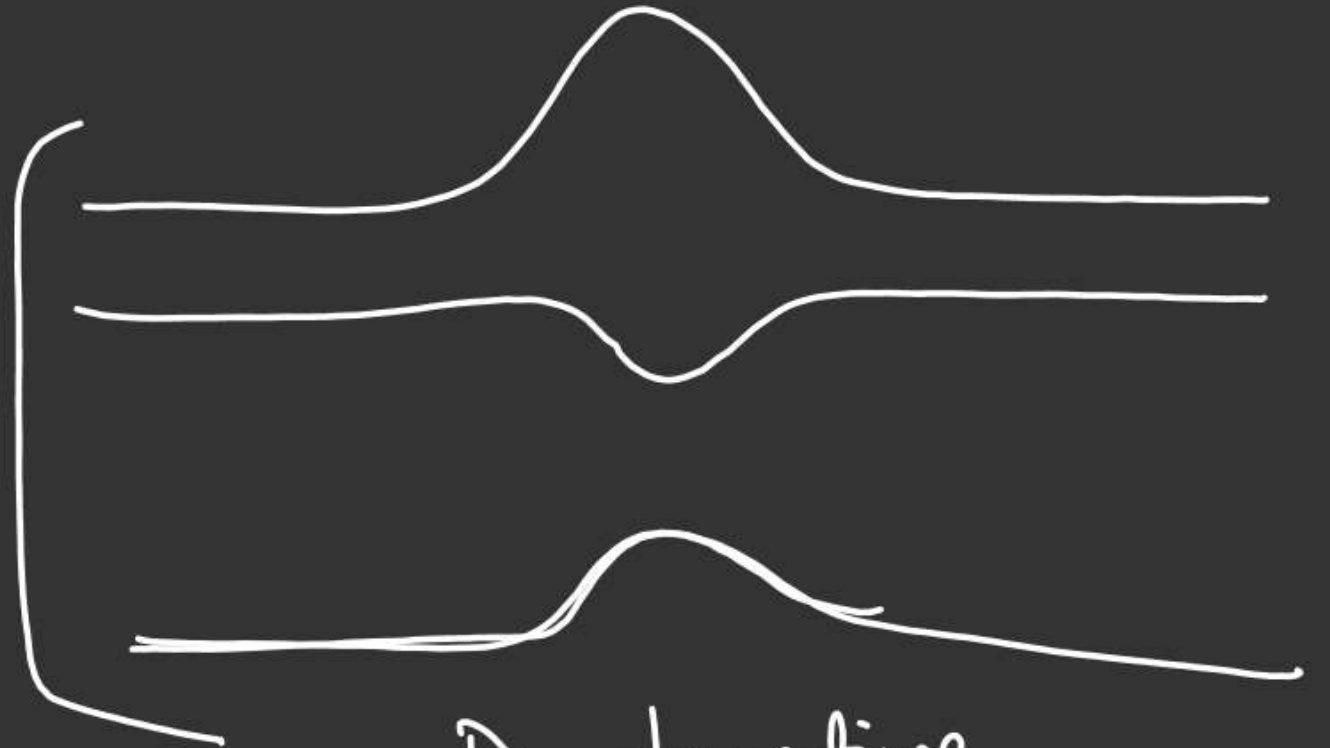


Constructive
interference



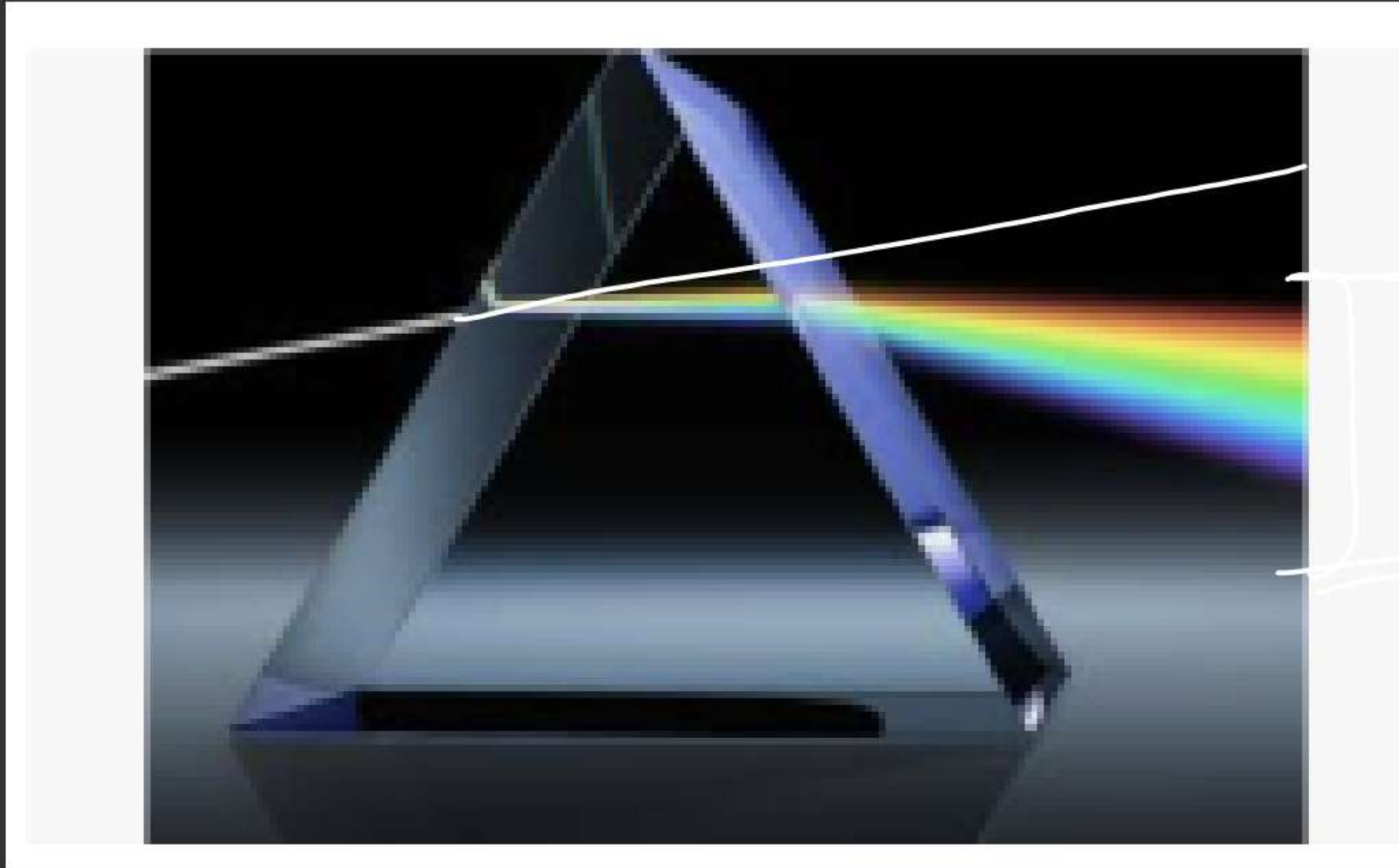
$$\text{intensity} \propto (\text{amplitude})^2$$

energy/area/sec



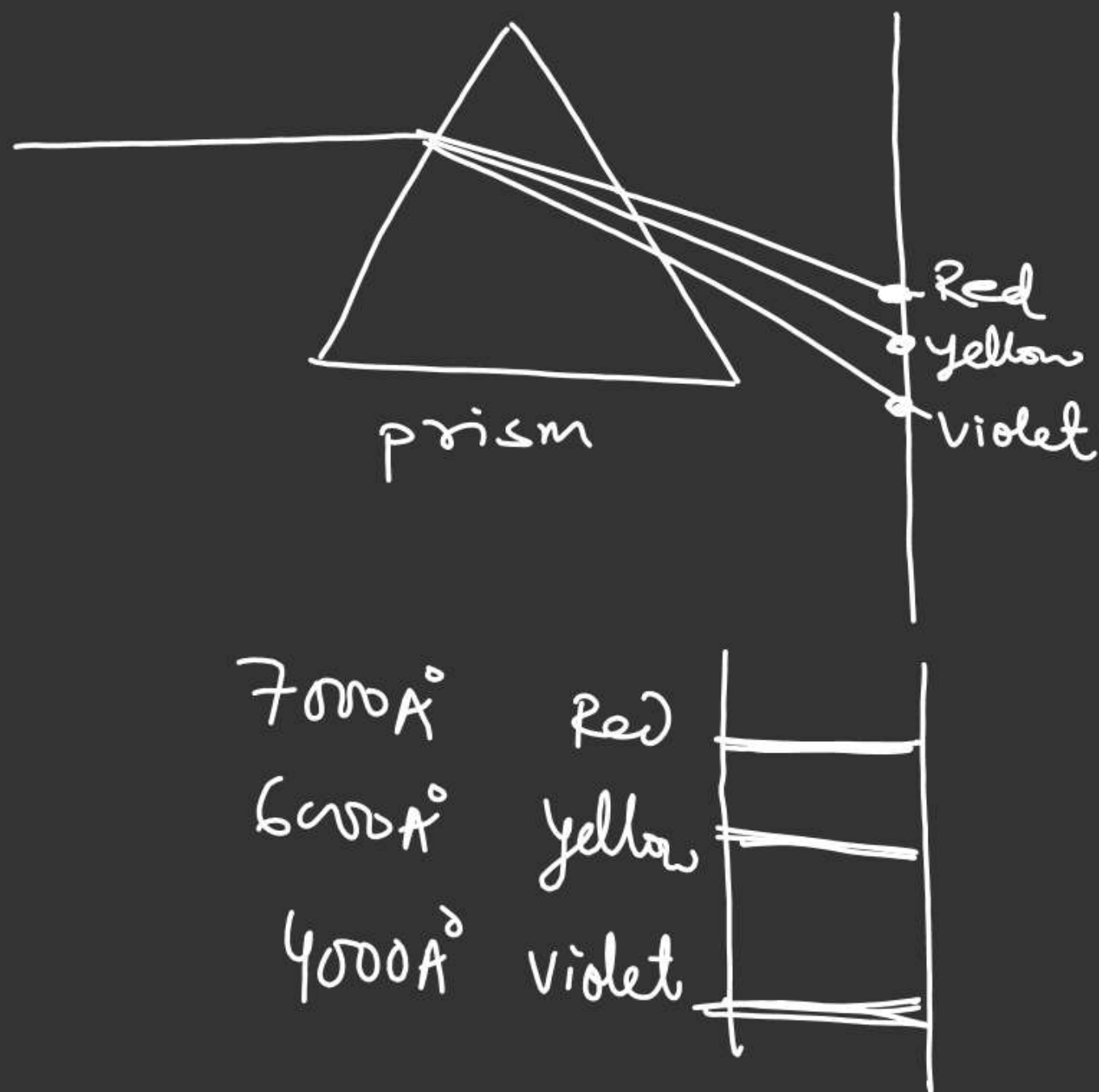
Destructive

Spectrum :->

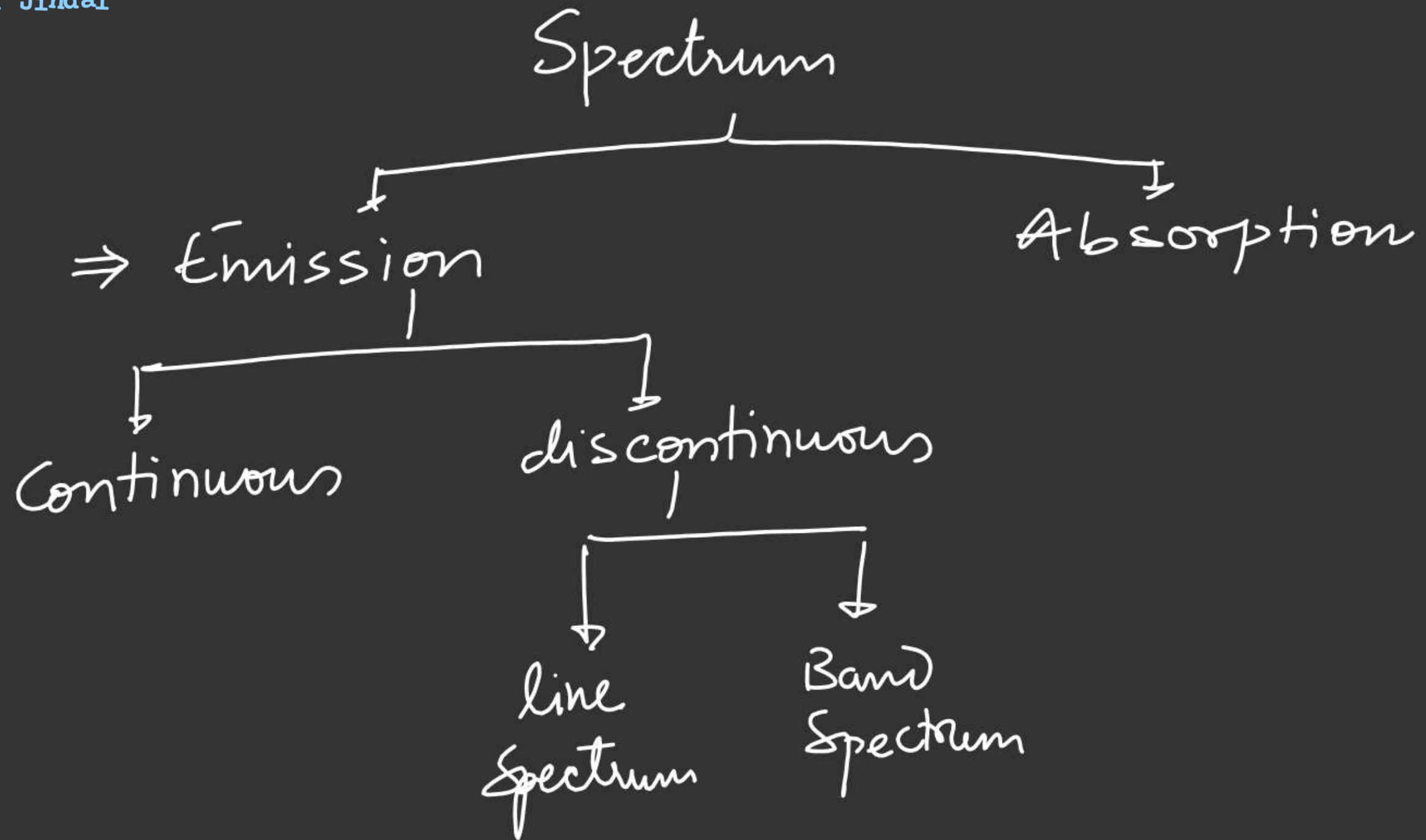


angle of
refraction $\propto \frac{1}{\lambda}$

Spectrum



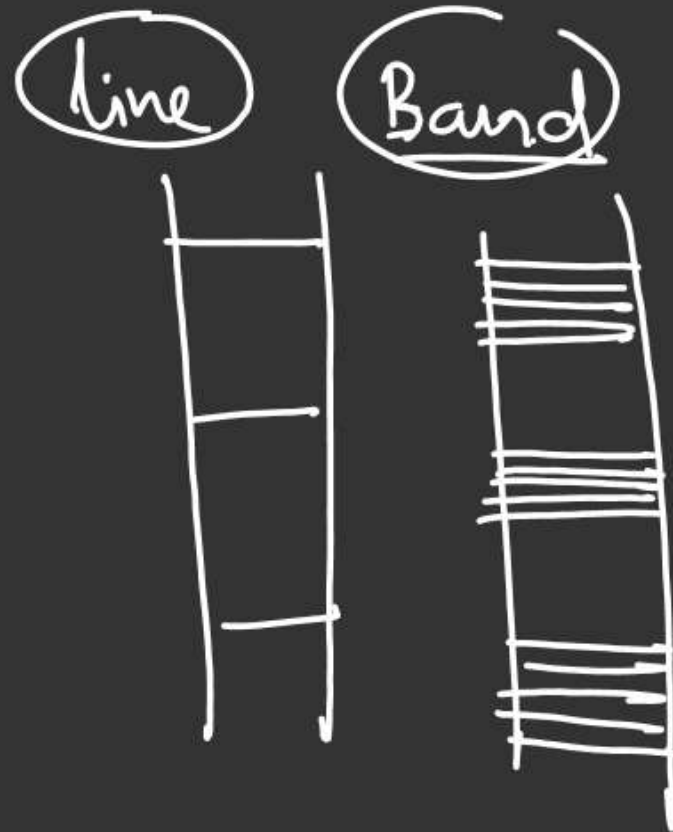
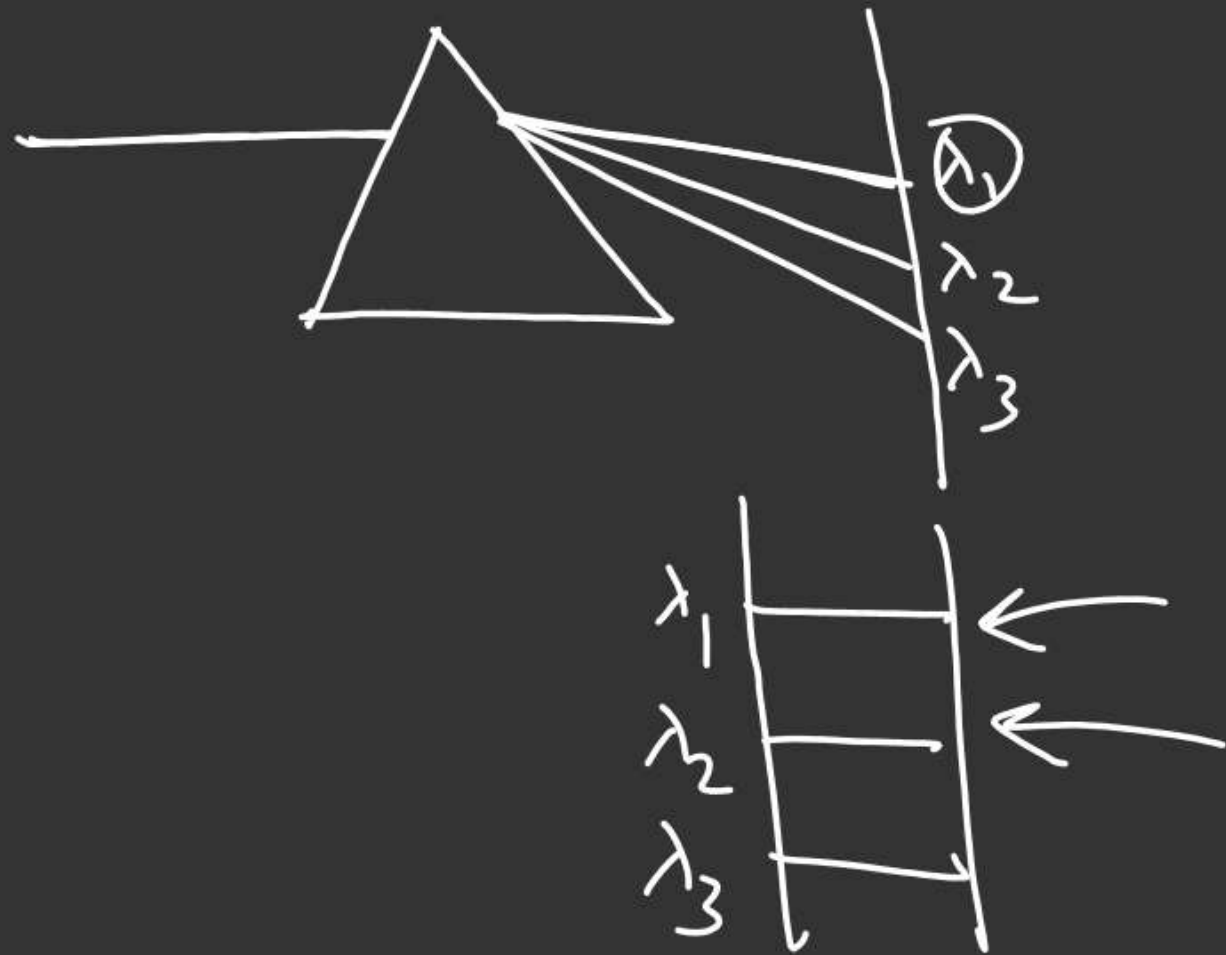
When a beam of light is passed through a prism, it splits the beam into different beams depending upon the wavelength. The collection of such a dispersed light giving its wavelength composition is called spectrum.



Emission Spectrum \rightarrow When emitted light is passed through a prism to get spectrum it is called emitted spectrum

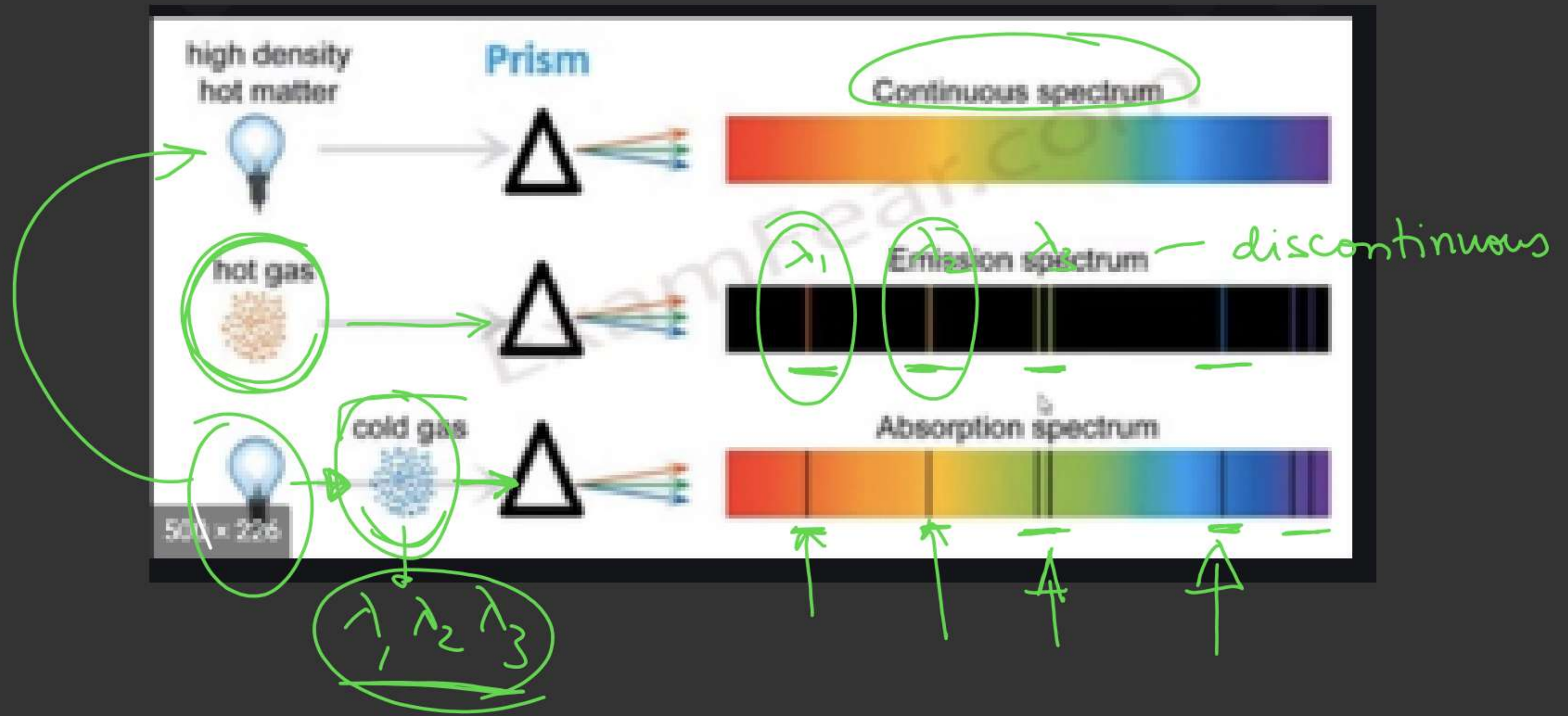
Continuous \rightarrow Light (radiations) emitted by the bulb, tubelight etc usually consist of radiations of all the wavelength of visible range. When such a light is dispersed through the prism, we get continuous bands of colours called continuous light e.g. rainbow

Discontinuous :— When light consisting of radiations of few particular wavelength we get discontinuous spectrum.



$$\lambda \propto \frac{1}{\theta}$$

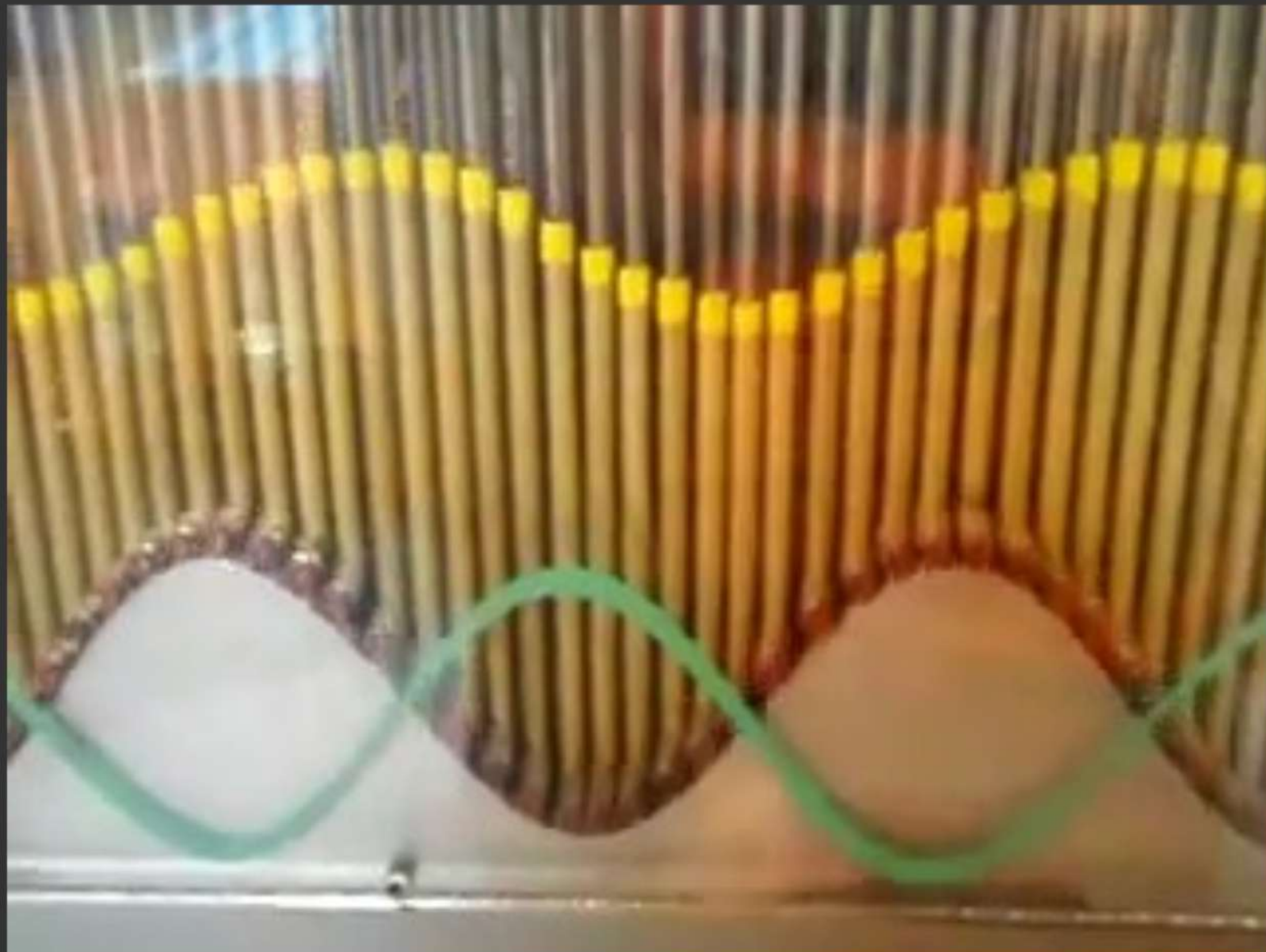
$$\frac{\lambda_1}{\lambda_2} = \frac{\theta_2}{\theta_1}$$



Absorption spectrum : It is a well known fact that a substance absorb all the radiation at lower temp which it emits at higher temperature.

When a beam of white light is passed through a substance, it absorbs radiation of some specific wavelength. when such an absorbed light is dispersed by prism, it is called absorption spectrum.

In absorption spectrum we get dark lines in place of bright line in the emission spectrum.



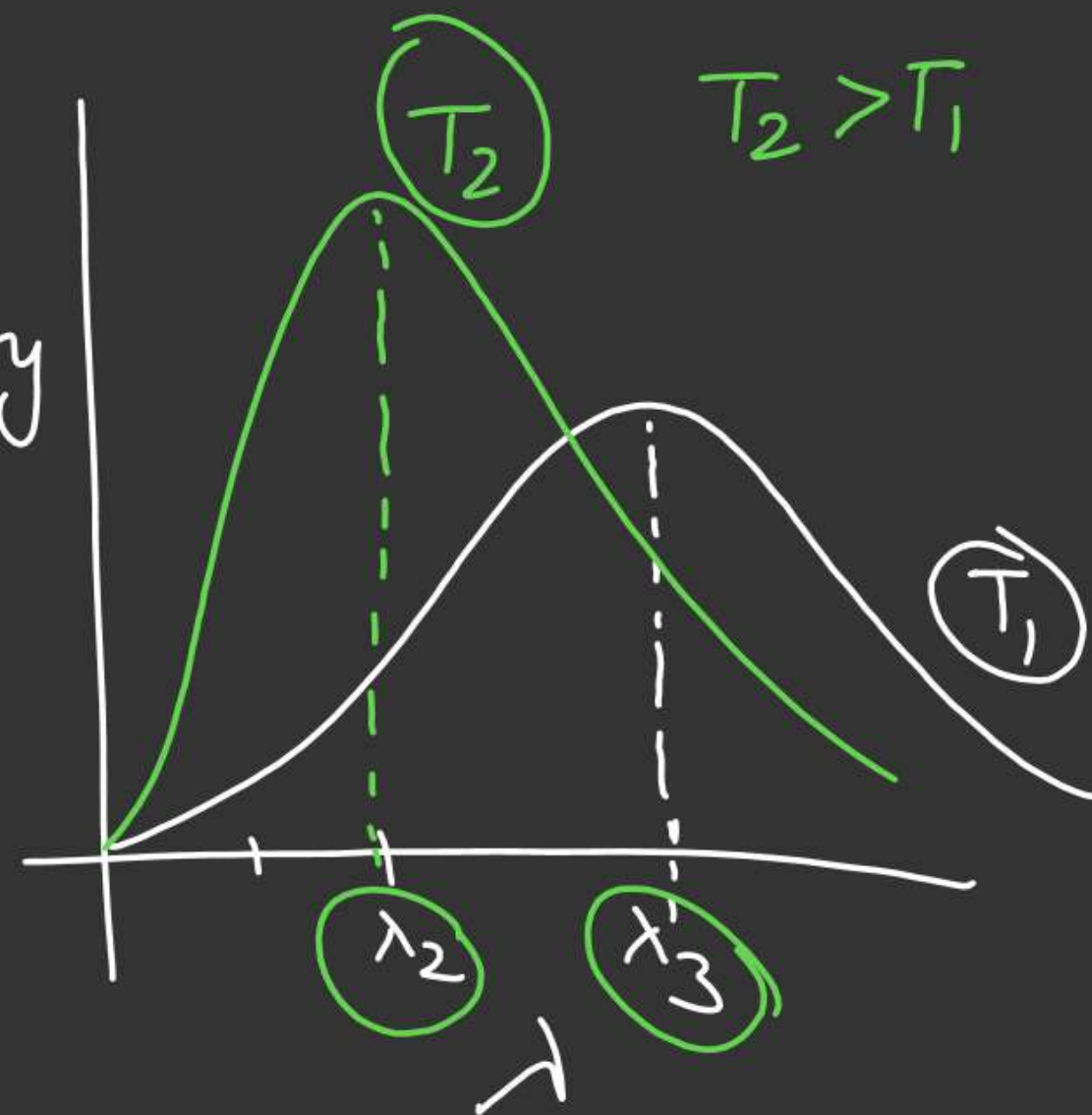
Planck's quantum theory

Black body radiation exp

which can absorb or
emit light of
any wavelength.

197 amu

Intensity



Light consist of discrete packets of energy called quanta or photon.

⇒ Light shows both wave as well as particle nature.

$$\begin{array}{l} \rightarrow 5 \times 10^{13} \text{ A}^\circ \\ 6 \times 10^{13} \text{ A}^\circ \end{array}$$

