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A.I.F. - E.S.T.T.

03/2010

Reflection, refraction and total internal reflection in water/air surface

Rosa Brígida

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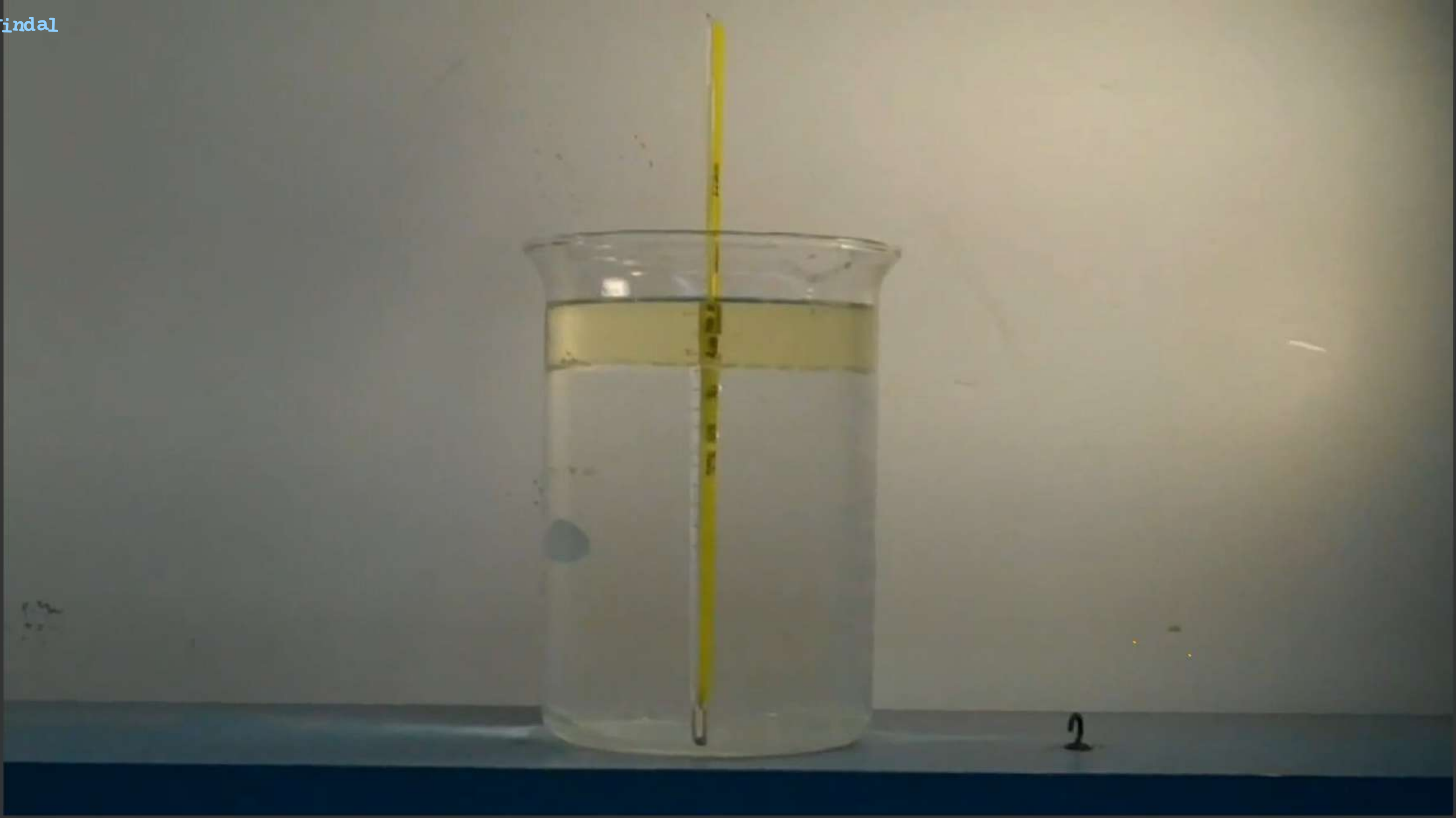

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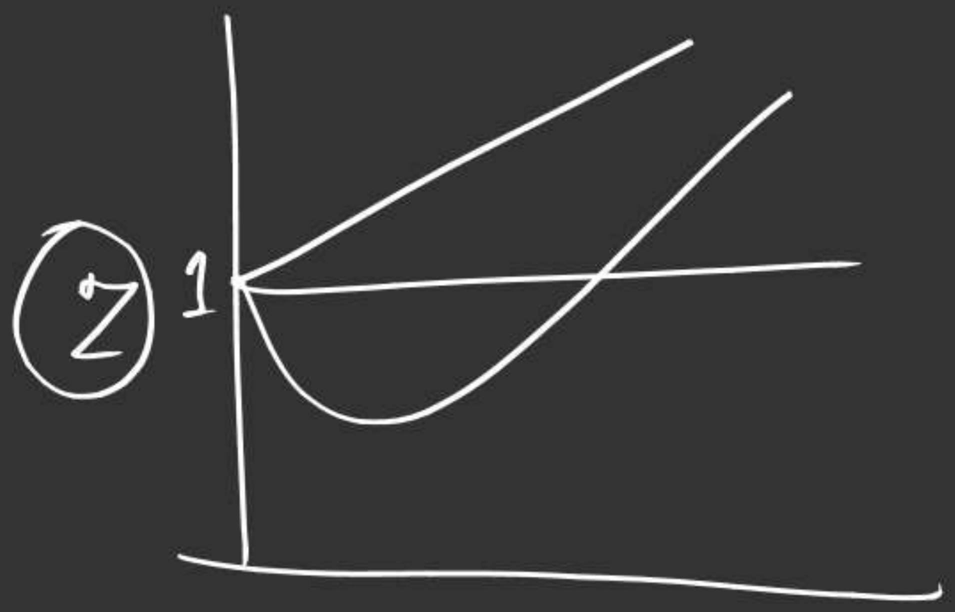

Z vs P   Intercept on Y-axist = 1

PV_m vs P   ″   ″ = RT

$$\frac{PV_m}{RT} = 1$$

$$PV_m = RT$$

0 – II

5

A T

B T

C T

D F

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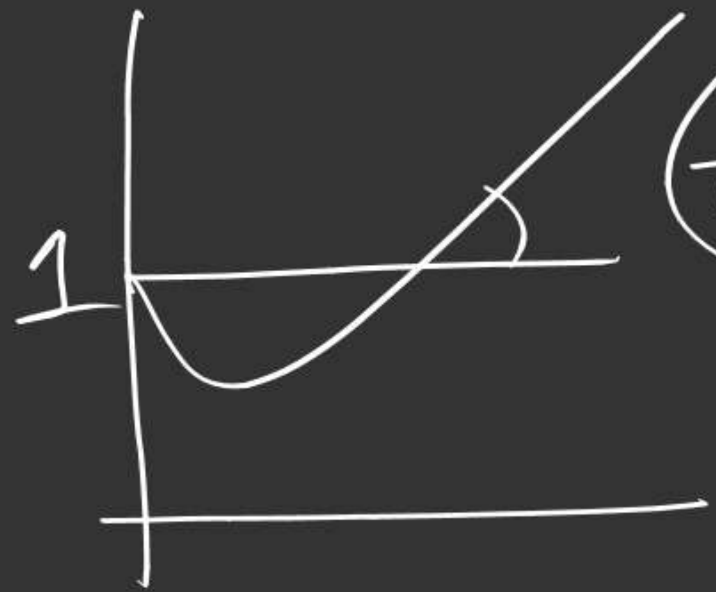
O-II ③



$$\frac{b}{RT} = 0.005$$

$$T_C = 500 = \frac{8a}{27Rb}$$

$$500 = \frac{8}{27} T_{Boyle's}$$

⑨ c & d

$$Z = 1 - \frac{a}{V_m RT}$$ more compressible

H_2 & He

$Z > 0$ less compressible

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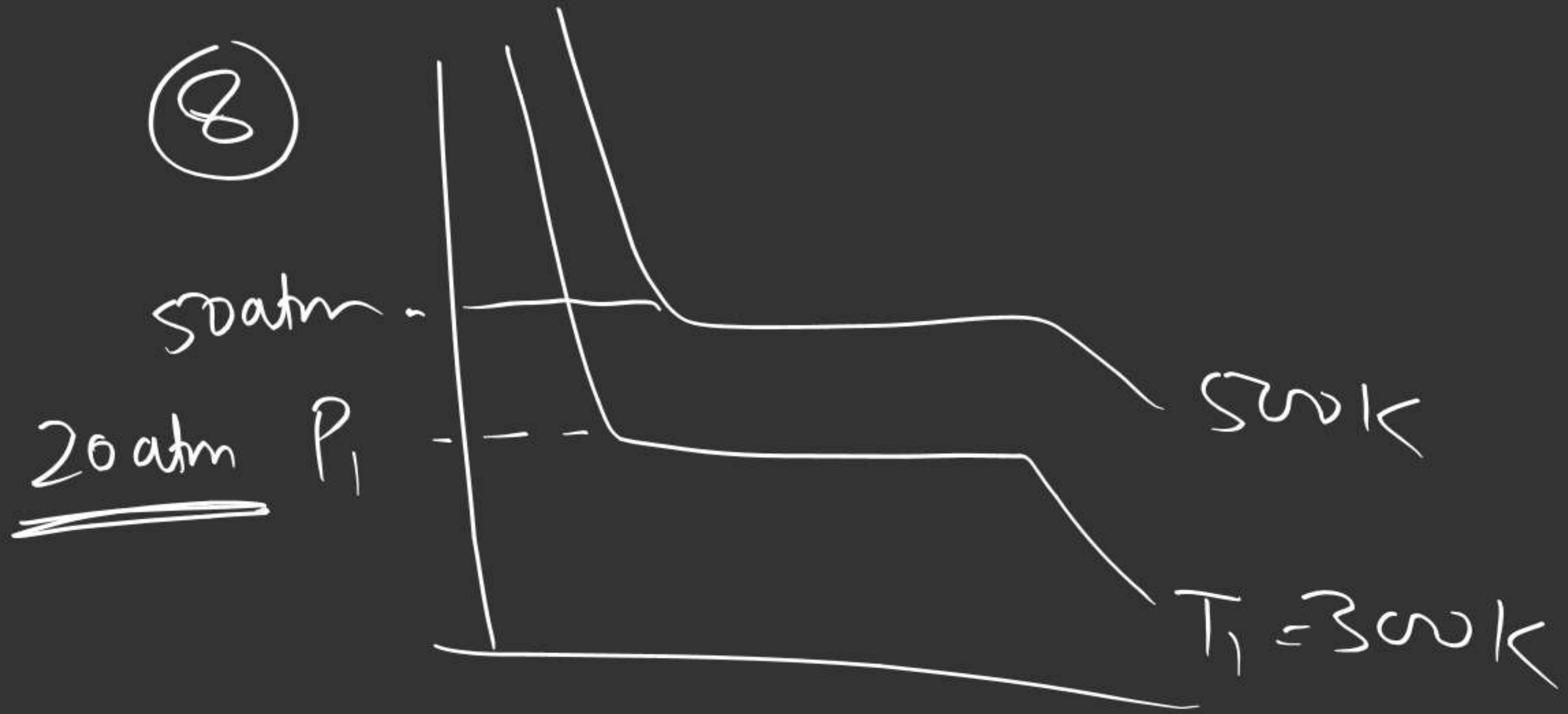

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$\Rightarrow \quad R = R_0 (A)^{1/3}$

radius of nucleus

$R_0 = 1.33 \times 10^{-15}$ m

A = Atomic mass or mass number $= n + p$

$\Rightarrow$ 

Columbs law electrostatic force $= \dfrac{Kq_1 q_2}{r^2}$

$k = 9 \times 10^9 = \dfrac{1}{4\pi\varepsilon_0}$

Distance of closest approach

$$q_1 \xleftrightarrow{\quad r \quad} q_2$$

$$\boxed{(U)\ \text{Potential Energy} = \frac{K q_1 q_2}{r}}$$

for similar charge particle PE > 0

$$\boxed{(F)\ \text{Force} = \frac{K q_1 q_2}{r^2}}$$

$$\Rightarrow \boxed{F = -\frac{dU}{dr}}$$

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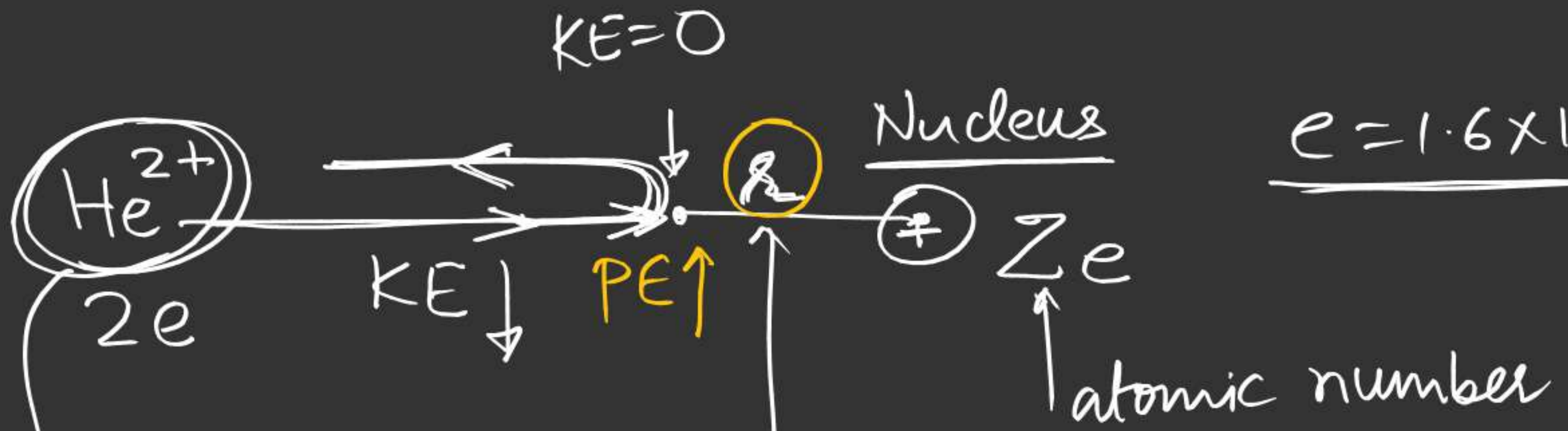

$e = 1.6 \times 10^{-19}$ Colombs

$\boxed{\text{distance of closest approach} = r}$

$KE_i = PE$

$$\boxed{\frac{1}{2} m v_i^2 = \frac{K q_1 q_2}{r}}$$

$q_1 = 2e$

$q_2 = Ze$

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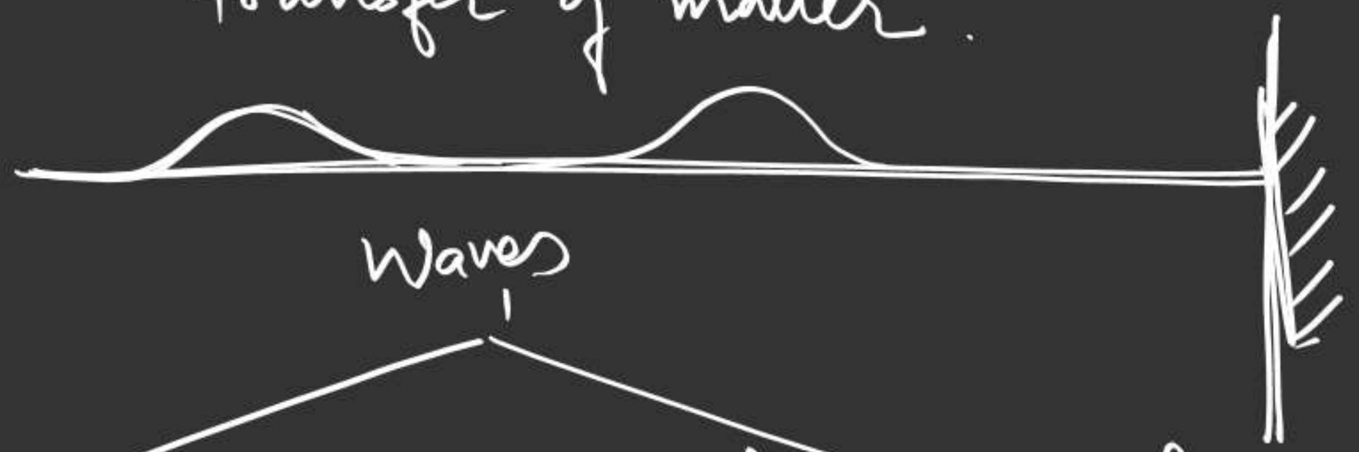
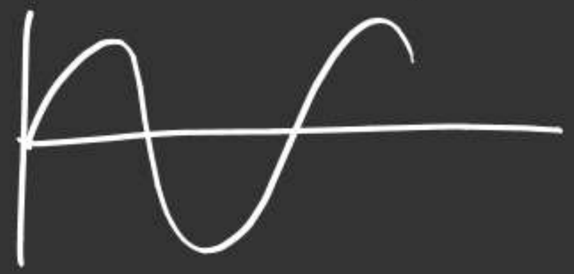
Waves :→ Mode of energy transfer without the net transfer of matter.



Waves

Transverse
- → water waves
- → string waves
- → light

Particles move ⊥ar to the wave propogation



longitudinal

e.g Sound wave

particles move in the same direction as that of waves

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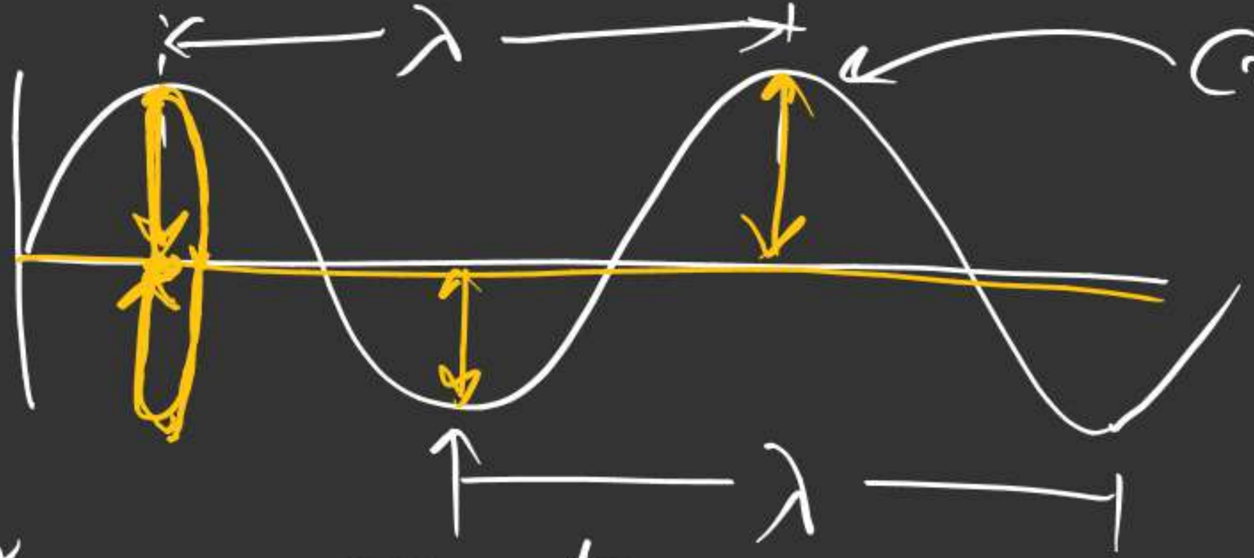
Wavelength (λ)

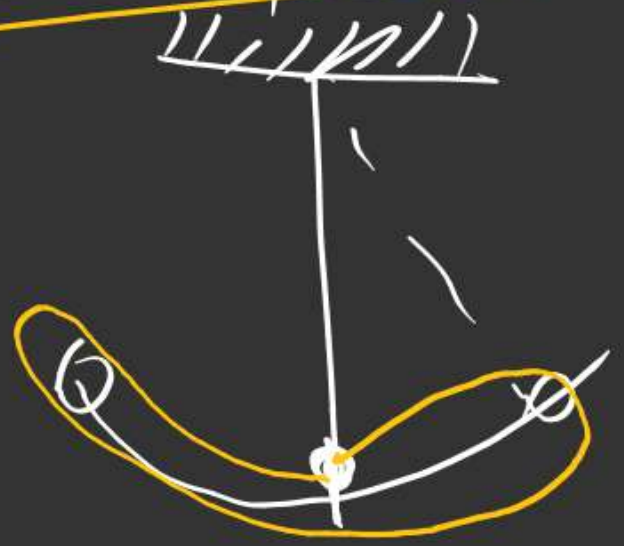


distance betn two nearest crest or trough

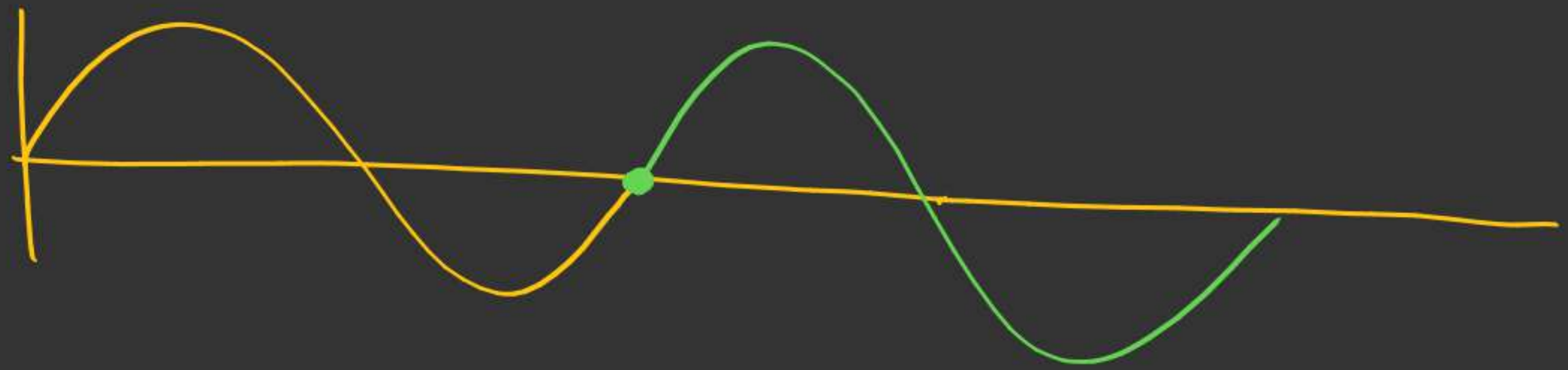
Amplitude (A) : maximum displacement from mean position

frequency :→ No of oscillation per second

Unit
Sec^{-1}
Hertz



Nu (ν)



$\lambda \longrightarrow 1$ oscillation

Speed of wave $\longrightarrow v \longrightarrow \frac{v}{\lambda}$ oscillation = no. of oscillation in one sec (ν)

$\nu = \frac{v}{\lambda}$ in case of light

$$\boxed{\nu = \frac{c}{\lambda}}$$

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Electromagnetic wave (light)

It consist of oscillating electric and magnetic field which are ⊥ar to each other and to the direction of wave

electromagnetic spectrum

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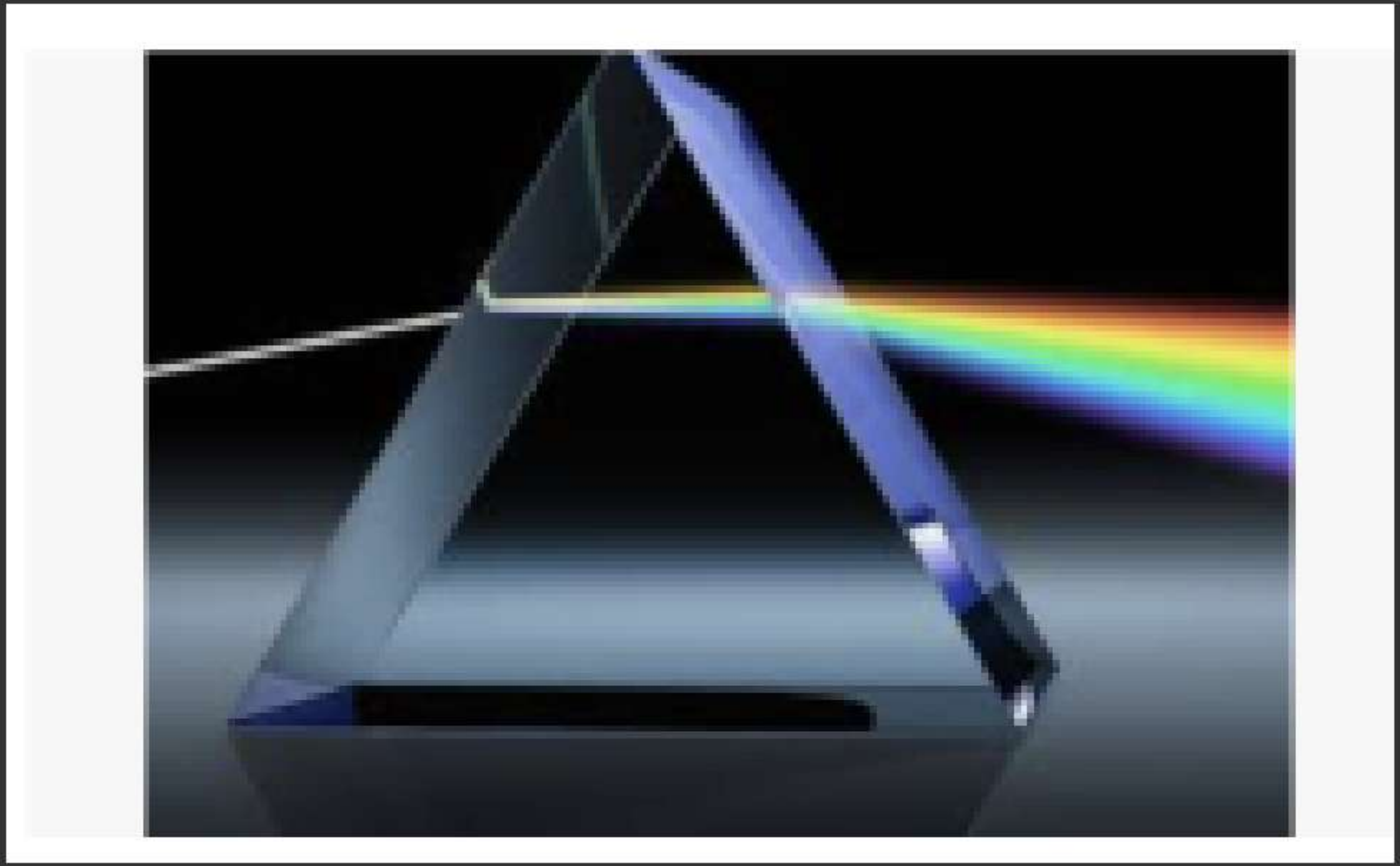

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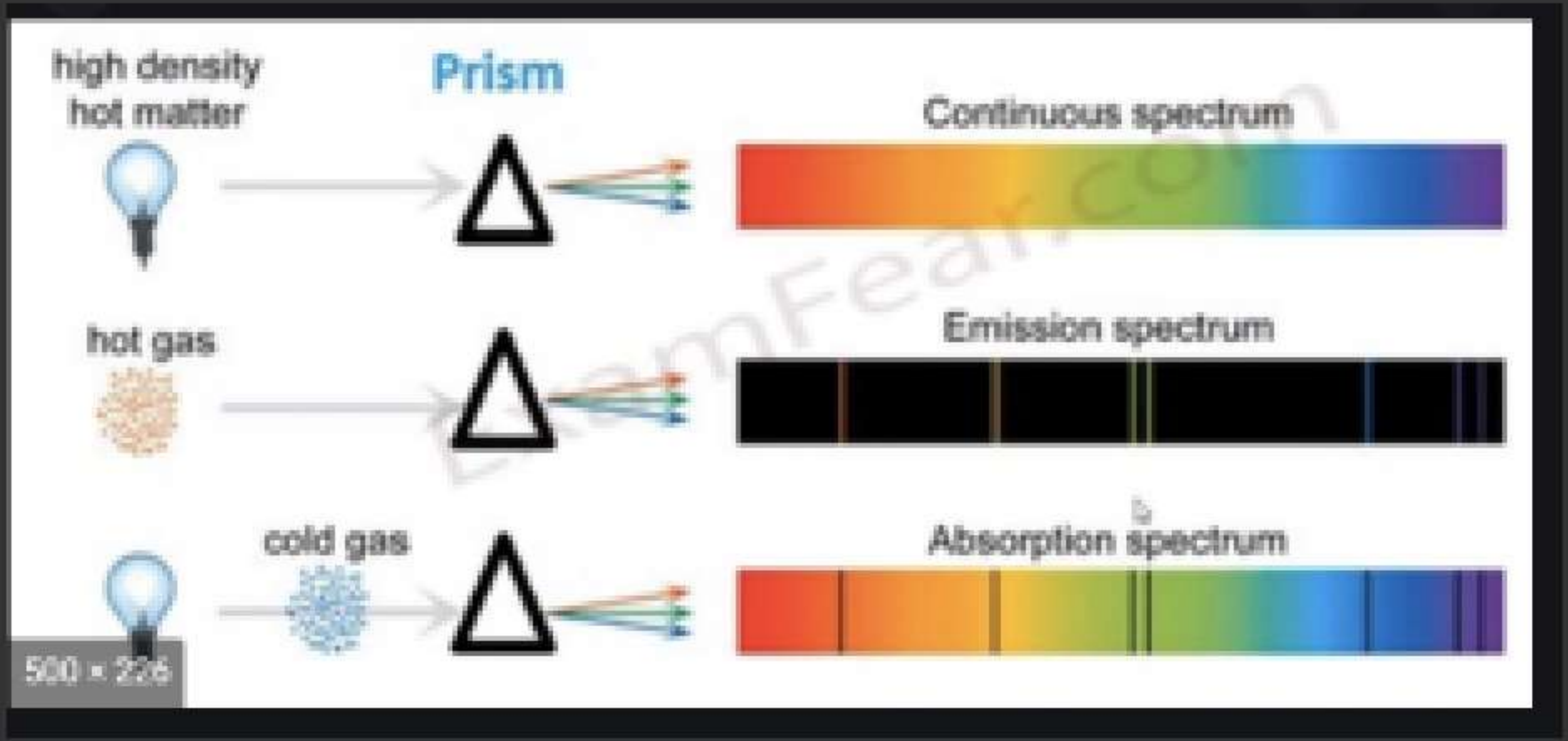

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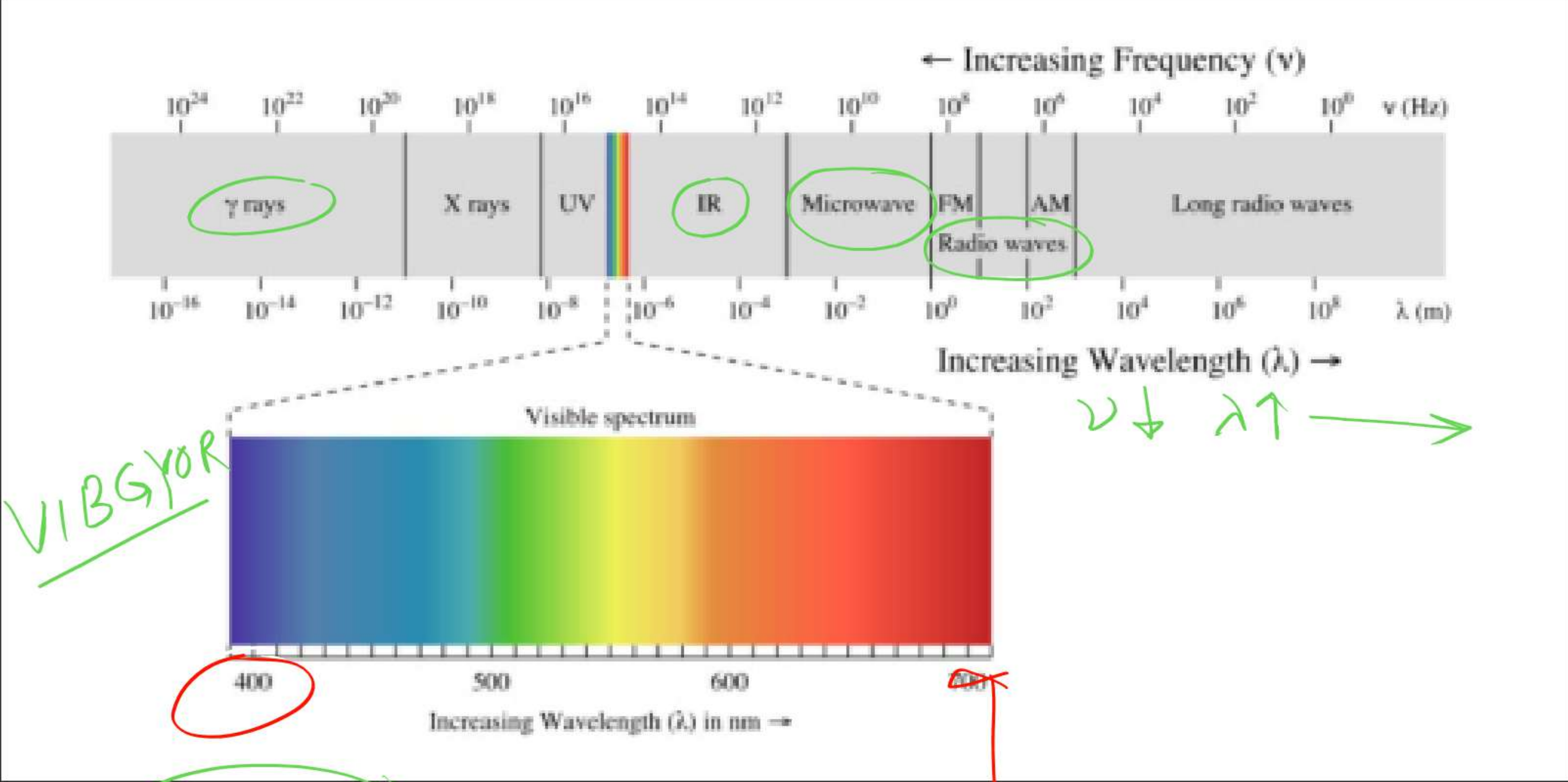

$\nu\downarrow$ $\lambda\uparrow$ →

VIBGYOR

400nm —— 750nm

γ-rays	X-ray	UV		IR	Micro wave	Radiowaves

Visible

400 nm – 750 nm

4000 Å – 7500 Å

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<u>Properties of wave</u> :→ reflection

refraction

Interference

diffraction

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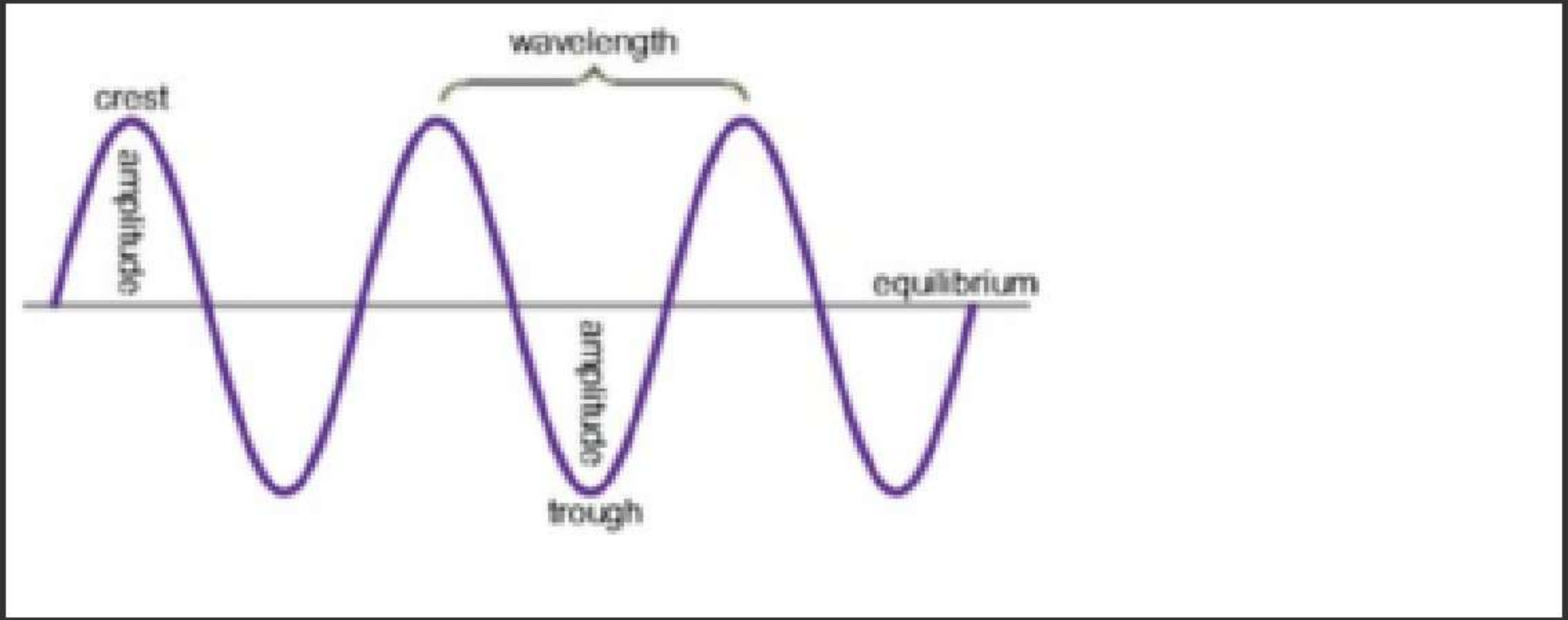

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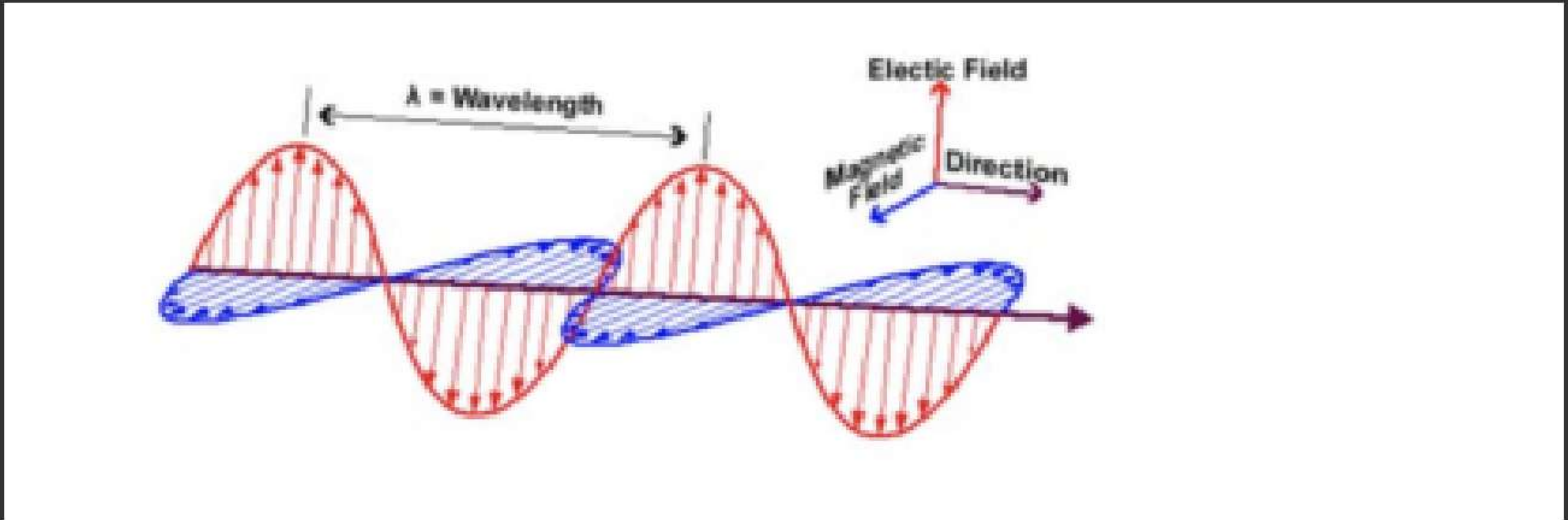

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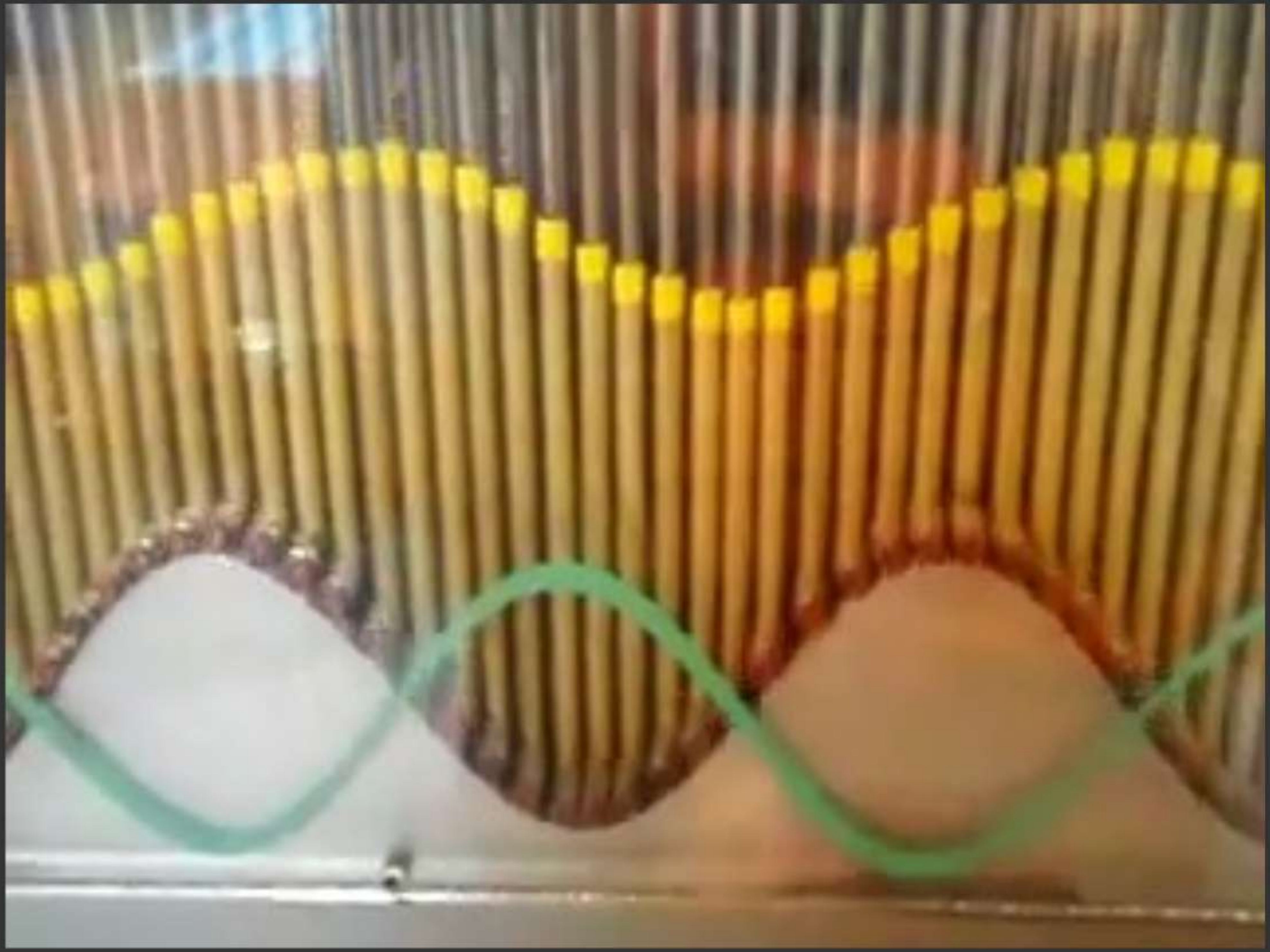

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