

How we know that light is a wave

wave interference movie

light interference pattern

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The Photoelectric Effect

no light X light - works

so... light provides W_{th} needed

but...

red light X blue light works

w/c ... blue has more W_{th} !

but...

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Diagram illustrating light diffraction through a slit. A slit is shown at the top with light rays passing through. Below, two interference patterns are shown: a large, low-frequency wave (red) and a smaller, high-frequency wave (orange). A purple curve represents the intensity distribution, showing a central maximum and smaller side maxima. Handwritten notes include:

- bright red = lot of rays
- (more rays than) → dim blue waves
- A.R.E. light is corpuscular
- color diff = momentum diff.

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de Broglie

$$\lambda = \frac{h}{p}$$

Planck's const (pointing to h)
 $m \cdot v$ (pointing to p)

waves = particles

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Heisenberg - uncertainty principle

$$\Delta X \cdot \Delta p \geq \frac{h}{2\pi}$$

distance
momentum

↑ ↑

uncertainty in
the measurement
of ...

can't know exactly where
something is and how it's moving
at same time

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