Electromagnetic waves

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WAVES

Oscillations that travel periodic in time in space

\[ T = \text{period (s)} \]
\[ \lambda = \text{wavelength (m)} \]
\[ f = \text{frequency (Hz = \frac{1}{s})} \quad f = \frac{1}{T} = \text{oscillations/s} \]
\[ A = \text{amplitude (m)} \]
\[ v = \text{speed (m/s)} \quad v = \frac{\lambda}{T} = 2f \quad \lambda \uparrow \Rightarrow f \downarrow \]

LIGHT = electromagnetic wave

\[ E = \text{electric field} \]
\[ B = \text{magnetic field} \]
DIFFRACTION

\[d \gg \lambda\]

\[d \sim \lambda\]

(size of slit)

(light 400 - 700 nm)
INTERFERENCE

2 slits / many slits $\rightarrow$ lines

= bright

= dark

- optical grid
Polarization

Light = transversal wave
E \perp propag
(B \perp propag)

Looking from this direction

Not polarized

Direction of polarization

Filter

Polarized

Perpendicular filter

No light