

Physics 112 Waves *8.3 min 500 sec.*

Types of Waves:

1) **Electromagnetic:** *500 nm light*

- no material or medium is needed for their propagation.
- travel at the speed of light $\rightarrow 3.0 \times 10^8 \text{ m/s} = 300,000,000 \text{ m/s}$
- difficult to observe directly.

ex: Visible light waves, radio waves, x-rays, microwaves

2) **Mechanical:** *transverse longitudinal*

- require a material or a medium to propagate.
- Newton's Laws govern their motion.
- more easily observed.

ex: water waves, sound waves, waves in a spring or slinky

3) **Matter:** *high speeds*

- electrons and other sub-atomic particles show some wave like behaviour.
- Quantum Mechanics is needed to describe these waves.

Handwritten notes:
 $d = Ut$
 $d = (3.0 \times 10^8 \text{ m/s})(500 \text{ nm}) = 1.5 \times 10^{11} \text{ m}$
refraction
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Dec 13-9:18 AM