

Waves

Mechanical

requires a
medium to
travel through

→ region of
particles with
elastic
characteristics
ie air
water

any state
of matter

Electromagnetic

requires no
medium

What is a wave?

1) "a disturbance that passes through a medium"

→ caused by some vibrating object!

2) transfer of energy w/o the bulk transfer of matter

transverse and longitudinal waves

<http://www.ngsir.netfirms.com/englishhtm/TwaveA.htm>

blue wave

<http://www.physics.nwu.edu/ugrad/vpl/waves/wavetypes.html>

http://www.upscale.utoronto.ca/GeneralInterest/Harrison/Flash/#sound_waves

good!!! tuning fork, disp.

Amplitude
Wavelength
Frequency
Continue
Freeze
Select a point
Remove selections
Decolorize wave
Graph
Whiten rarefaction

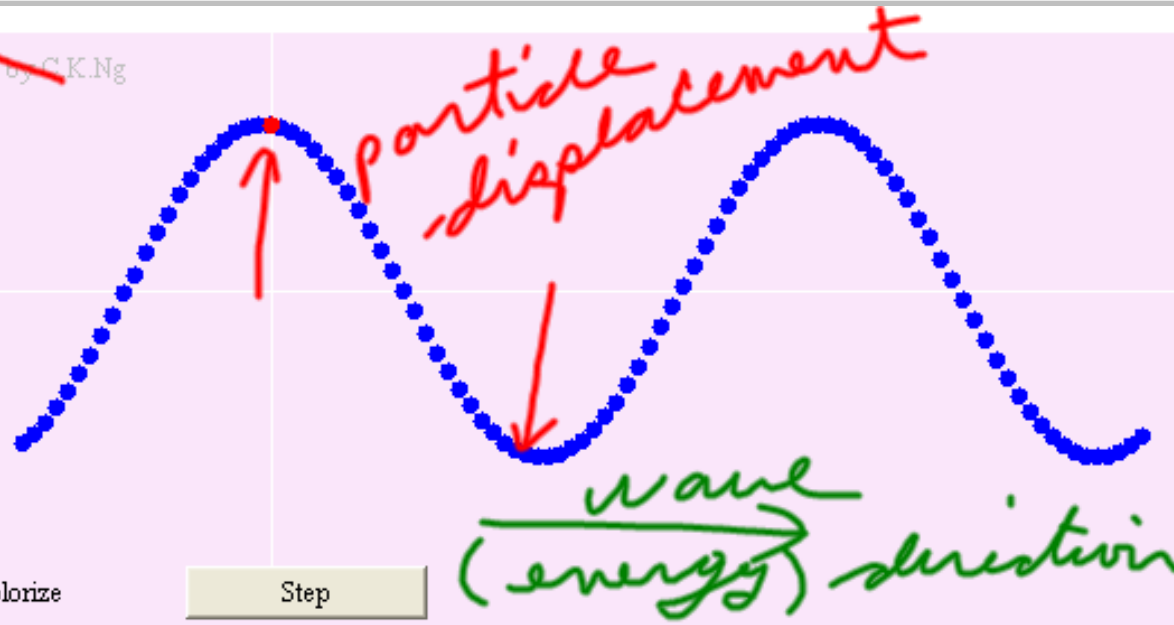
Applet by C.K.Ng

Compression
particles
pushed
together

rarefaction
particles
pulled
apart

note that particle
displacement is "||"
to wave direction
= compressional wave
(longitudinal)

Applet by C.K.Ng



Decolorize

Step

Continue

Select a point

Amplitude

Wavelength

Frequency

Freeze

Remove selections



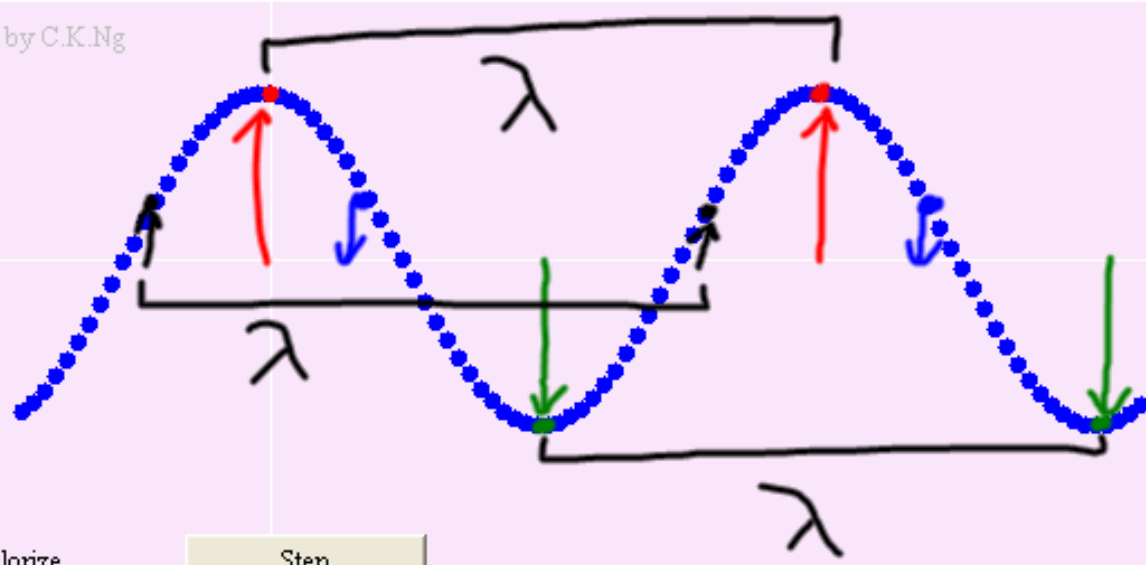
Travelling Wave



$\perp \rightarrow$ = Transverse wave



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Decolorize Step

Continue Select a point Amplitude Wavelength Frequency

Freeze Remove selections < > < > < >

Travelling Wave λ = distance between similar particle displacement vectors



frequency: # of waves (disturbances)
that pass a point
in 1 second (Hz)

$$\text{Hz} = \frac{\text{hertz}}{\text{second}} = \frac{\# \text{ waves}}{\text{second}}$$

$f_o = f_{\text{wave}}$ ← frequency of wave
in medium
↑
frequency object
vibrates at

Velocity of a wave

- 1) depends on the medium
- 2) vel. is constant in the medium

displacement vectors
of a transverse wave

<http://www.phy.ntnu.edu.tw/ntnujava/viewforum.php?f=3>

