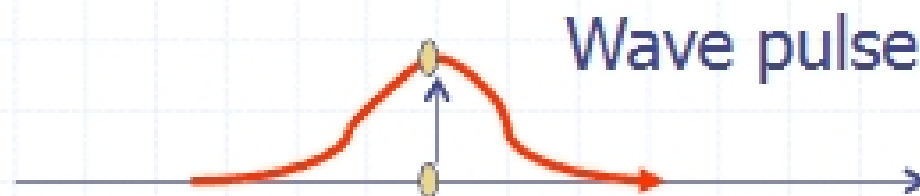


Chapter 14: Wave Motion

- We now leave our studies of mechanics and take up the second major topic of the course – wave motion (though it is similar to SHM)
- Wave – a traveling disturbance which carries energy from one point to another, but without the translation of mass

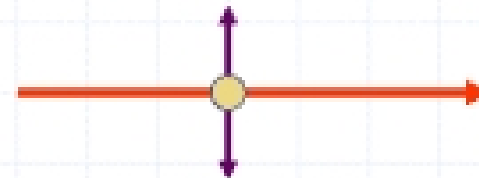


- A wave usually travels through a medium (gas, liquid, solid), except for light (an electromagnetic wave) which can propagate through a vacuum

□ The particles of the medium which convey the wave, can be said to oscillate about their equilibrium positions (like SHM)

□ Waves can be classified according to the direction of the oscillatory displacement

□ Transverse waves – the displacement (of the particle conveying the wave) is perpendicular to the direction of the wave; examples are a guitar string and light



□ Longitudinal waves – the displacement is along the direction of the wave; examples are sound, the spring, and seismic waves



❑ Some waves can be a mixture of longitudinal and transverse modes – surface water wave

❑ Can also classify waves as to whether they are

- a *Pulse* – a single cycle of disturbance
- *Periodic* – a repeating pattern of cycles

❑ In both cases, each particle of the medium experiences SHM, but for the pulse they start from rest, go through one cycle, then return to rest, while for a periodic wave they experience many, many cycles

Pulse on a string

