

A History of Wave-Particle Theory of Light

6th Century BC – **Pythagoras** believed that light was a stream of particles.

4th Century BC – **Artistotle** theorized that light was a wave.

1600's – studies of refraction, diffraction of light, rainbows and telescopes

Kepler (orbital laws), **Snell** ($n_1 \sin \theta_1 = n_2 \sin \theta_2$ math of refraction)

Newton (Sir Isaac), **Hooke** (elastic constant $Ee = \frac{1}{2} kx^2$)

1670's – Christian **Huygens** (microscope wave theory explains polarization

- Ignace **Pardies** – wave theory explains refraction.

1704 – **Newton** – publishes his particle theory of light.

1803 – Thomas **Young's** double slit experiment defines light as a wave

He showed light can interfere with itself constructively and destructively
like wave waves and sound waves.

1845 – **Faraday** – established that light is a form of electromagnetism

1864 – **Maxwell** – light is a transverse, self-propogating electromagnetic wave .

1917 – **Einstein** – theorized photons (discreet bundles of light energy) *sounds a bit like particles!

**Today ** we have wave-particle duality theory. We use the theory that works best when explaining behavior of light.