Snells Law

In optics and physics, **Snell's law** (also known as Descartes' law, the Snell-Descartes law, and the law of refraction) is a formula used to describe the relationship between the angles of incidence and angle of refraction, when referring to light or other waves passing through a boundary between two different isotropic media, such as water and glass. The law says that the ratio of the sines of the angles of incidence and of refraction is a constant that depends on the media.

In optics, the law is used in ray tracing to compute the angles of incidence or refraction, and in experimental optics and gemology to find the refractive index of a material.

Refraction of light at the interface between two media of different refractive indices, with n2 > n1. Since the velocity is lower in the second medium (v2 < v1), the angle of refraction Î¸2 is less than the angle of incidence Î¸1; that is, the ray in the higher-index medium is closer to the normal.

Snell's law is also satisfied in the metamaterials which allow light to be bent "backward" at a negative index, with a negative angle of refraction.

Named after Dutch mathematician Willebrord Snellius, one of its discoverers, **Snell's law** states that the ratio of the sines of the angles of incidence and refraction is equivalent to the ratio of velocities in the two media, or equivalent to the opposite ratio of the indices of refraction:

[\frac{\sin\theta_1}{\sin\theta_2} = \frac{v_1}{v_2} = \frac{n_2}{n_1}

v = velocity, SI units are m/s

n = refractive index, which is unitless

Snell's law follows from Fermat's principle of least time, which in turn follows from the propagation of light as waves. Snell Law, Wikipedia

See Also

Compression Wave
Compression Wave Velocity
Differentiation
Figure 4.15 - From One Comes all seeming things through Refraction or Differentiation
Figure 8.3 - Coiled Spring showing Longitudinal Wave
Figure 8.4 - Transverse Wave
Index of Refraction
Law of Assimilation
Longitudinal
Longitudinal Wave
Mode
Modes of Vibration
Negative Refraction
Rayleigh Wave
Ratio
Refraction
Rhythmic Balanced Interchange
Transverse Wave
Universal Heart Beat
Velocity