

3.2: Total Internal Reflection

When light passes from a medium of lesser index of refraction to one with greater index of refraction, Snell's law indicates that the ray bends toward the normal to the interface. The reverse occurs when the passage is in the other direction. In this latter circumstance a special situation arises when Snell's law predicts a value for the sine of the refracted angle greater than one. This is physically untenable. What actually happens is that the incident wave is reflected from the interface. This phenomenon is called total internal reflection. The minimum incident angle for which total internal reflection occurs is obtained by substituting $\theta_R = \pi/2$ into equation (3.1.2), resulting in

$$\sin(\theta_I) = n_R/n_I \quad (\text{total internal reflection}) \quad (3.2.1)$$

This page titled [3.2: Total Internal Reflection](#) is shared under a [CC BY-NC-SA 3.0](#) license and was authored, remixed, and/or curated by [David J. Raymond](#) ([The New Mexico Tech Press](#)) via [source content](#) that was edited to the style and standards of the LibreTexts platform.