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\begin{equation} \sin^2 \theta_c = \left( \frac{n_2}{n_1} \right)^2 \end{equation}
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We can demonstrate total internal reflection very easily with a water basin, for example, where we couple in light from a laser from the side.

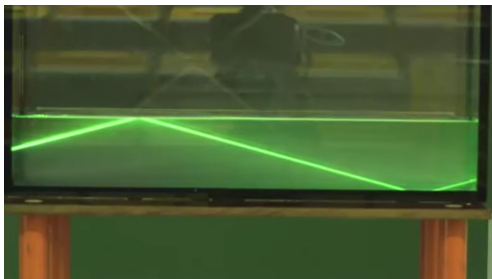
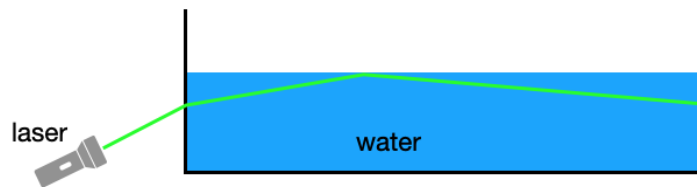


Fig.: Total internal reflection at a water/air interface.

But you could try that yourself also in the bath tub diving below the water surface.

Optical Fiber Total internal reflection is very important for guiding light in telecommunications, for example. There, glass wires with a diameter from a few to several 100 μm are used to transport light. The glass wire with a central core of refractive index n_1 is surrounded by a cladding layer of slightly lower refractive index n_2 . Light is then coupled into the fiber from one side. To obtain total internal reflection in this setting, the incident rays have to hit the front of the fiber at a maximum angle θ_a

