

# The Physics Experiments of Robert Wichard Pohl (1884–1976)

For decades, Robert Wichard Pohl taught his famous lectures of introductory physics in the old lecture hall of the Physics Institute at Goettingen University. These lectures became the foundation for three volumes entitled „Introduction into Physics“. Now, using Professor Pohl's original instruments in the same lecture hall in which he taught, this set of videos captures his extraordinary ingenuity and once more brings to life Pohl's great experimental skills.



## Bent light ray

**Video title:** Bent light ray

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**Abstract:** A trough contains a sugar solution with a vertical concentration gradient, so that its index of refraction decreases with increasing height. A laser light beam enters the trough, tilted slightly against the horizontal direction. As it moves through the liquid, it is bent, as can be observed through scattering.

**Source:** Pohls Einführung in die Physik - Elektrizitätslehre und Optik. Lüders, Klaus; Pohl, Robert Otto (Hrsg.) 22. Aufl., 2006, Springer Berlin Heidelberg New York; p. 206, 207, 393

**Key words:** Optics, refraction, light scattering

**Goal of the experiment:** If light is moving in a medium in which the index of refraction has a gradient, the light rays are not straight, but curved.

**Experimental setup:** A trough contains a sugar solution with a vertical concentration gradient, so that the index of refraction decreases with increasing height. For its preparation, seven layers with decreasing sugar concentration, each about 1 cm thick, were poured carefully one on top of the other, onto a floating cork disk.

**Experiment:** When the laser is turned on, the bent light ray can be viewed readily because of scattering. By tilting the laser, the entering angle is varied. It is seen that even after reflection at the liquid surface or at the walls of the trough the light beam continues to be bent.

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