

# 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.



## Elastic deformation, Hooke's law

**Video title:** Elastic deformation, Hooke's law  
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**Abstract:** A demonstration of the proportionality of tension and elongation during elastic deformation of a metal wire (Hooke's law).  
**Source:** Pohls Einführung in die Physik - Mechanik, Akustik und Wärmelehre. Lüders, Klaus; Pohl, Robert Otto (Hrsg.) 19. Aufl., 2005, Springer Berlin Heidelberg New York; p. 105  
**Key words:** Mechanics, metal physics, elastic deformation, stress, strain, Hooke's law

**Goal of the experiment:** A demonstration of the proportionality of tension and elongation during elastic deformation of a metal wire (Hooke's law).  
**Experimental setup:** A copper wire, 4.4 m long, 0.4 mm in diameter, is suspended from the ceiling of the lecture hall. For the measurement of its elongation, a mm scale is attached to its lower end and is projected onto a screen, together with a fixed pointer. As the wire is pulled with a known force, its elongation can be read directly.  
**Experiment:** The wire is pulled in two steps by attaching consecutively two 300 g weights. The total elongation measured is 1 mm for 300 g, and 2 mm for 600 g, and is shown to be fully reversible when the weights are removed, indicating an elastic deformation. Elongation and force are proportional, i.e. Hooke's law is obeyed.

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