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.

Vibrations of a tuning fork

Video title: Vibrations of a tuning fork

Signature: C 14857

Series title: The Physics Experiments of Robert Wichard Pohl (1884-1976)

Abstract: The sinusoidal vibrations of a tuning fork are made visible by means of a reflected light beam. The tuning fork is excited by compressed air, and can be rotated around its vertical axis. One of its legs carries a small mirror off which a laser beam is reflected onto the wall. By uniformly rotating the tuning fork, the time dependence of its vibration can be demonstrated.

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. 175

Key words: Acoustics, harmonic vibrations, tuning fork

Goal of the experiment: To make the vibrations of a tuning fork visible by means of a reflected laser beam.

Experimental setup: A tuning fork is excited by compressed air, and can be rotated around its vertical axis. One of its legs carries a small mirror off which a laser beam is reflected onto the wall. By uniformly rotating the tuning fork, the time dependence of its vibration can be demonstrated.

Experiment: After turning on the laser, rotating the tuning fork moves the light spot horizontally, thus indicating a time scale. The tuning fork is excited. As long as the tuning fork is not rotated, a vertical line marks its vibration, through a slight tilting of the mirror. When the tuning fork is now rotated, the time dependence of the vibration is displayed. It is a sine curve. After the compressed air has been turned off, the slow decay of the amplitude demonstrates the damping.

Scientific Contributors:

Klaus Lüders	Department of Physics, Free University Berlin, Germany
Robert Otto Pohl	Laboratory of Atomic and Solid State Physics, Cornell University, Ithaca, USA
Gustav Beuermann	I. Physical Institute, University Goettingen, Germany
Konrad Samwer	I. Physical Institute, University Goettingen, Germany

Editor: Walter Stickan
Camera: Kuno Lechner
Sound: Thomas Gerstenberg
Video Editing: Abbas Yousefpour
Technical Assistant: Joachim Feist

Production and Distribution: IWF Wissen und Medien gGmbH, http://www.iwf.de, © IWF Goettingen 2006

IWF Wissen und Medien gGmbH
Nonnenstieg 72, D-37075 Goettingen
Phone: +49 (0) 551 5024 0
www.iwf.de

Leibniz Gemeinschaft

IWF
WISSEN UND MEDIEN
KNOWLEDGE AND MEDIA