

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.



Amperes Law

Video title: Amperes Law

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

Abstract: A long induction coil wound on a flexible hose is used to explore the magnetic field near current carrying conductors and also near a permanent magnet.

Source: Pohls Einführung in die Physik - Elektrizitätslehre und Optik. Lüders, Klaus; Pohl, Robert Otto (Hrsg.) 22. Aufl., 2006, Springer Berlin Heidelberg New York; p. 81 – 84

Key words: Electric currents, magnetic field, line integral of the magnetic field, Amperes Law, permanent magnets.

Goal of the experiment: The discover of the connection between current and magnetic field.

Experimental setup: A long induction coil wound on a flexible hose is being used in various forms near current carrying conductors. Using a ballistic galvanometer, the voltage pulse is measured when the current changes.

Experiment: The induction coil is used first to measure the line integral of the magnetic field near a long current carrying conductor. These observations can be summarized in Amperes Law, and can thus be used for the experimental discovery of this important law which is a part of one of Maxwells equations. After that, this device is used to measure the magnetic field inside a current carrying solenoid, and to explore the magnetic field on its outside. Finally, it is used to study the magnetic field of a permanent magnet.

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
Assistant:	Gudrun Schwarz, Natalie Frick
Sound:	Thomas Gerstenberg, Karl-Heinz Seack
Video Editing:	Abbas Yousefpour
Technical Assistant:	Joachim Feist

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

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