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.

Precession of a spinning wheel

Video title: Precession of a spinning wheel

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

Abstract: A spinning top (gyroscope) does not follow a torque in the same way as, for example, a top at rest. Rather, it moves sideways, it „precesses". This startling behavior will be shown here.

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Key words: Mechanics, top, gyroscope, precession, angular momentum, torque

Goal of the experiment: A spinning top (gyroscope) does not follow a torque in the same way as, for example, a top at rest. Rather, it moves sideways, it „precesses". This startling behavior will be shown here.

Experimental setup: The top is a bicycle wheel with its rim filled with lead wire. It can be suspended on a rope dangling from the ceiling.

Experiment: The wheel is spun while holding its axle horizontal. Then, one end of the axle is attached to the rope. The weight of the wheel and the tension in the rope together cause a torque which, however, does not turn the axle into the vertical position, as would happen if the wheel were not spinning. Instead, the axle, which indicates the direction of the wheels angular momentum, circles on a horizontal plane around the point on which it is suspended.

This sideways motion of a top under the influence of a torque is called „precession".

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