

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.



Capacitance of a sphere

Video title: Capacitance of a sphere

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

Abstract: Experimental determination of the capacitance of a sphere

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Key words: Electric field, capacitance, Coulombs Law.

Goal of the experiment: A systematic measurement on spheres of different radii would demonstrate that the electric field of charged conducting spheres is proportional to the square of the inverse distance to the center of the spheres. This is the essential content of Coulombs Law.

Experimental setup: A globe (radius 27 cm) hangs on a string, using a piece of amber as insulation, as far away as possible (> 2.5 m) from the walls, floor and ceiling of the lecture hall. After charging it with a power supply (which process, however, somewhat disturbs the spherical symmetry), it is discharged through a ballistic galvanometer which is calibrated in ampereseconds.

Experiment: Between the sphere and the walls of the lecture hall, a known voltage difference is established. As the sphere is discharged, its charge is measured. From these quantities, the capacitance is calculated.

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