



P 3.1.2
Coulomb's law

P 3.1.2.3 Confirming Coulomb's law – recording and evaluating with CASSY

Confirming Coulomb's law with displacement sensor and CASSY (P 3.1.2.3) (old equipment)

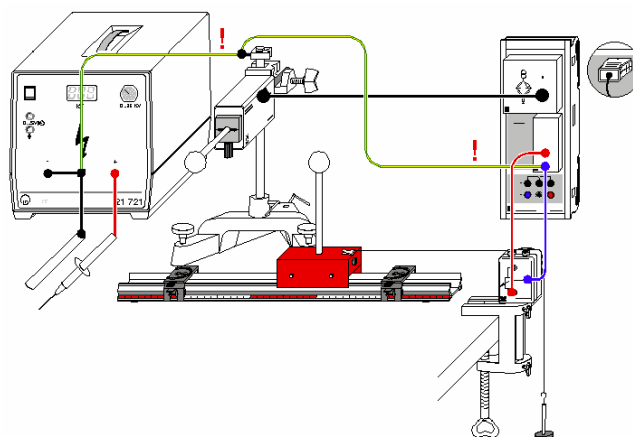
Cat. No.	Description	P 3.1.2.3
314 263	Set of bodies for electric charge	1
337 00	Trolley 1, 85 g	1
460 82	Precision metal rail, 0.5 m	1
460 95	Clamp rider	2
524 060	Force sensor S, ± 1 N	1
529 031	Displacement sensor	1
524 010USB	Sensor CASSY	1
524 200	CASSY Lab	1
524 031	Current supply box	1
521 721	High voltage power supply 25 kV	1
501 05	High voltage cable, 1 m	1
590 02	Small clip plug	1
300 41	Stand rod, 25 cm	1
532 16	Connection rod	1
300 02	Stand base, V-shape, 20 cm	1
301 01	Leybold multiclamp	1
337 04	Set of driving weights	1
301 07	Simple bench clamp	1
309 48	Cord, 10 m	1
501 46	Pair of cables, 100 cm, red and blue	1
500 414	Connection lead, 25 cm, black	1
500 444	Connection lead, 100 cm, black	3
	<i>additionally required:</i>	
	PC with Windows 95/NT or higher	1

For computer-assisted measuring of the coulomb force between two charged spheres, we can also connect the force sensor to a CASSY interface device via a bridge box. A displacement sensor is additionally required to measure the distance between the charged spheres; this is connected to CASSY via a current source box.

This experiment utilizes the software CASSY Lab to record the values and evaluate them. The coulomb force is measured for different charges Q_1 and Q_2 as a function of the distance r . The charges of the spheres are measured using an electrometer amplifier connected as a coulomb meter. The aim of the evaluation is to verify the proportionality

$$F \propto \frac{1}{r^2}$$

and to calculate of the permittivity ϵ_0 .



Confirming Coulomb's law with displacement sensor and CASSY (P 3.1.2.3) (new equipment)