Recording the path-time diagrams of linear motions – recording and evaluating with CASSY (P 1.3.2.2)

P1.3.2

One-dimensional motions with Fletcher's trolley

P 1.3.2.2 CASSY-S Recording the path-time diagrams of linear motions – recording and evaluating with CASSY

P 1.3.2.3 CASSY-S Definition of the Newton as a unit of force – recording and evaluating with CASSY

Cat. No.	Description	P 1.3.2.2	P 1.3.2.3
337 130	Track, 1.5 m	1	1
337 110	Trolley	1	1
315 410	Slotted weight hanger, 10 g	1	
315 418	Slotted weight, 10 g	4	
337 114	Additional weights	1*	
337 115	Newton weights		1
337 462	Combination light barrier	1	1
337 464	Combination spoked wheel	1	1
683 41	Holding magnet	1	1
524 010	Sensor-CASSY	1	1
524 034	Timer box	1	1
524 200	CASSY Lab	1	1
501 16	Multicore cable, 6-pole, 1.5 m long	1	1
309 48	Cord, 10 m	1	1
501 46	Pair of cables, 1 m, red and blue	1	1
	additionally required: 1 PC with windows 95/NT or higher	1	1

The first experiment looks at motion events which can be transmitted to the combination spoked wheel by means of a thin thread on Fletcher's trolley. The combination spoked wheel serves as an easy-running deflection pulley, and at the same time enables path measurement using the combination light barrier. The signals of the combination light barrier are recorded by the computer-assisted measuring system CASSY and converted to a path-time diagram. As this diagram is generated in real time while the experiment is running, the relationship between the motion and the diagram is extremely clear.

In the second experiment, a calibrated weight exercises an accelerating force of 1 N on a trolley with the mass 1 kg. As one might expect, CASSY shows the value

$$a = 1\,\frac{\mathrm{m}}{\mathrm{s}^2}$$

for the acceleration. At the same time, this experiment verifies that the trolley is accelerated to the velocity

$$v = 1\,\frac{\mathrm{m}}{\mathrm{s}}$$

in the time 1 s.