DECOMPOSITION OF FORCES ON AN INCLINED PLANE

MED 02.11

Material:

Item-no.	Qty.	Description
DS101-1G	1	Support base, large, L=500 mm
DS090-3K	3	Sliding saddle "Sepp", H=40 mm
DS300-50	1	Support rod, squared, L=500 mm, 12x12 mm
DS300-75	1	Support rod, squared, L=750 mm, 12x12 mm
DS400-3K	2	Bosshead cross-pattern, Demo, green
P7240-1C	1	Support rod, round, L=250 mm, D=10 mm
DS103-1G	1	Rail support "parallel", H=150 mm
DS130-1S	1	Inclined plane, simple (02)
DM650-1R	1	Roller, 500 g
DM132-1D	1	Torsion dynamometer 5 N
DM725-ND	1	Newtonmeter "inno" 20 N / 2000 g
P3120-5B	1	S-shaped assembly platform

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Purpose
Demonstrating the decomposition of forces on an inclined plane.

Preparation
Place the two „sepp“ sliding saddles on the support base as shown on the image. Insert the two squared support rods into these sliding saddles; afterwards mount a bosshead at a height of 40 cm on the left support rod.

The Inclined plane is mounted on the bosshead as shown on the image.

Fix the rail support on the inclined plane and mount another sliding saddle on the rail support; the weighing bar of the Newtonmeter is mounted in this sliding saddle afterwards.

Hang the 500 g roller into the hook of the weighing bar.

Mount another bosshead at a height of 30 cm on the right support rod and insert the 25 cm support rod horizontally in it.

Now bring the Inclined plane into horizontal position by moving the bosshead of the right support rod. Make sure that the roller does not roll off the inclined plane.

As soon as the roller does not exert any tensile force anymore turn the Newtonmeter on and tare (set to 0).

Experiment
The inclined plane is set to a 30 ° incline and fixed at this angle.
Push the roller slightly upwards; as soon as the roller no longer exerts tensile force, the Newtonmeter is tared again (adjusted to "zero"). Now the force is displayed correctly.
A Torsion dynamometer is attached to the second hook of the rolling element and pulled away at an angle of 90 ° to the inclined plane until the roller is lifted slightly.
We observe and note the angle of inclination and the two measured forces.

Then the angle of inclination of the sliding plane can be changed. Before each reading however, the Newtonmeter must be tared and the position of the Torsional dynamometer must be aligned normal to the plane.