

Moments of inertia and torsional vibrations with CobraSMARTsense

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Principle

The moment of inertia of a solid body depends on its mass distribution and the axis of rotation. Steiner's theorem elucidates this relationship.

Benefits

- Angular oscillation apparatus includes five different body shapes for in-depth experimenting
- High-precision movement sensor
- Very robust and durable setup

Tasks

1. The moments of inertia of different bodies are determined by oscillation measurements.
2. Steiner's theorem is verified.

Learning objectives

- Rigid body
- Moment of inertia
- Centre of gravity
- Axis of rotation
- Torsional vibration
- Spring constant
- Angular restoring force

Scope of delivery

Angular oscillation apparatus	02415-88	1
Cobra SMARTsense - Rotary Motion (Bluetooth + USB) - Sensor for measuring rotational movements 0 ... ∞ ° (Bluetooth + USB)	12918-01	1
measureLAB, multi-user license	14580-61	1
Tripod base PHYWE	02002-55	2
Fishing line, l. 5m	02089-01	1
Weight holder, silver bronze, 1 g	02407-00	1
Slotted weight, silver bronze, 10 g	02205-03	3
Measuring tape, l = 2 m	09936-00	1
Support rod, stainless steel, different lengths	02031-00	1
Cobra SMARTsense Force & Acceleration - Sensor for measuring force and acceleration ±50 N / ±16 g (Bluetooth + USB)	12943-00	1

Recommended accessories

Portable Balance, OHAUS CX2200	48921-00
Silk thread, l = 200 m	02412-00