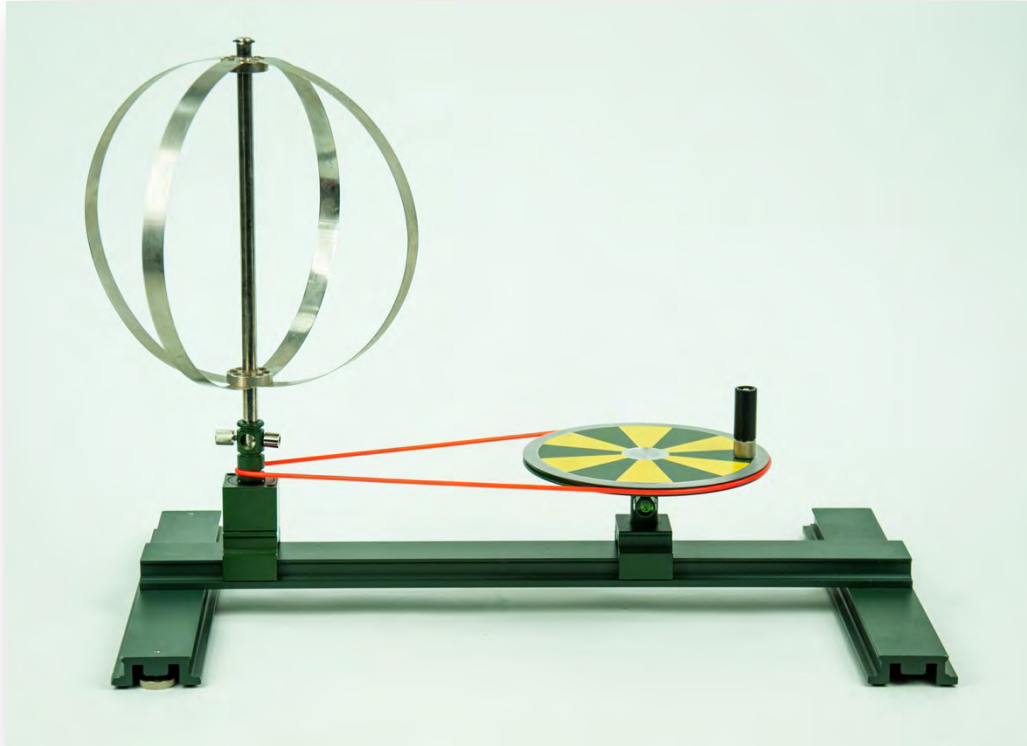


CENTRIFUGAL FORCE – CENTRIFUGAL HOOPS

MED 09.07



Material

Item-no.	Qty.	Description
DS101-1G	1	Support base, large, L=500 mm
DS103-3G	1	Sliding saddle, H=34 mm
DS402-3B	1	Pivot bearing with transverse hole,
DS402-3S	1	Drive pulley demo, with ball bearing
DS402-2N	1	Crank pin, L=50 mm
DS401-1A	1	Drive belts, set of 2
DM352-1E	1	Centrifugal hoops

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Purpose

To demonstrate the flattening of the earth due to the centrifugal force.

Preparation

Mount the pivot bearing and the sliding saddle on the support base as shown on the image; afterwards screw the crank pin on the drive pulley.

Insert the drive pulley into the sliding saddle and mount the centrifugal hoops on the pivot bearing.

As shown on the image below taut the long drive belt between the sliding saddle and the pivot bearing.

Experiment

Set the centrifugal hoops into rotation.

The following formula applies for the centrifugal force:

$$F = m r \omega^2$$

A greater centrifugal force acts on mass particles near the equator than on those near the pole because of their greater distance from the axis.

The model is subjected to flattening contrary to the spring force of the rings.

Note

Actually, the earth should have a spherical shape due to the smallest possible potential energy. The flattening shows the rotation of the earth compared to an inertial system.

Water surfaces are normal to the resulting F_R - however other forces have to be taken into account too.

