

## **The Gsvp balance project developed at the Royal Observatory of Belgium**

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An astatized symmetrical vertical pendulum is monitoring torque  $\Gamma(M)$  resulting of gravitational attractions exerted by two external masses  $M$  moving up and down.

Local gravity field  $g$  produces the main pendulum restoring torque combined with a variable torque  $\Gamma(m)$  of similar intensity induced by the rotation of the needles of a watch which is embedded on the pendulum.

Transfer of fundamental units to calibrate the  $\Gamma(m)$  torques is obtained by a reference torque  $\Gamma(\mu)$  resulting of precise displacements of a well known mass  $\mu$ .

We permanently monitored ratio between the gravitational effect  $\Gamma(M)$  and calibrated  $\Gamma(m)$  to determine  $G$ .

The position of the pendulum is measured with a capacitive bridge.

Bias voltages sent to two electrodes set-up at the bottom of the pendulum allows to feedback pendulum with a controlled electrostatic torque.

We discuss potential interest of our prototype to design a multi pendulum system to check systematic effects for different geometries and various kinds of materials.