

## THE PENDULUM AND $g$

**Objectives:**

- Review notions of uncertainty and error propagation.
- Measure the local value gravitational acceleration to a part in  $10^3$ .

**To Do Before Lab:**

- Read this lab

**Apparatus:** string, brass mass, clamps, etc for pendula, measuring tape, stop watches, Excel

**The Lab:**

Before you on the lab table are the makings of a pendulum and familiar measuring devices. The objective of the lab is to construct a simple pendulum that allows you to measure the local gravitational constant “ $g$ ” to 1 part in 1000.

Once your group has played around with some theory and the pendulum, take a good look at the sources of uncertainty in your measurements. Reduce these to the maximum extent possible and begin to make a high precision measurement!

Please talk to your lab instructor about your procedure and your result(s). Feel free to try lots of ideas. And do not feel constrained to measure  $g$  only once...

Enjoy!