The title of the experiment
(exp. id unassigned)

An experiment proposed by
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Overview

Here, you are expected to give a short overview of your experiment. Motivations, prerequisite, objectives (in terms of physics, not pedagogical ones), etc.

If needed you can add formulas and images. We use the `wrapfigure` environment to put figures embedded with the text. To use it, you must include the corresponding LaTeX code within the paragraph into which it must be embedded, with no line before and after the `wrapfigure` block.

Opening the environment you need to specify whether you want the figure to appear on the left (`l`) or on the right (`r`), as well as the width of the figure as a fraction of the paragraph width (use `0.3` `columnwidth`). The figure can be imported using `includegraphics` to which we specify, besides the name of the image file, its width (a little bit smaller than the figure, i.e. `0.28` `columnwidth`).

See below for an example about how to include your embedded figure in the text, causing the image of Albert Einstein appearing on this page.
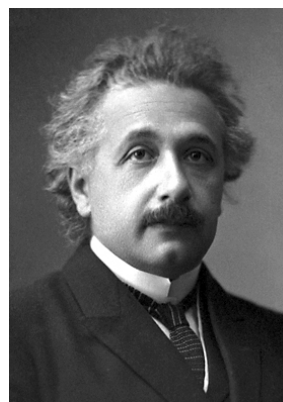
```
\begin{wrapfigure}{r}{0.3\columnwidth}
  \includegraphics[width=0.28\columnwidth]{Albert_Einstein}
\end{wrapfigure}
```

Materials & Requirements

1. When quoting PHYPHOX, do it in *small caps*
2. A second tool
3. A third tool. If needed, you can give more details such as the size, the average price, and any other characteristic of the tool that you believe could be important for the experiment to succeed.

Section 1 title

Here you are supposed to describe the activities to be done to perform this experiment. You may have more than one section, here. If you need to explain how a tool works, use a separate section to do it in general. For example, if you need the acoustic stopwatch in PHYPHOX, describe how

it works in a separate section whose title has been chosen appropriately (e.g. Using the acoustic stopwatch).

Section 2 title

Describe the execution of the experiment in one section, containing all the details needed to perform it, from building to analysis. Do not be too much specific. The description of the experiment must be as generic as possible in terms of tools, to be open for many different environments. See other experiments to learn how to write this section.

Section 3 title

If needed, you can add as many sections as you want. However, consider if they are really useful. Usually we have a section for explaining how tools work, a section describing the experiment to be performed and, at most, a section which asks questions to the student to learn more from the experiment.

Tips for formatting

The quality of the typesetting is a key for SMARTPHYSICSLAB. Please check that spacing and page lengths are ok.

When quoting measurements, write numbers within $\ldots$. Units are always written in roman fonts and must be attached to the number with an unbreakable short space. This can be accomplished as follows. To write, e.g. $3.2\,\mathrm{Nm}^{-1}$, use

```
$3.2\,\mathrm{}\mathrm{N}\mathrm{m}^{-1}$
```

An shorter form is allowed, useful when units do not involve math environment, as in 3.2 N/m, as follows:

```
$3.2$~{N}/m
```

For itemised or enumerated lists use, respectively, `compactitem` and `compactenum` environments.

General remarks

Always try to estimate the uncertainties of each measurement properly. Can you spot any source of systematic error? Can you estimate its size?

Before starting any series of measurements, make a few tests to train your ability to perform the required operations seamlessly. Write up the measurements neatly and in a complete way (indicating values, uncertainties and units). Use tables and graphs appropriately.

For the instructor
(exp. id unassigned)

Use this section to give as many details or suggestions to the instructor as you wish. In this section you can be rather specific and provide examples of measurements you have actually done.

You can add figures and plots, wither using the `\wrapfigure` environment, or putting the figure within the text (in this case always put it centred with respect to the page), as follows.
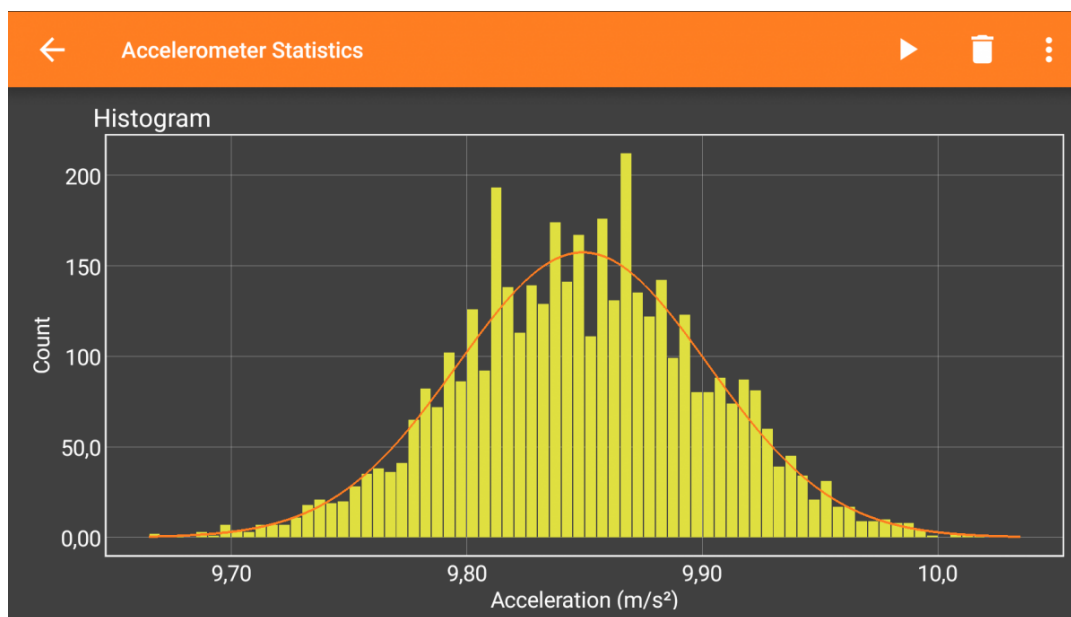
The above image has been done using the following code:

```
\begin{center}
\includegraphics[width=0.8\columnwidth]{phyphox-graph}
\end{center}
```

If you want to make a list of item use either `compactenum` or `compactitem`. At the end, as a separate paragraph, provide information about where and when the experiment has been tested, as follows.

This experiment has been tested successfully by high school students in Rome, during the 2020 lockdown period.

Objectives, Level of deployment, and Duration

1. Primary objective: Enjoyment and practice in empirical experiments.
2. Primary objective: Development of scientific investigating skills.
3. Suitable for: high school
4. Duration: less than one hour of data acquisition, + 2 hour of data plotting, + writing short report.

Further Info Online

Please leave feedback, suggestions, comments, and report on your use of this resource, on the channel that corresponds to this experiment on the Slack workspace "smartphysicslab.slack.com". Instructors should register on the platform using the form on `smartphysicslab.org` to obtain login invitation to the Slack workspace, and/or to request being added to the mailing list of smartphysicslab.