Introduction to the General Physics Laboratories

September 5, 2007

1 Course Goals

The goal of the IIT General Physics laboratories is for you to learn to be experimental scientists. For this reason, you will notice that the laboratory manuals are short and do not contain details of the experimental procedures. You will be asked to devise your own experimental procedures and make decisions as to how thoroughly to acquire data during the laboratory session. As the semester progresses, you will develop a good feeling as to how much data to take and how many trials to run for each set of conditions. Your report will suffer if you do not obtain sufficient data to convincingly report your experimental findings.

The Teaching Assistant is present as a resource, she will not tell you *what to do* but guide you to an understanding of the experiment so that you can make the decisions yourself.

The experiments have been designed to relate with principles you learn in the lecture portion of the course. **There is always a connection!**

3. no sandals, no open-toed shoes; and

$$z = f(w,x,y) \tag{4}$$

The full differential of z is given by:

$$dz = \frac{\partial f}{\partial w}dw + \frac{\partial f}{\partial x}dx + \frac{\partial f}{\partial y}dy \tag{5}$$

This expression can be rewritten in terms of the absolute errors to show the relationship between the error in z and the errors in x and y, with the condition that errors in the independent variable

5.3 Product of Variables: $z = xy$

The partial derivatives are given by

$$\left|\frac{\partial f}{\partial x}\right|$$

8 Appendix: The Method of Quadratures