

The importance of figures

"Graphic excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest place" - Edward R. Tufte -

"Figures play a significant role in the expression of scientific ideas" - APS Style Guide -

Think carefully before choosing the figures you use for your presentations and papers

Choosing the right figure is one of the most important and challenging things you'll need to do for talks and papers...time and space will be short, so you'll need to choose wisely:

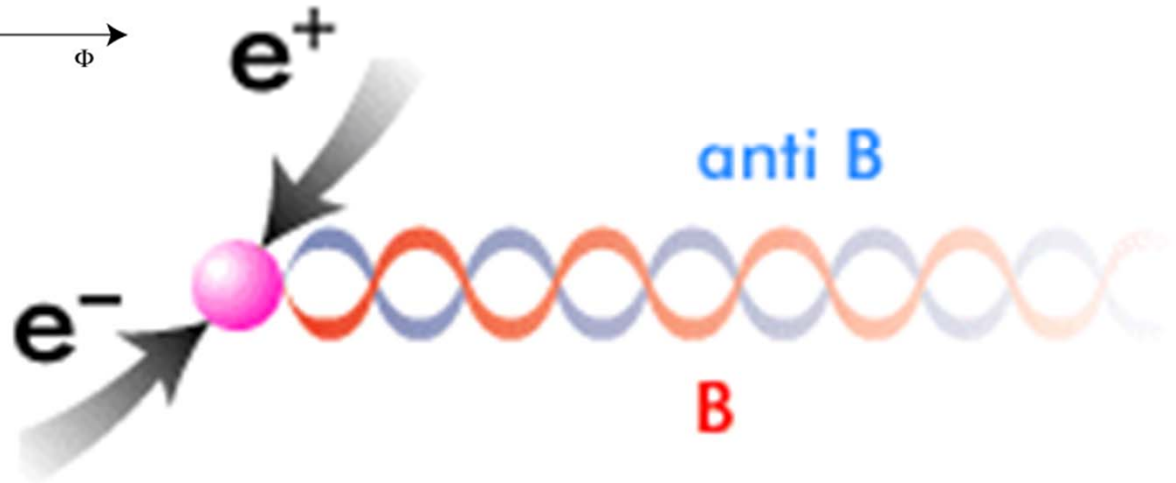
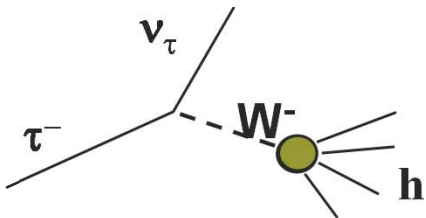
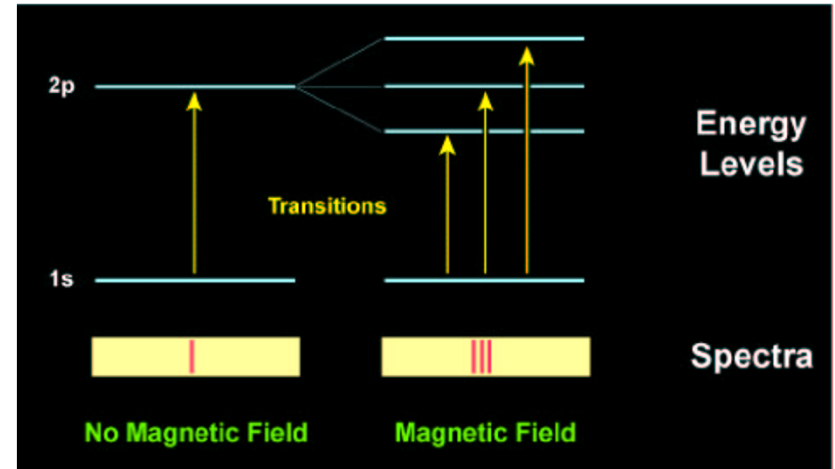
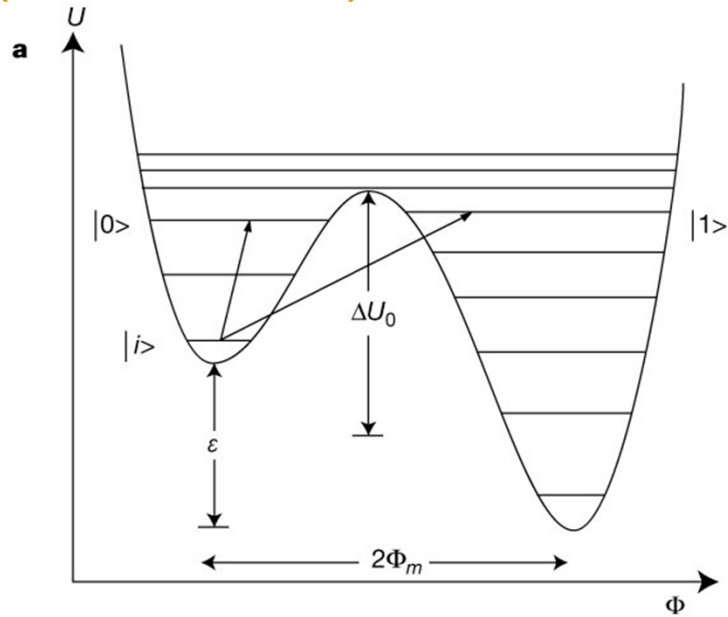
- (1) Start by highlighting the most important concepts/ideas in each section of the paper or presentation
- (2) Choose figures that help you convey to the reader those key concepts and ideas: decide whether you want to show data, illustrate a concept, show equipment, etc.
- (3) Make sure the figures you use are tailored to your audience! (e.g., is the audience for your paper/presentation a group of physics PhDs, physics grad and undergrad students, or the general public)

Celia's advice for evaluating your figures

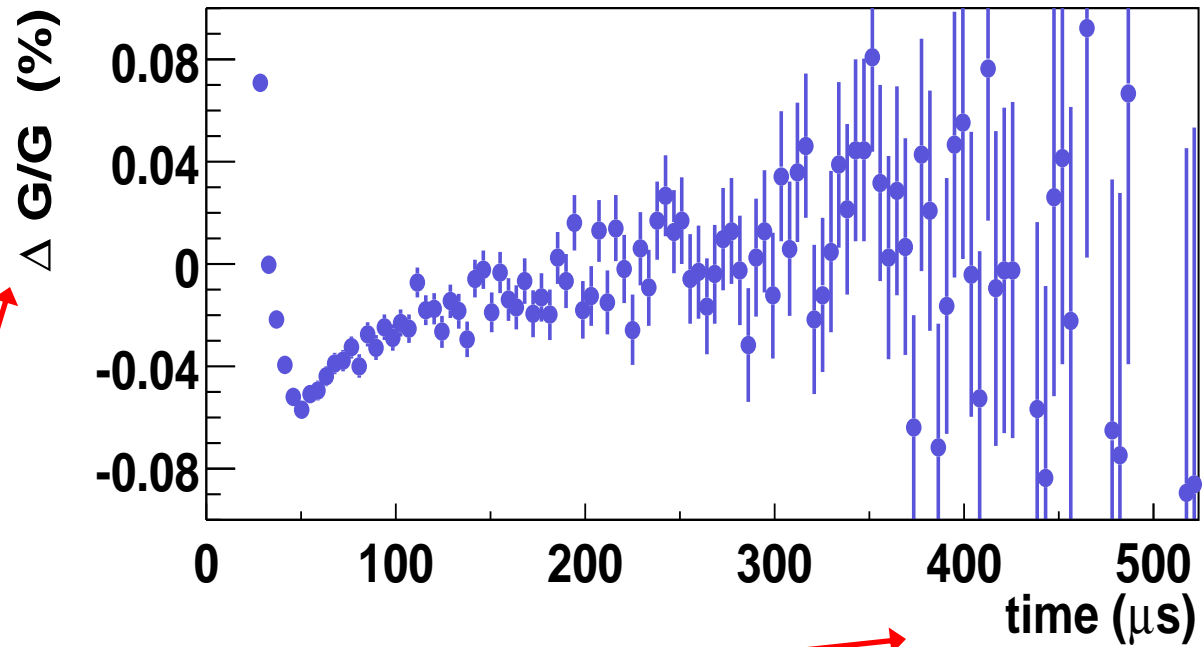
- It grabs the viewer's attention in <2 s
- The overall "message" is understood in <15 s
- The caption points out important features
- The general message is clear to a non-specialist
- Is logically organized
- It conveys something the viewer wants to see or needs to know; no "eye candy"
- It "Stands alone," i.e., is understandable without reading the text

Give yourself 1 pt for each "yes"; if <5 pts, don't use the figure

Figures that show physics processes



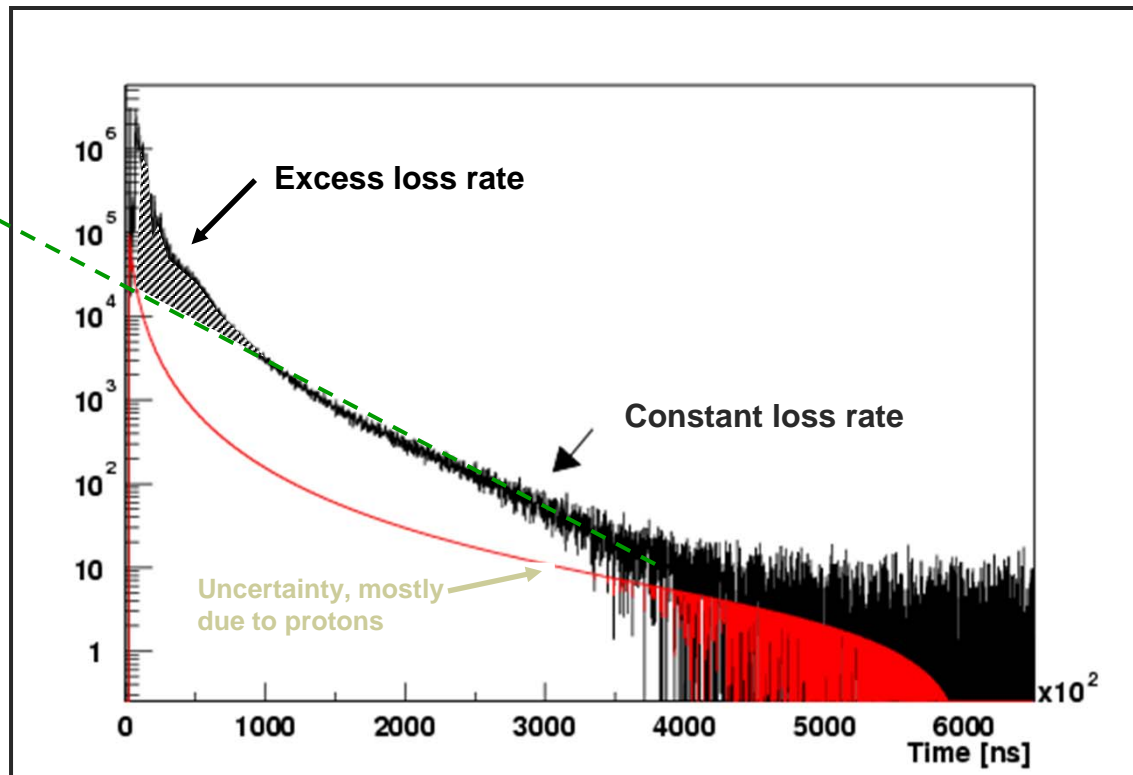
Figures that display data



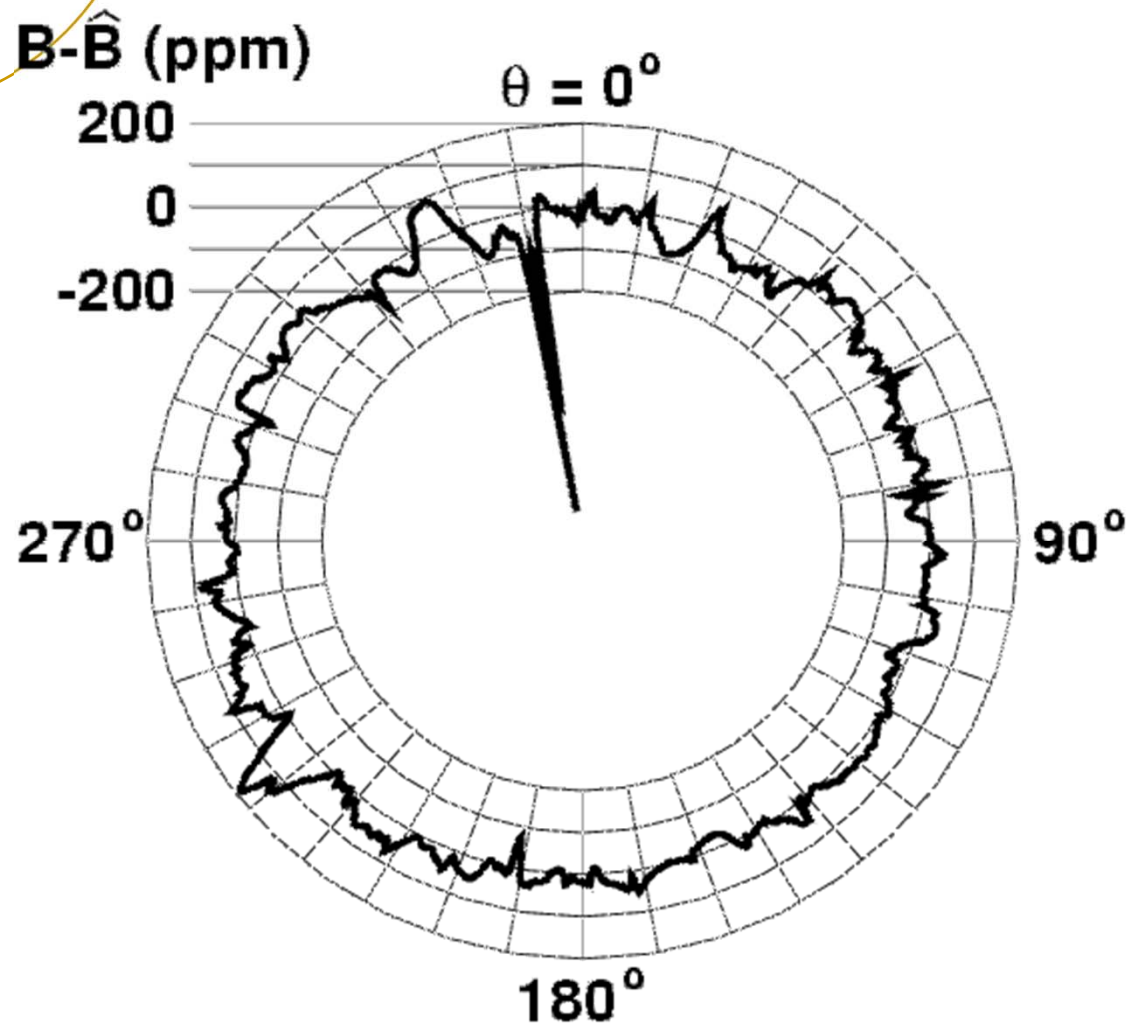
Labels and Units

Figures that display data

muon decay



Figures that display data



Illustrations are useful to show how things work

One advantage of drawings is control of detail

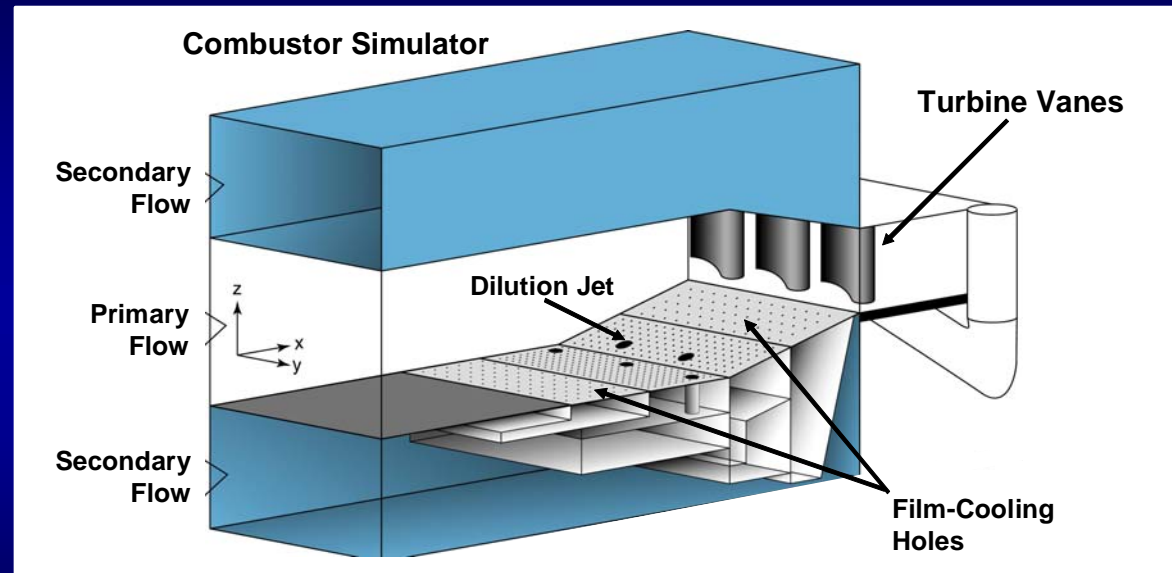
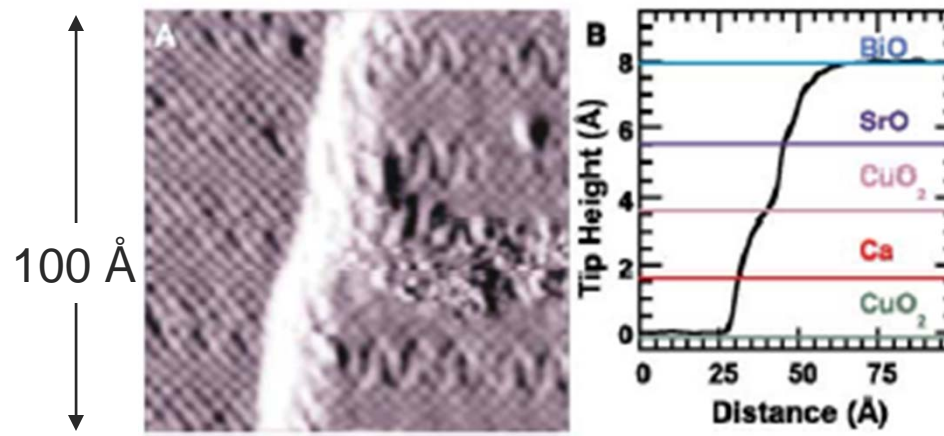
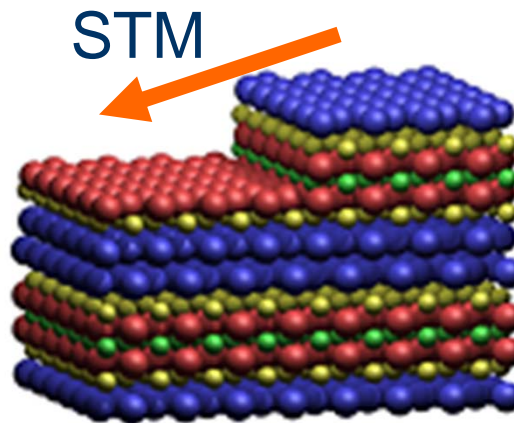


Figure 5. Wind tunnel experiment at Virginia Tech for evaluating film-cooling designs for the blades of gas turbine engines [Thole and others, 2000].

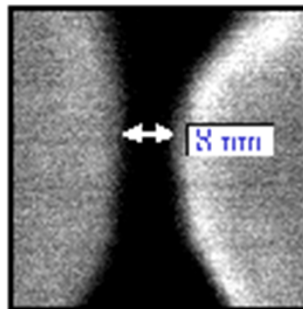
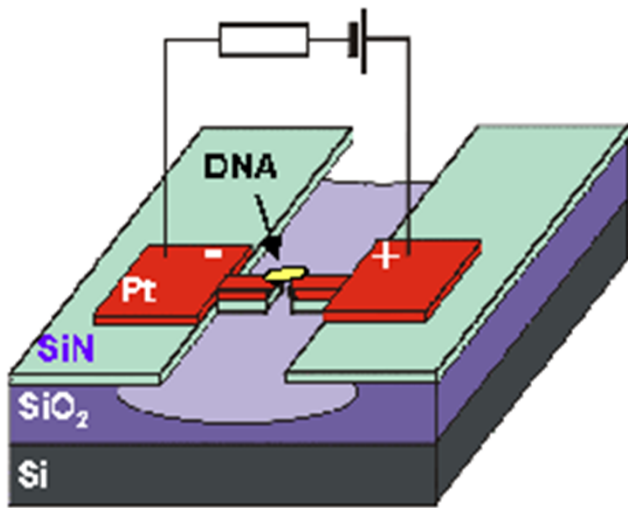
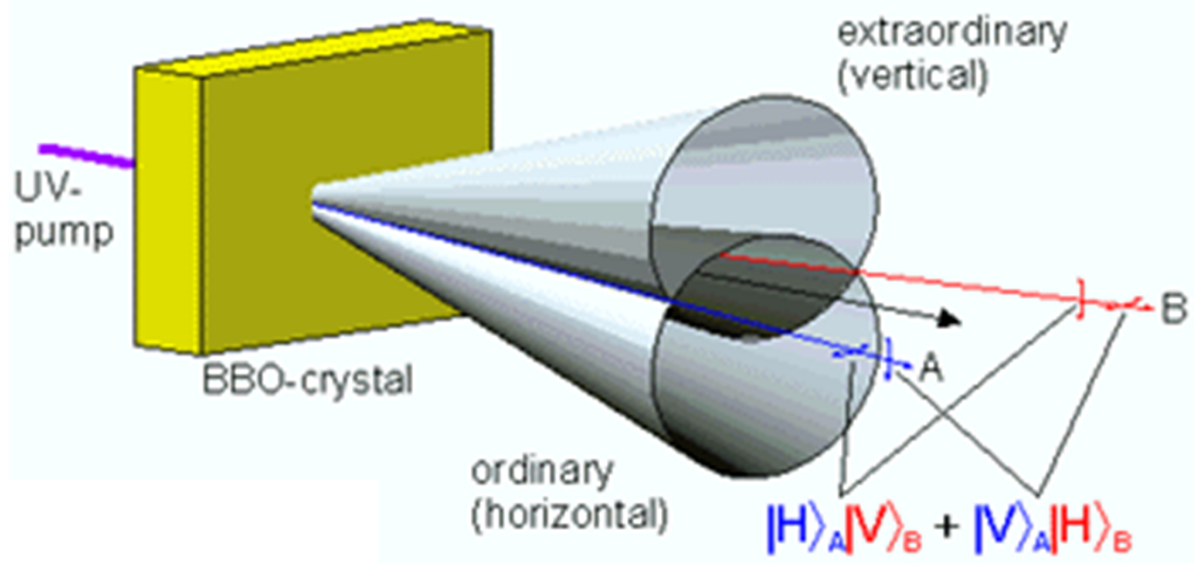


Source: The Craft of Scientific Presentations, Michael Alley
and <http://www.writing.eng.vt.edu/handbook/visuals.html>

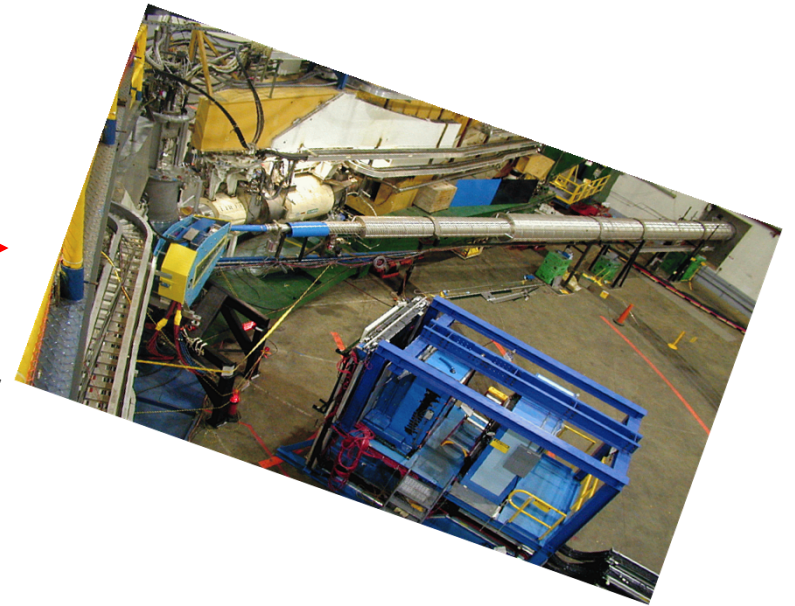
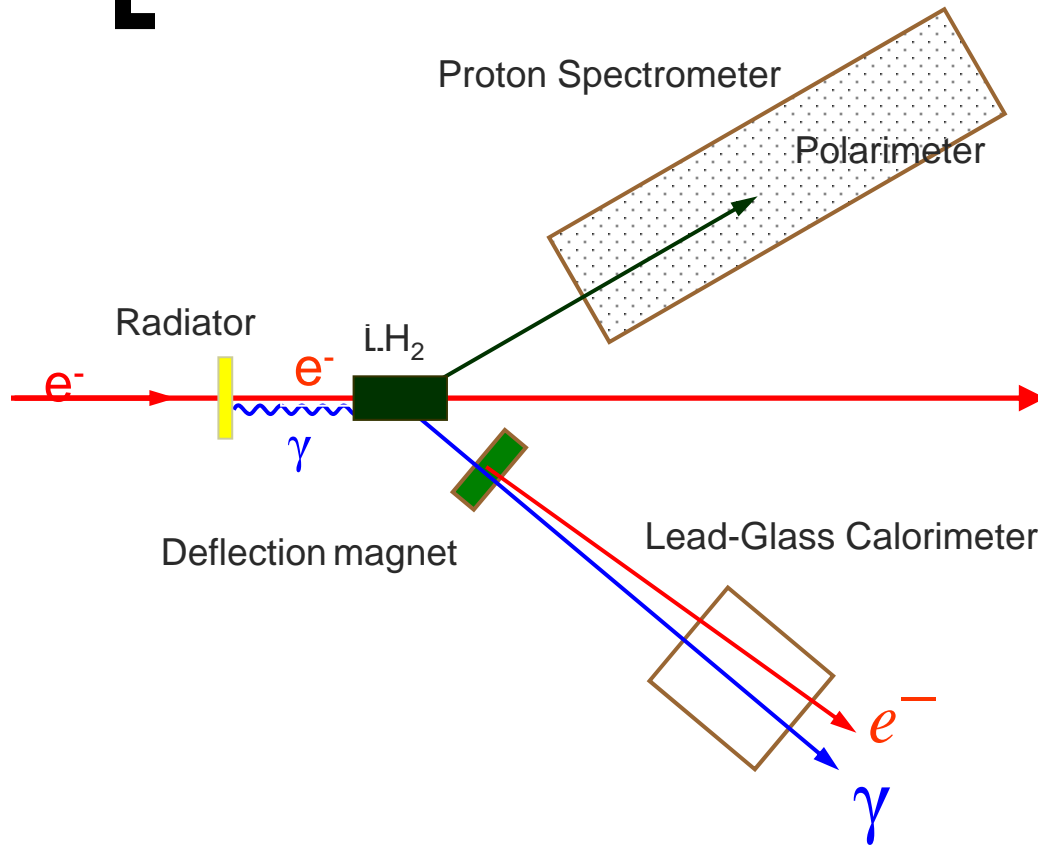
Figure combinations (data + illustration) can be very effective



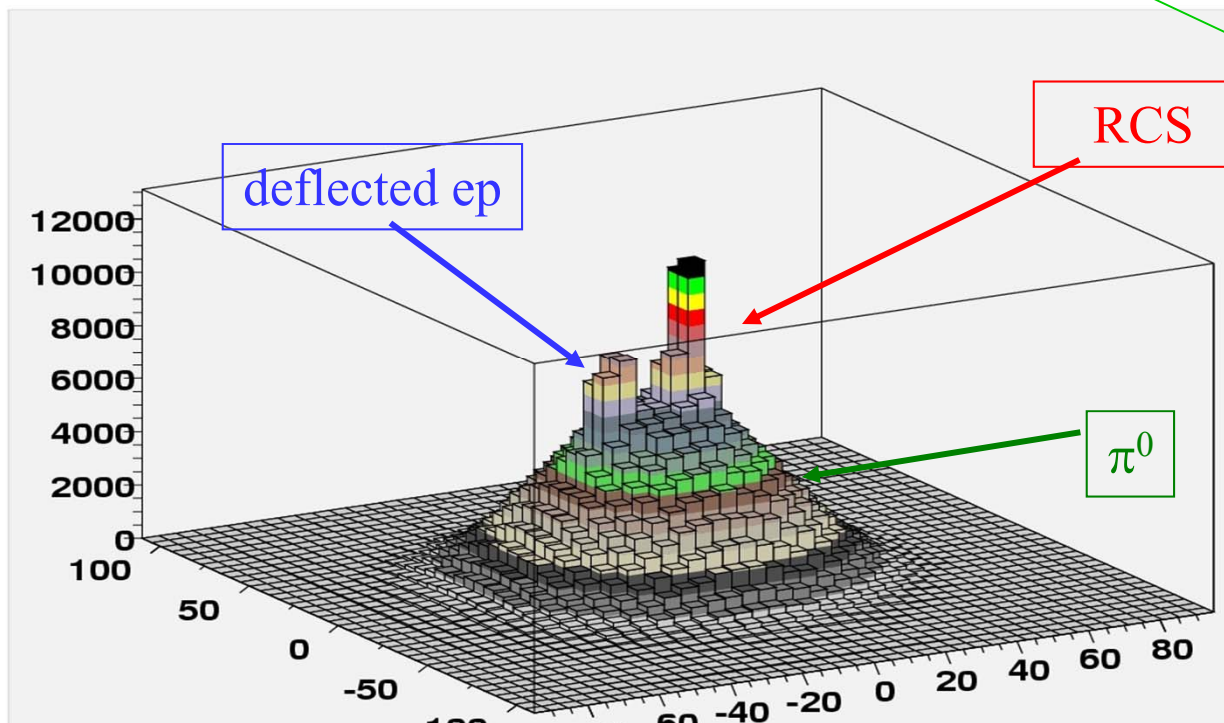
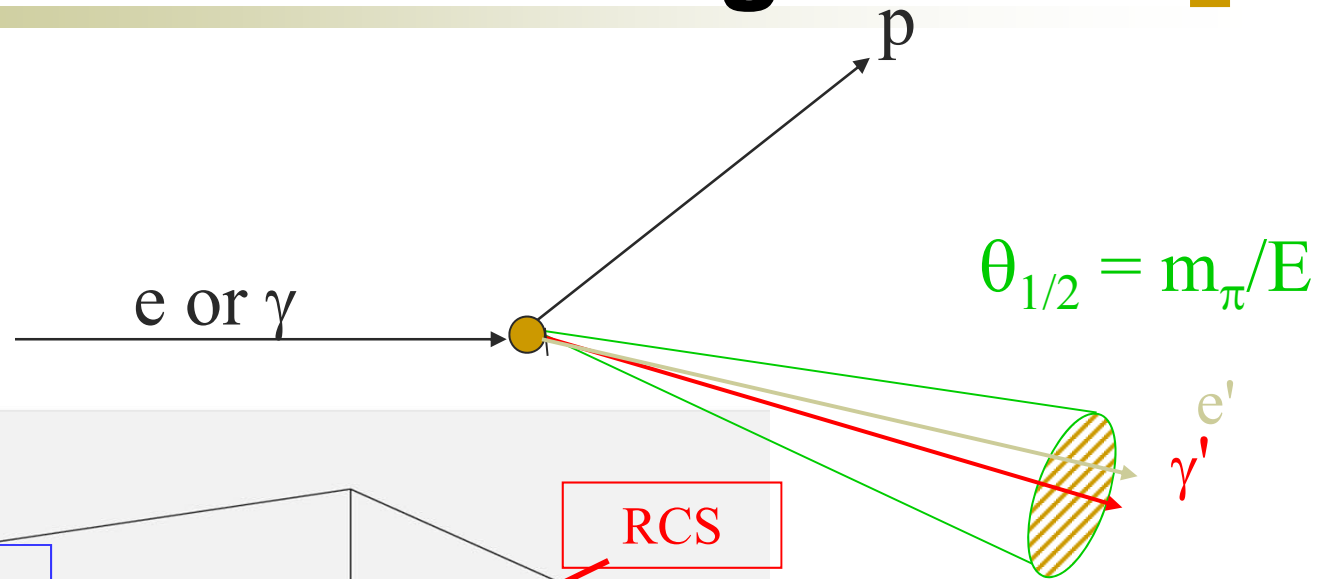
Figures that show how something works



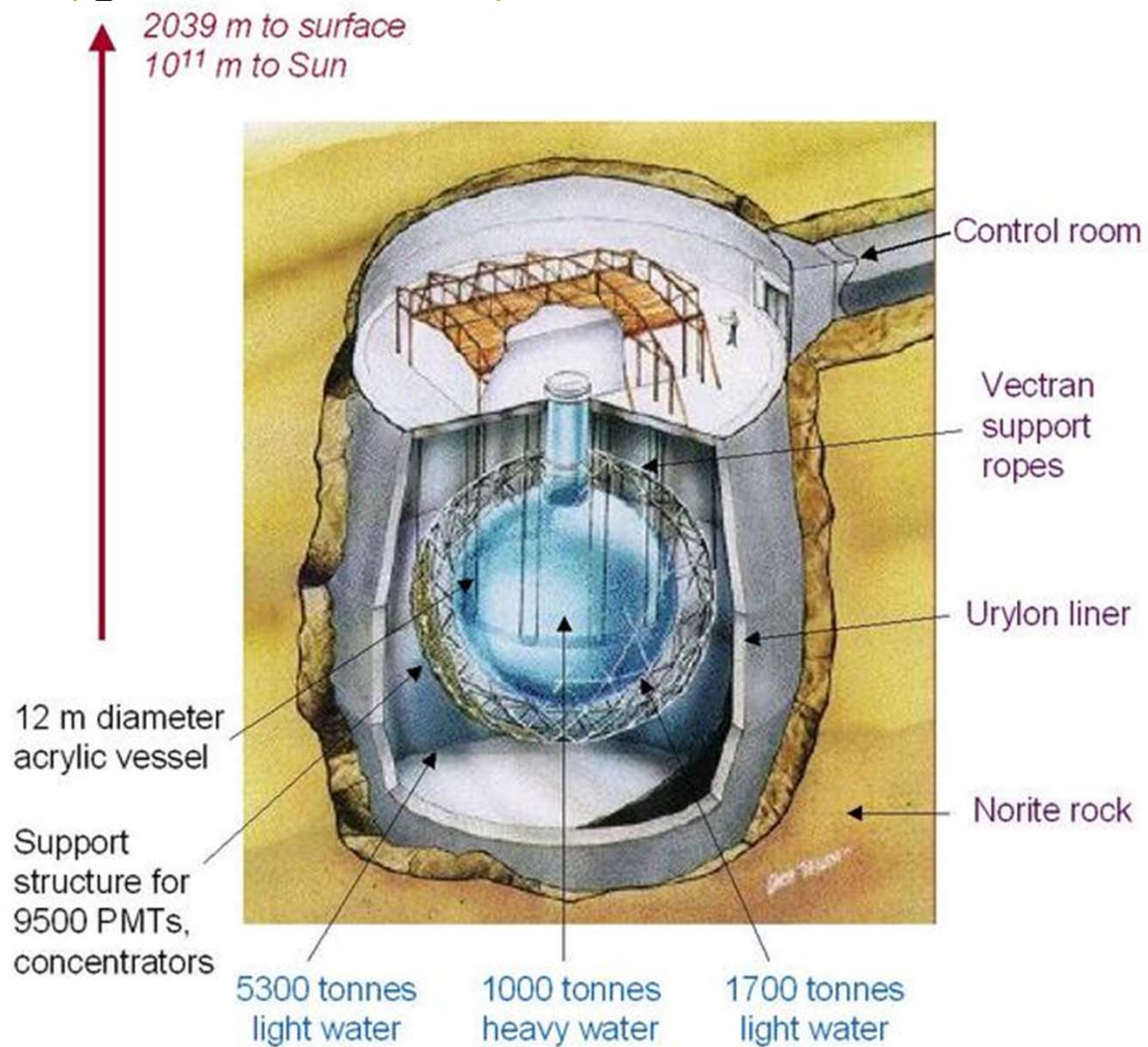
Combination figures that show how something works



Combination figures that show how something works

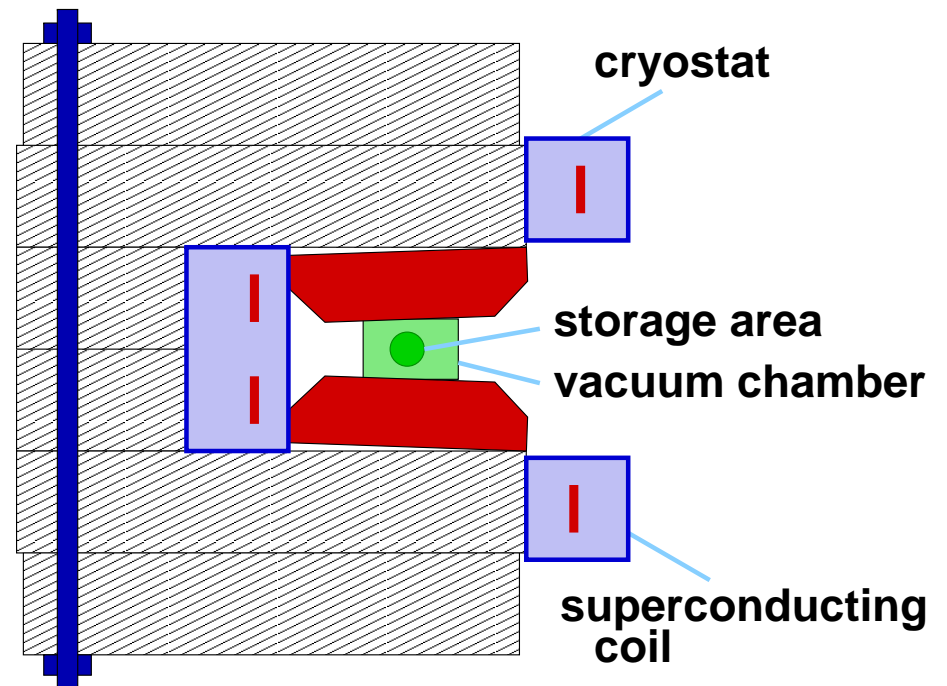
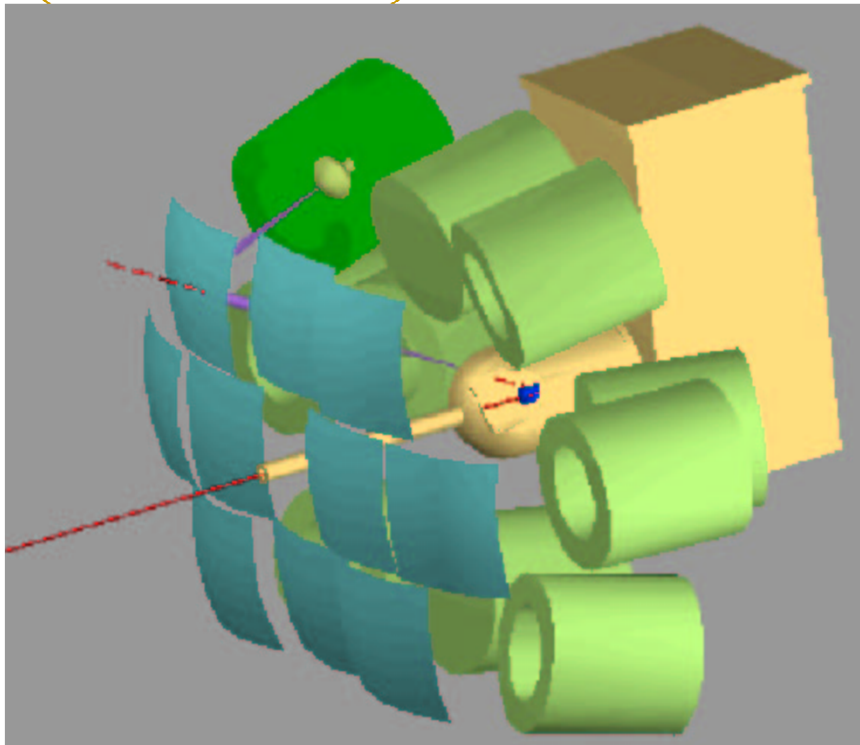


Figures that show scale

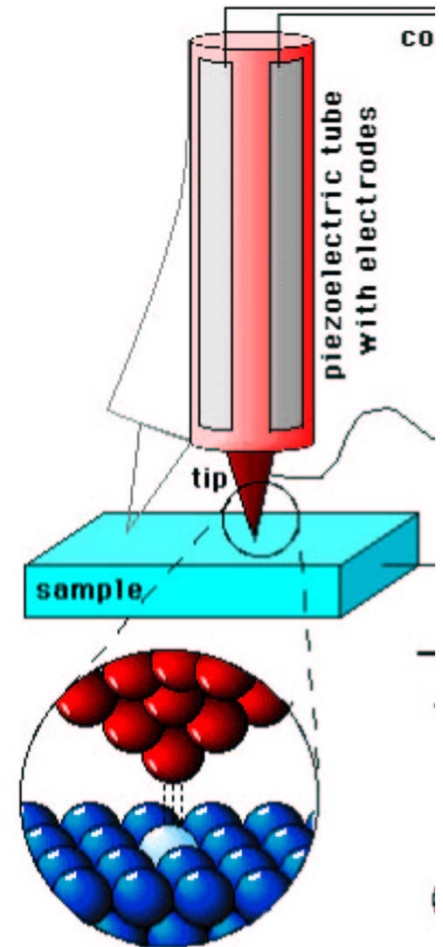
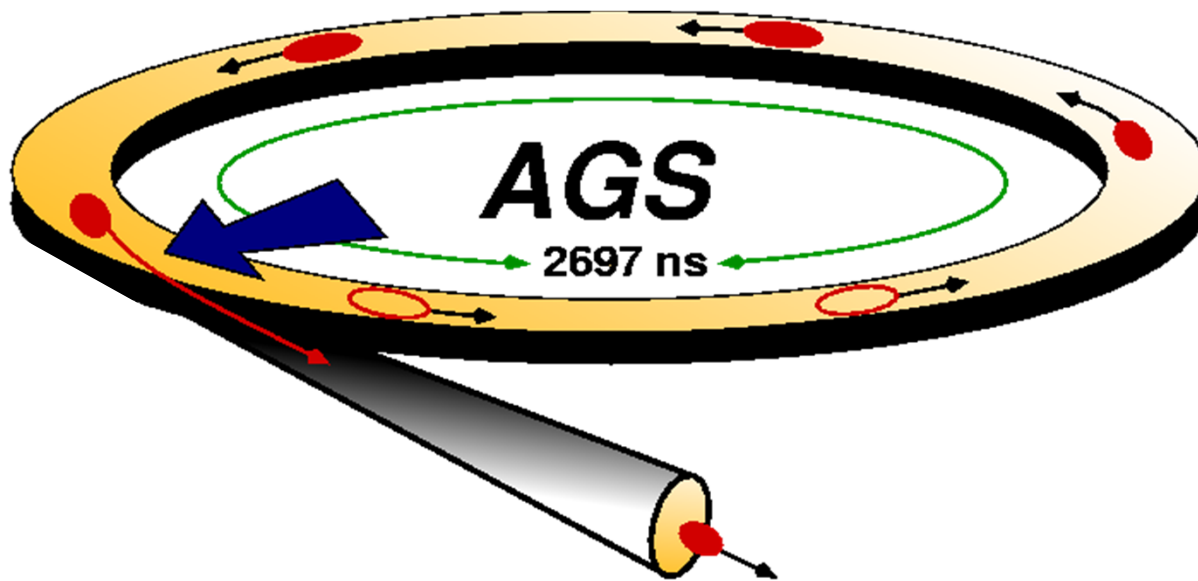


CERN - LHC

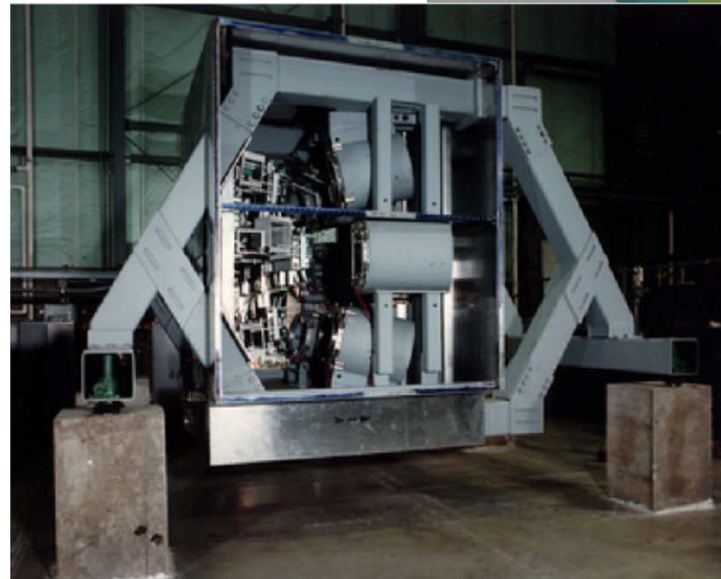
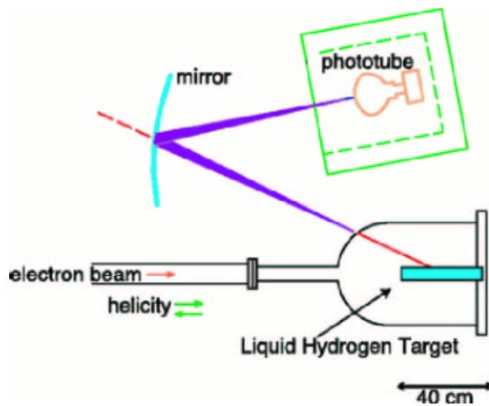
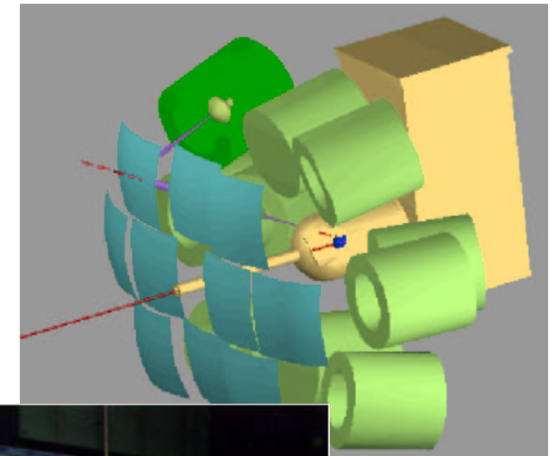
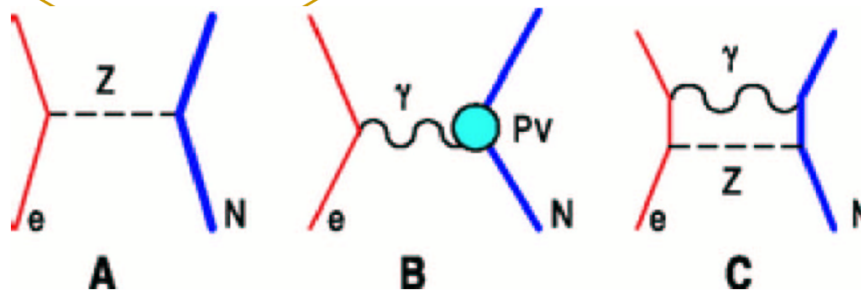
Figures that show equipment



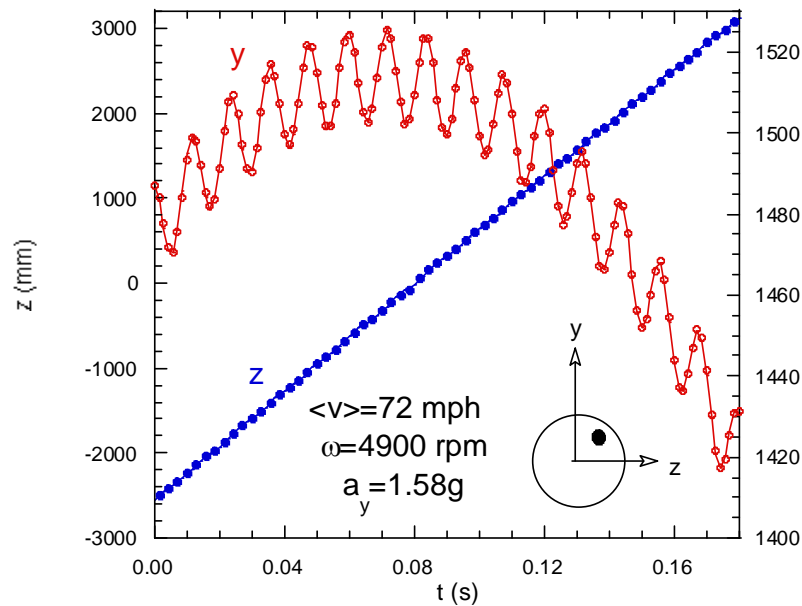
Figures that “peer inside”



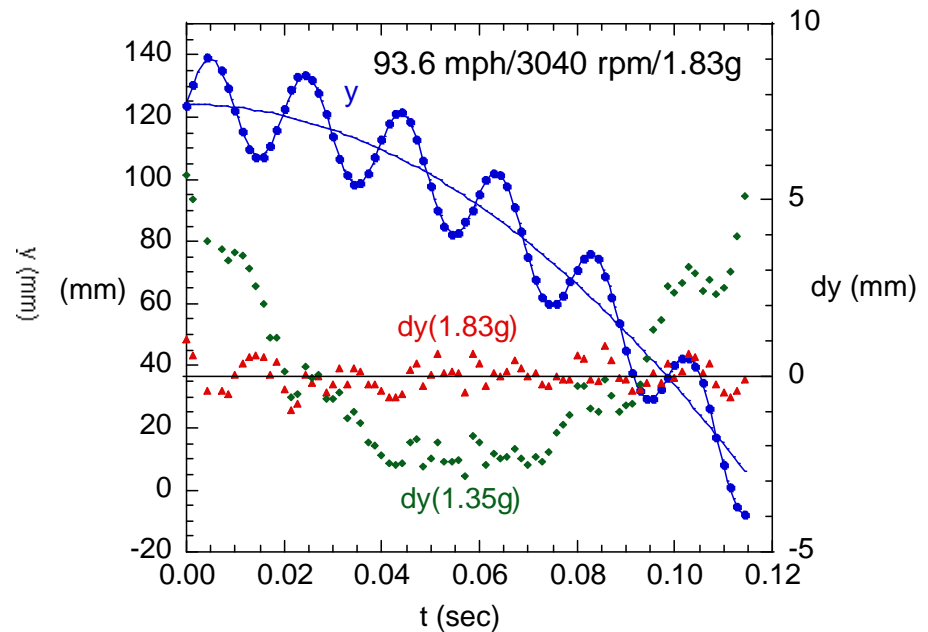
Same physics, different figures: The SAMPLE Expt.



Different figures for different purposes



Less Detail: appropriate for colloquium-type talk



More Detail: appropriate for more specialized audience

Some final tips

- Use figures to add interest to your papers & talks
- Make them clear, simple and memorable
- Remove the words you don't need
- Label all your data plots !!

