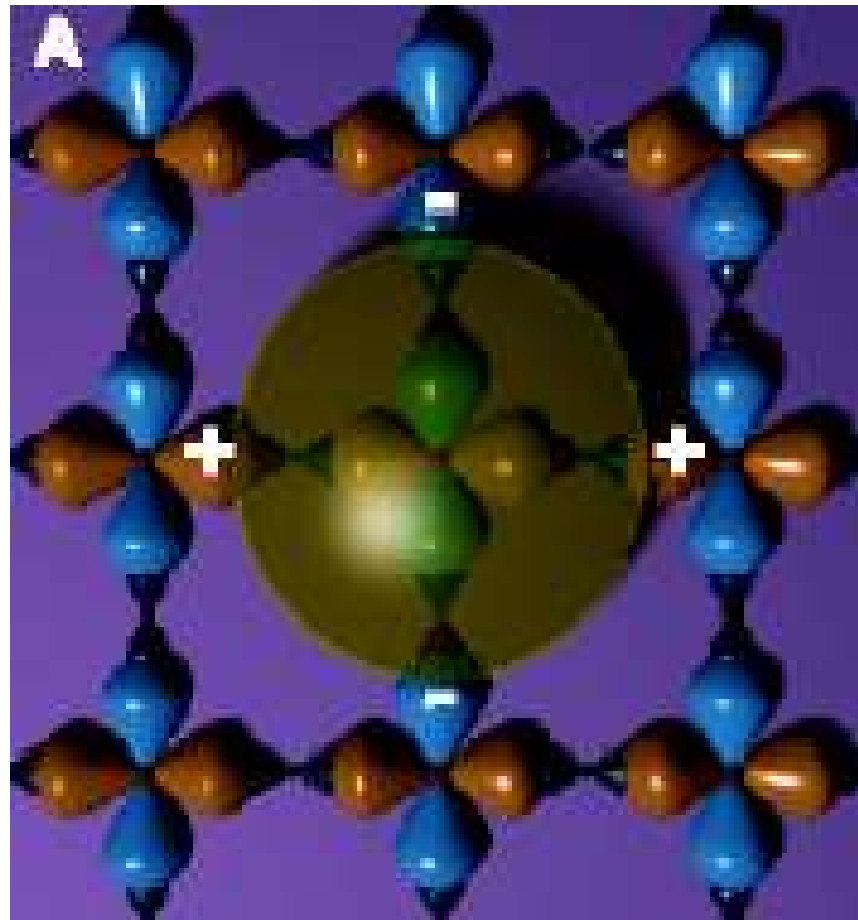


Figures for Scientific Documents and Presentations

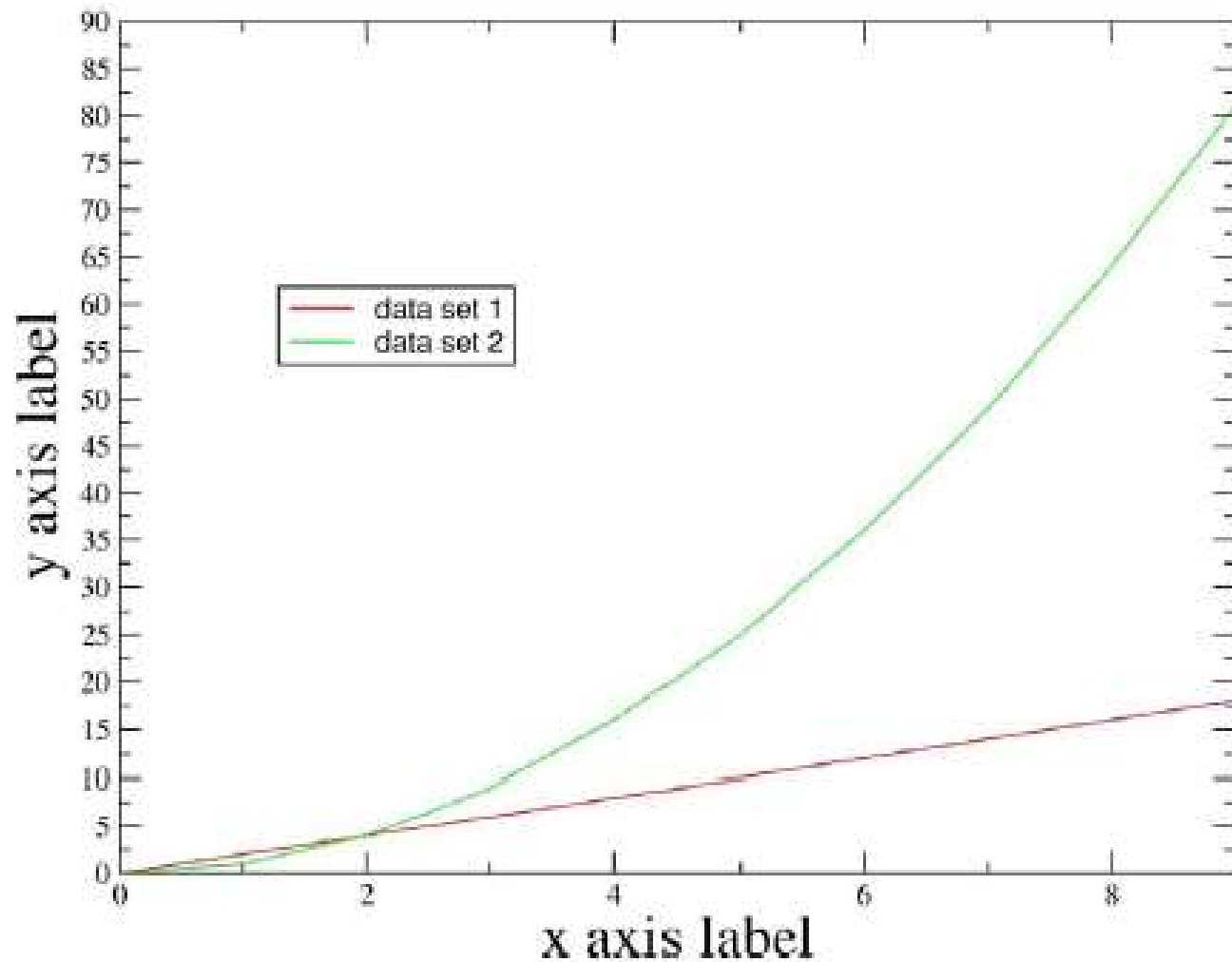


Orbitals in the CuO_2 Plane
Courtesy A. Yazdani

Figures Are the Centerpieces of Your Paper!

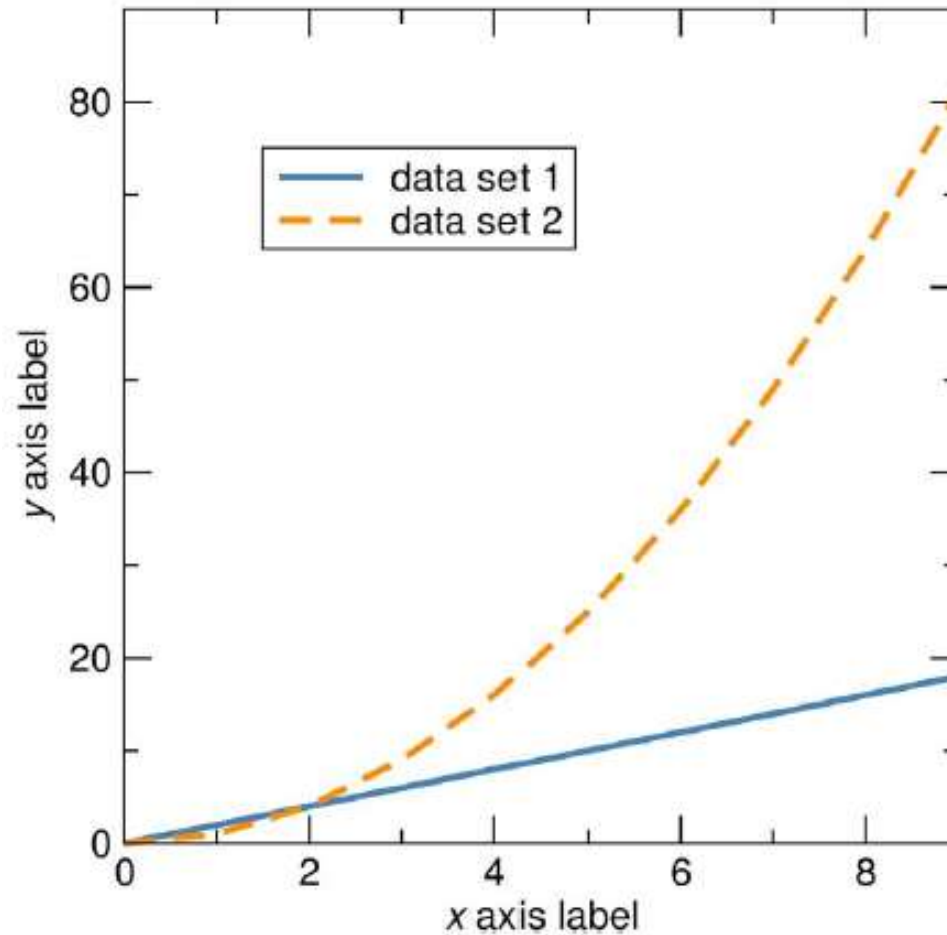
- (1) Your main ideas and conclusions are conveyed and supported by the figures ⇒ So identify the key ideas you want to communicate to the reader first, then decide on the figures that best convey that idea
- (2) Use the figures to tell the “story” of your research
- (3) Before writing, decide what figures will best help you convey to the reader those key concepts and ideas: decide whether you want to show data, illustrate a concept, show equipment, etc.
- (4) In a letter-style paper, you will only have 3 or 4 figures to make your case...you must choose wisely!

Let's start by looking at a "bad" plot



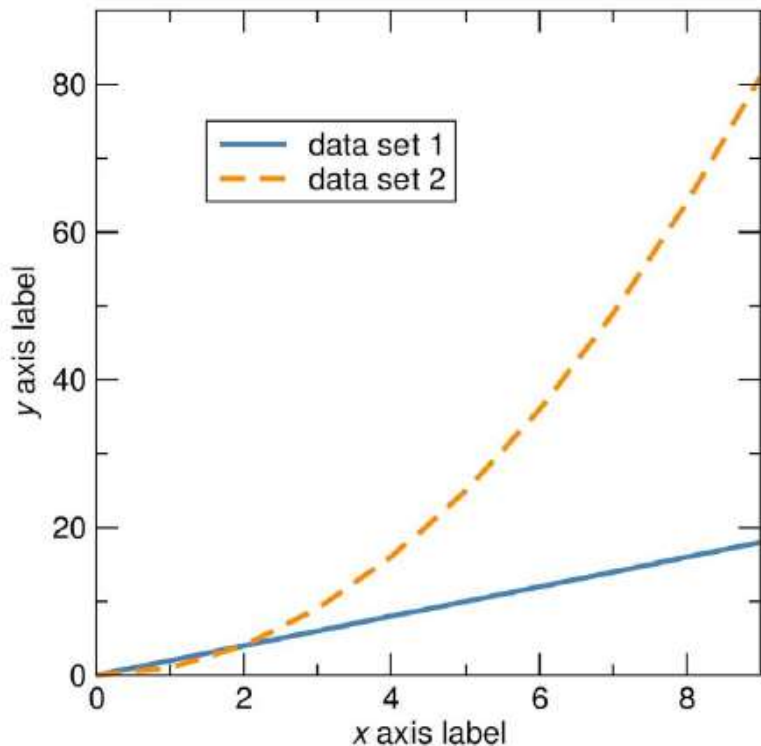
What are some of the problems with this plot?

Here's a much better plot



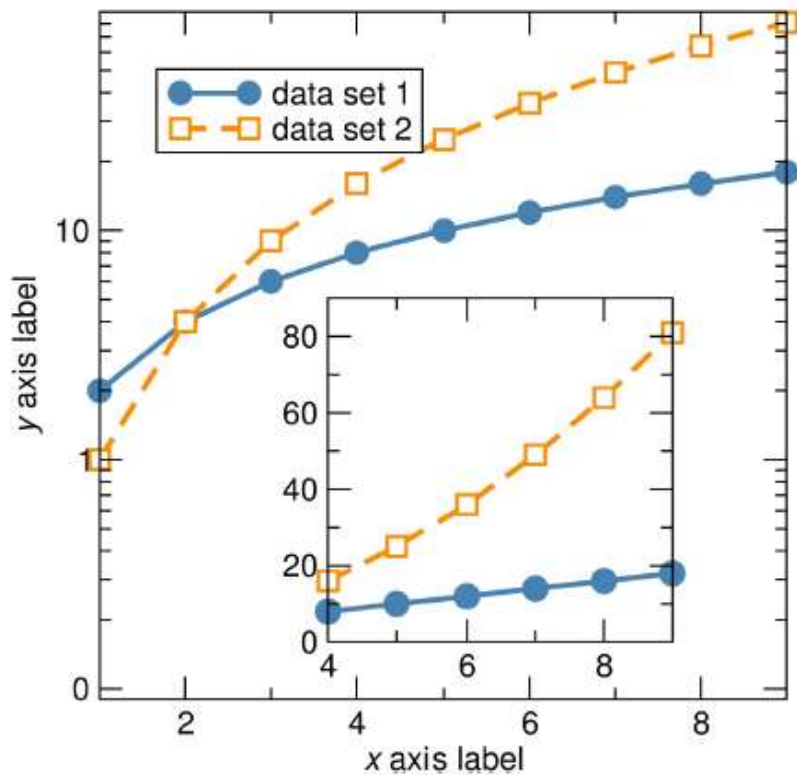
What's better about this plot?

Some General Tips



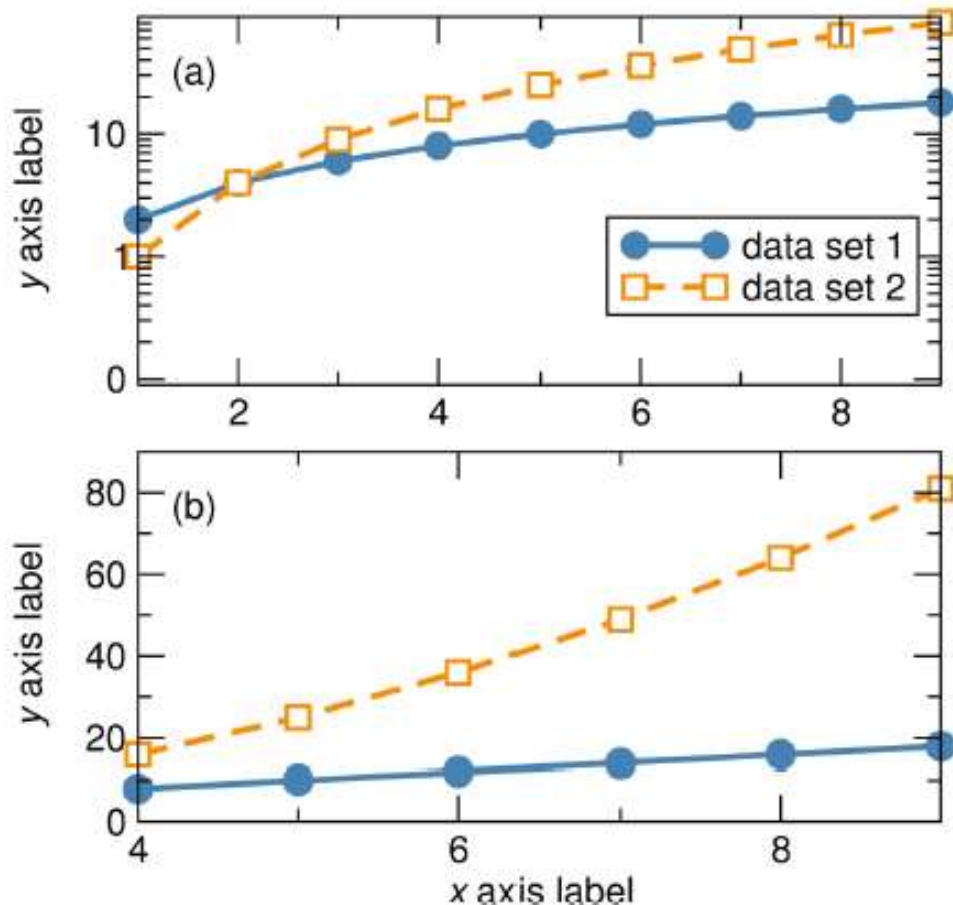
- (1) Sans-serif labels are easier to read than serif fonts, especially when figure is reduced
- (2) Squarish plots are more esthetically pleasing than rectangular plots, and they scale better when reduced
- (3) Squarish plots fit better in two-column paper format
- (4) Use appropriate number of ticks and labels. Make sure ticks and labels are sufficiently large, particularly after reduction!
- (5) Use data curves that are sufficiently thick
- (6) Use appropriate colors, and “redundant” coding for curves for black-and-white printing

A good plot with an inset



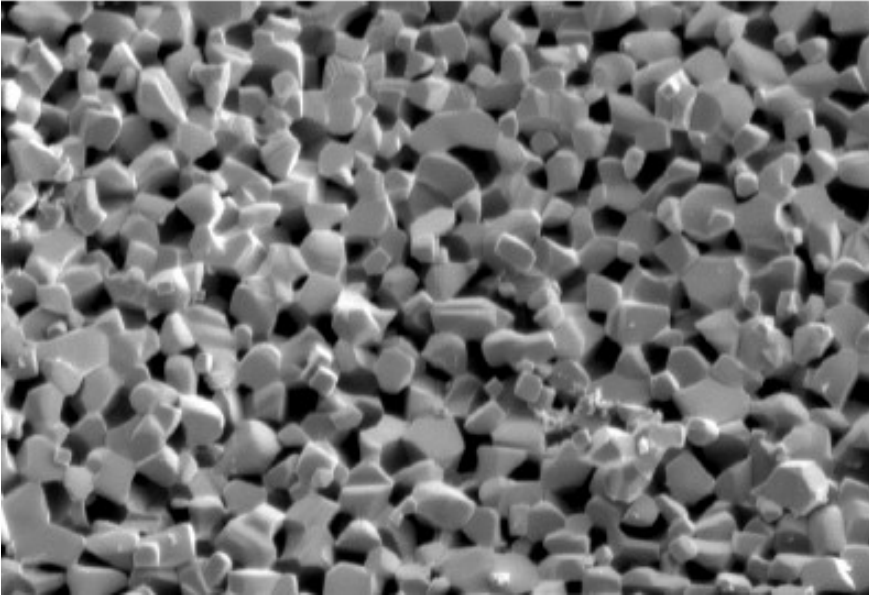
- (1) When using insets, make the labels and symbols as large as possible
- (2) Avoid cluttering your plot with unnecessary detail...you want the reader to focus on the main results

Another way to plot multiple sets of data



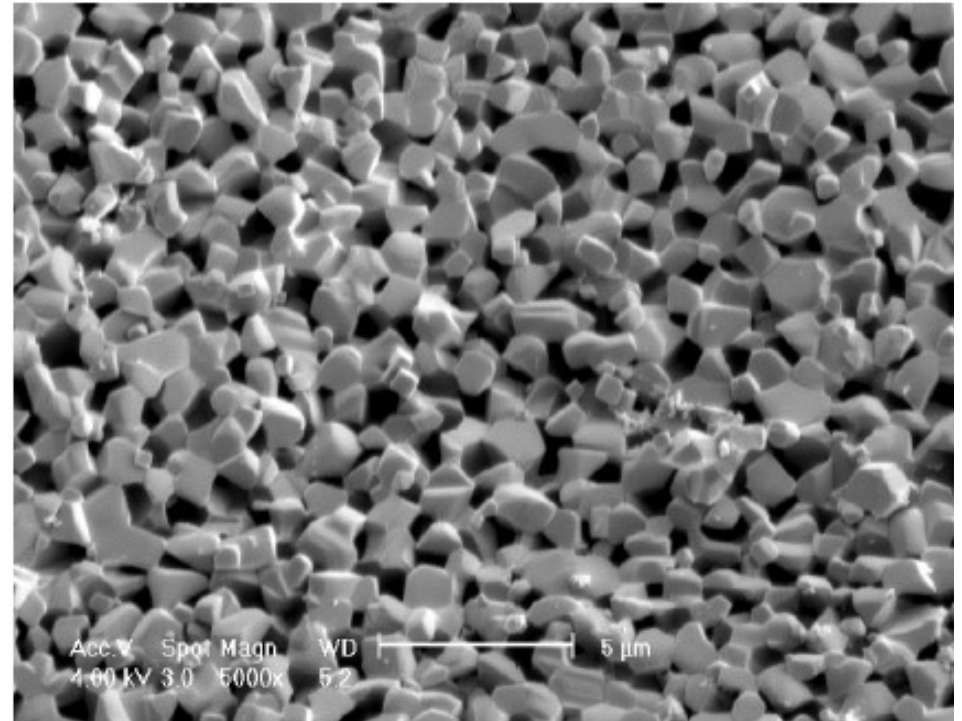
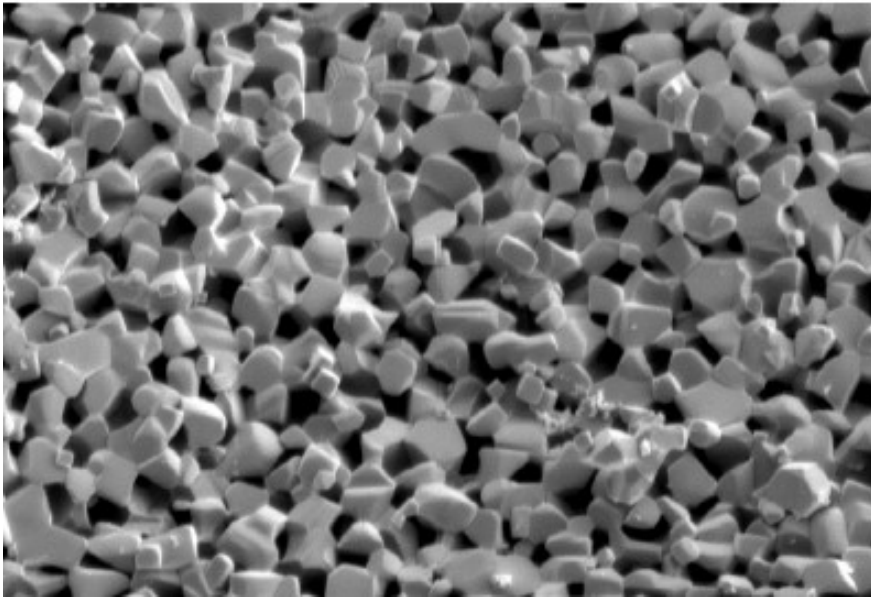
- (1) You can also use panels, rather than insets, to show multiple data sets
- (2) Pay attention to esthetic details! Align labels, vertically and horizontally!
- (3) Make sure all labels, including those in insets, are large enough to be read after reduction
- (4) Make sure the aspect ratio of your plots make best use of the 2-column format of most journals

When showing images...



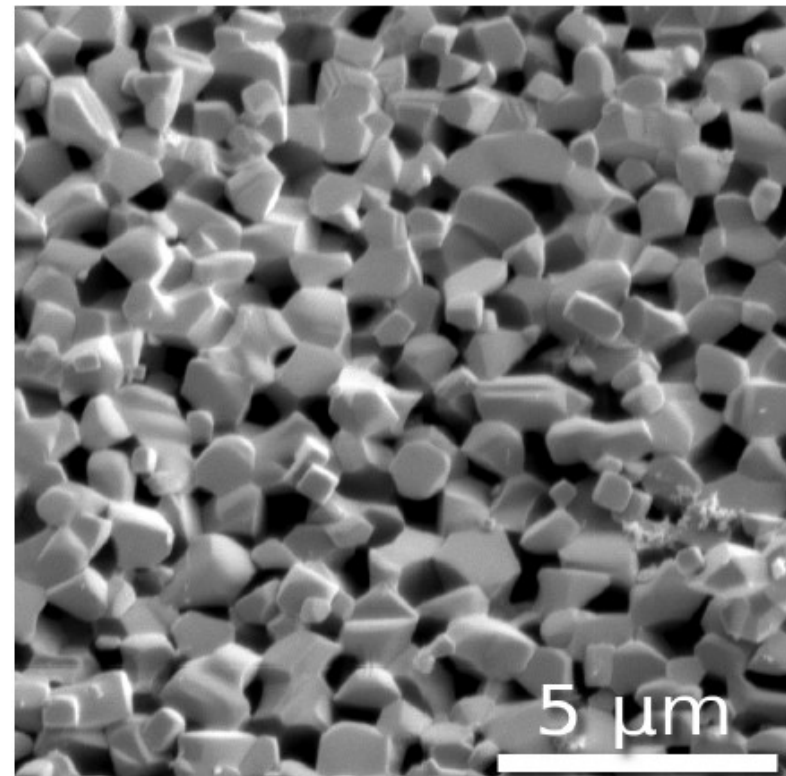
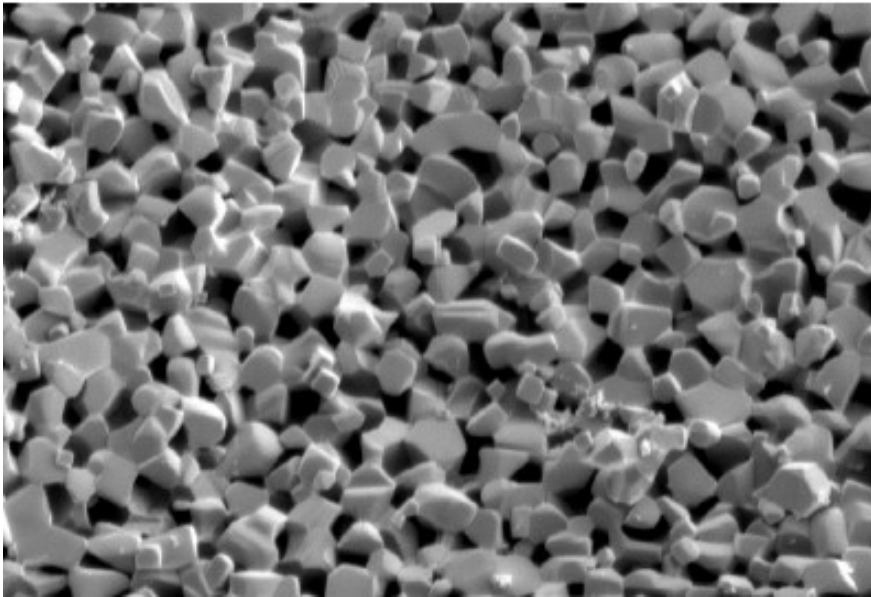
What's wrong with this image?

When showing images...



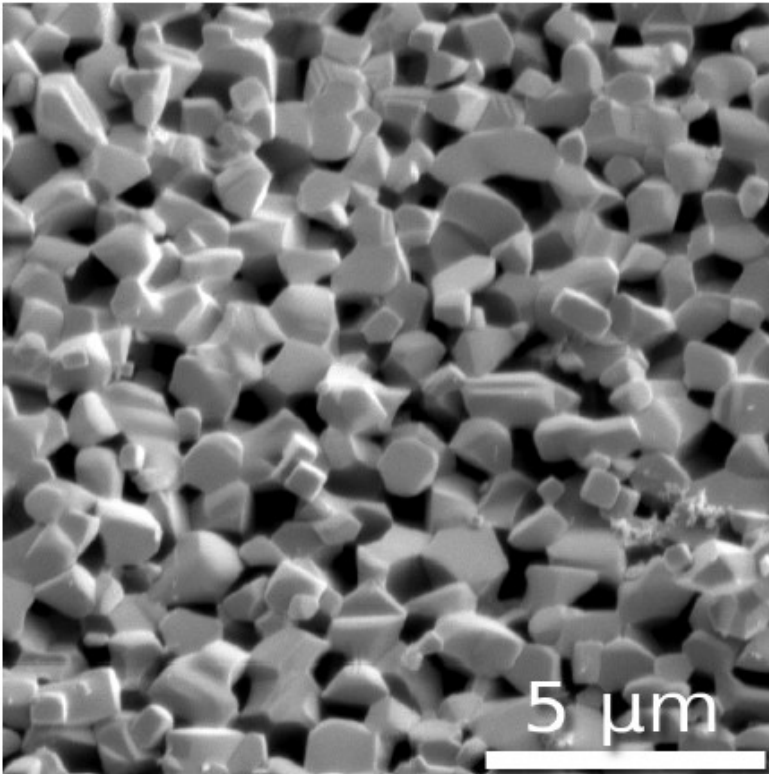
This is a little better...

When showing images...



This is much better...

When showing images...

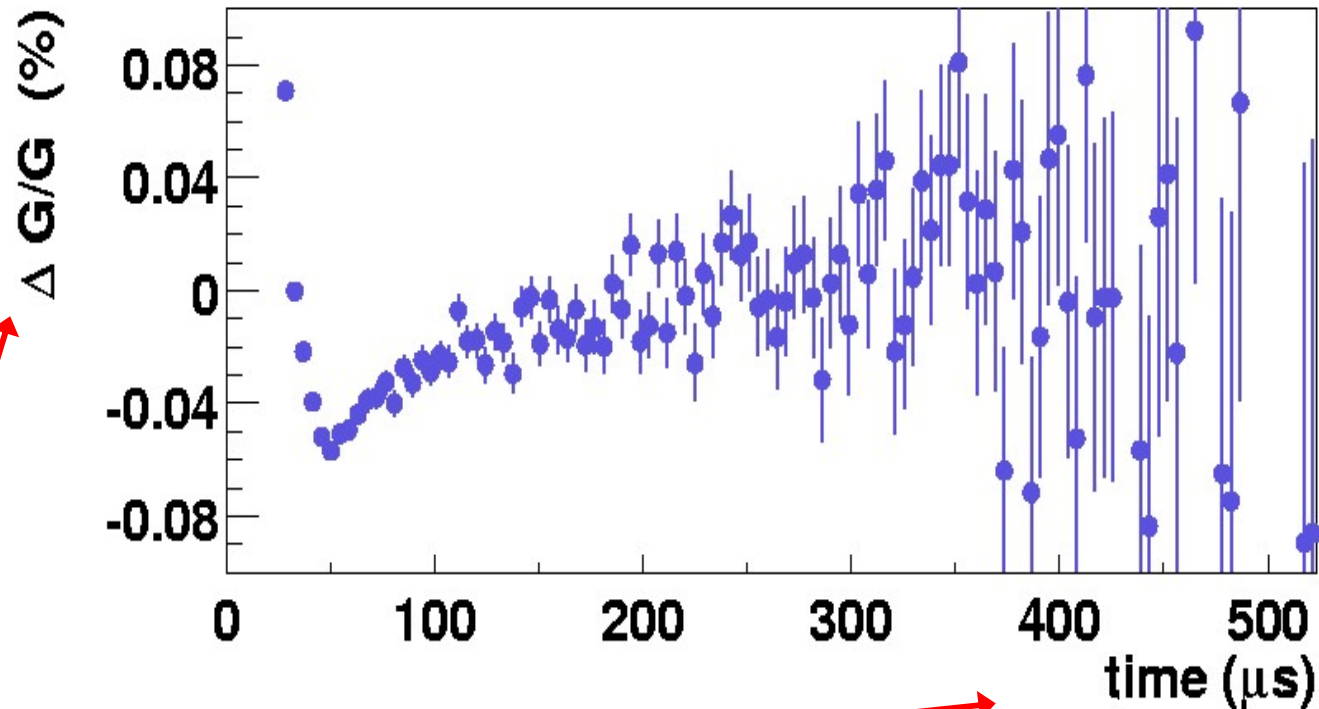


- (1) Make sure to include legible scale bars
- (2) Make sure the resolution of the image is high enough
- (3) Make sure the background provides good contrast



Different types of figures to consider for telling your “story”

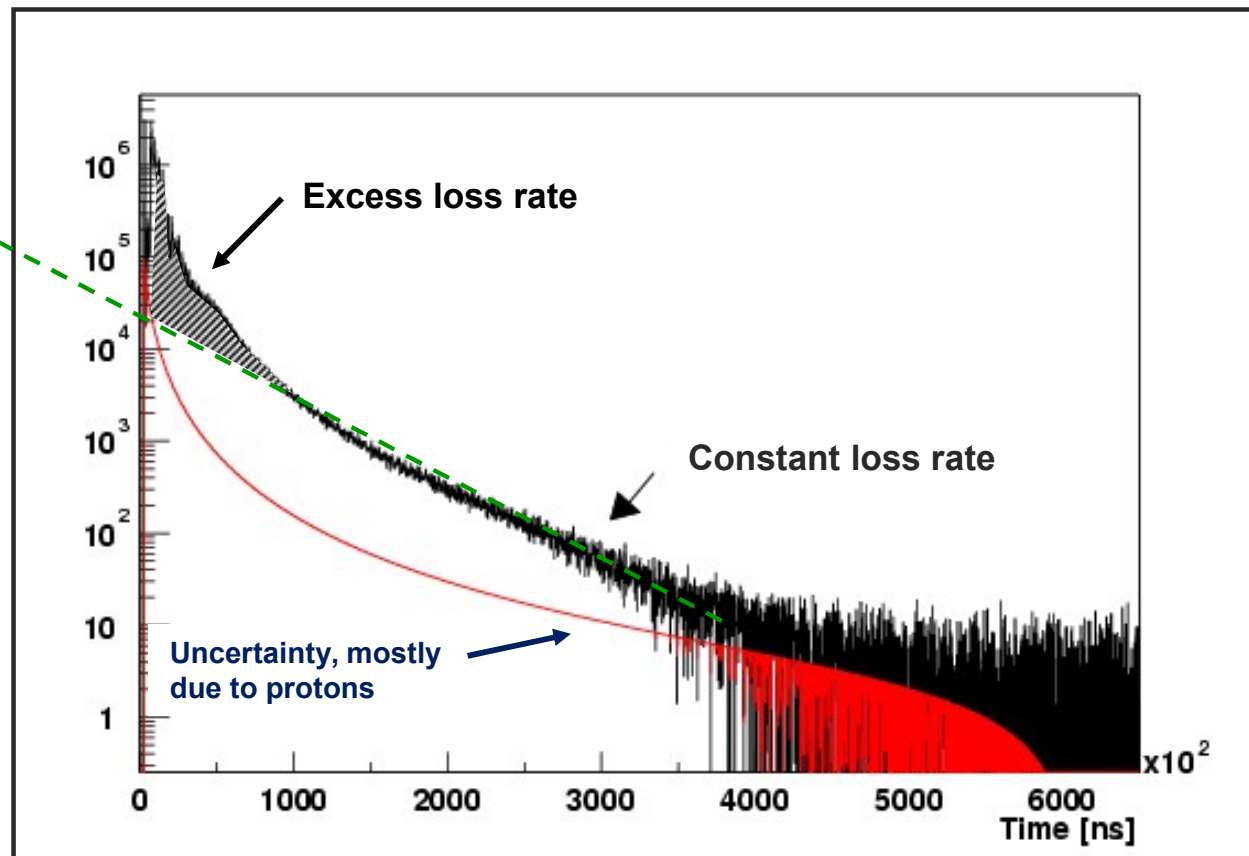
Figures that display data



**Show Clear
Labels and Units**

Figures that display data

muon decay



Make good use of labels, arrows, etc., to point out key features in your data

Figures that show a process

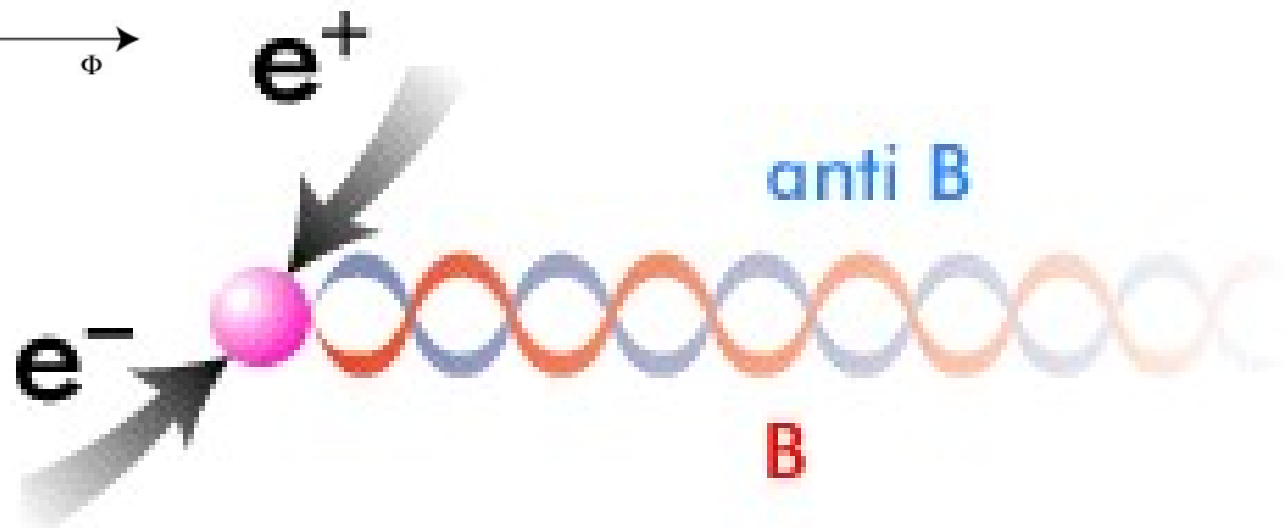
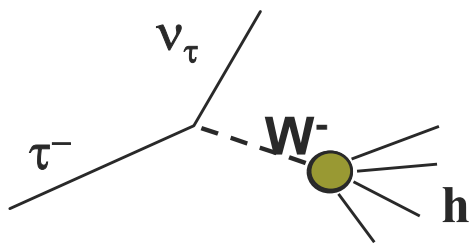
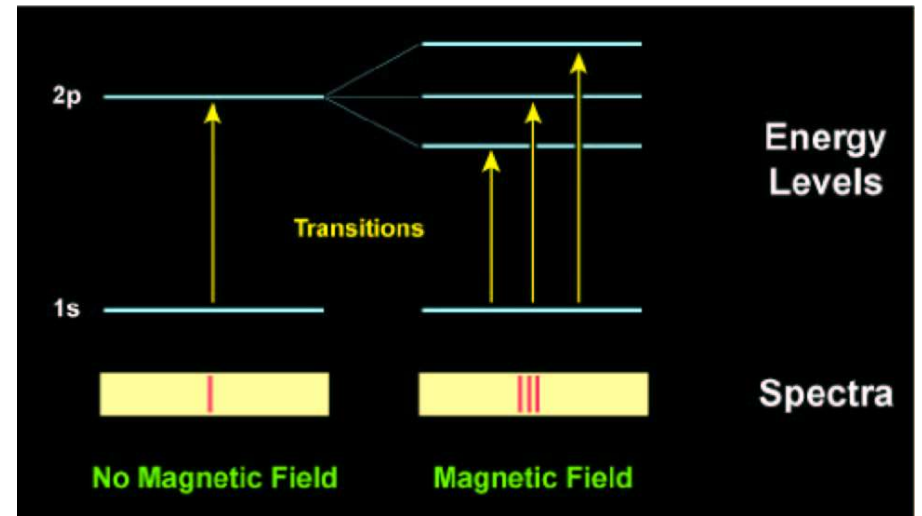
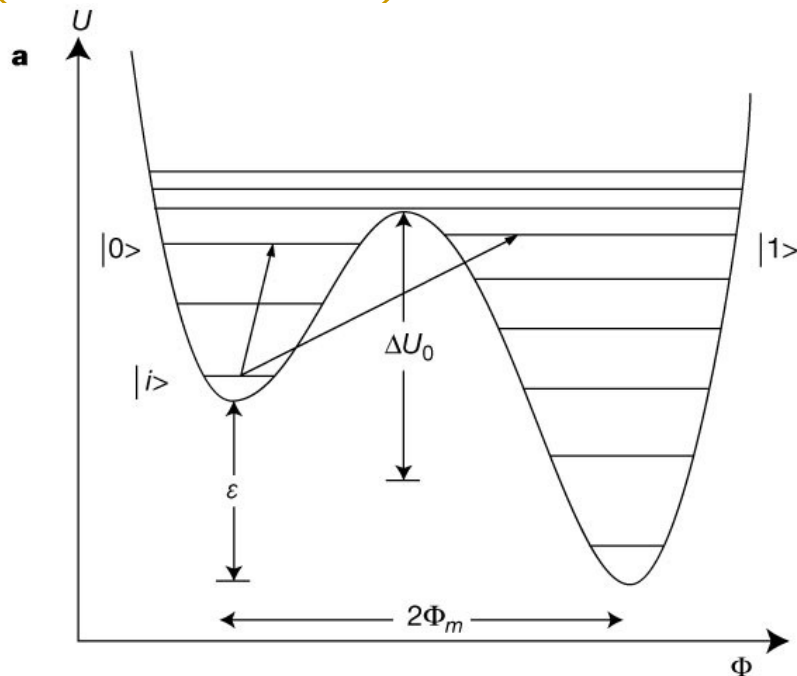
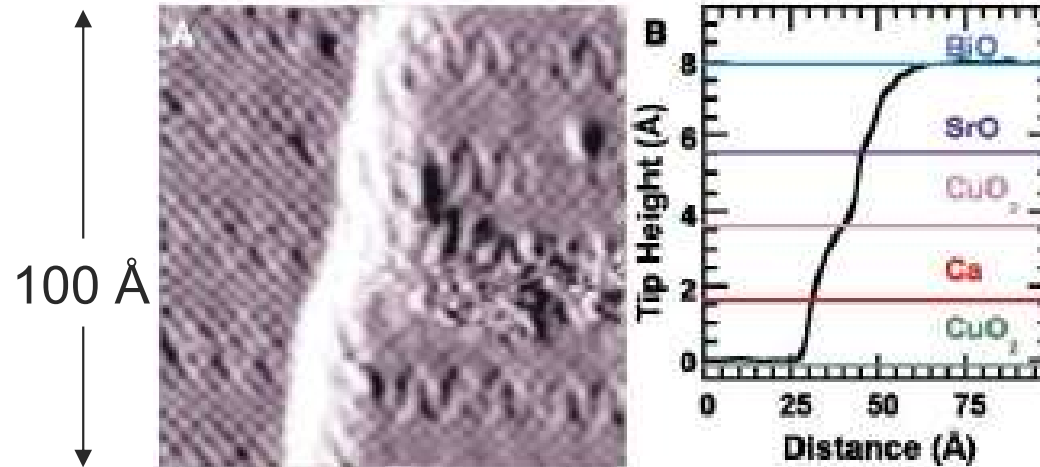
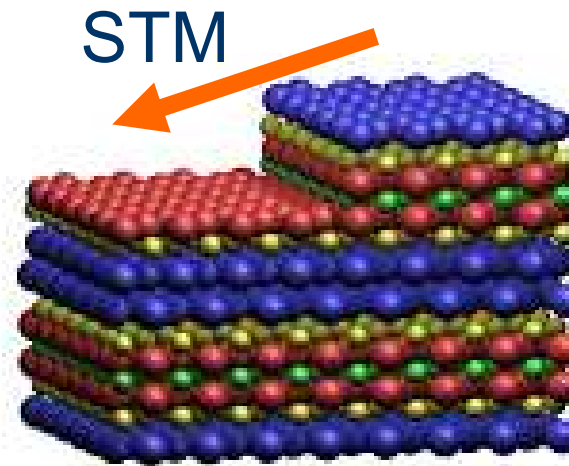
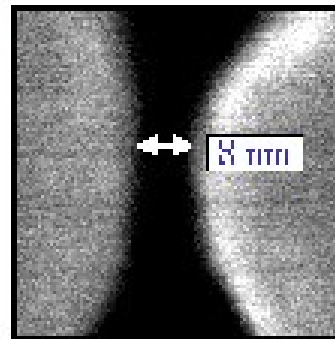
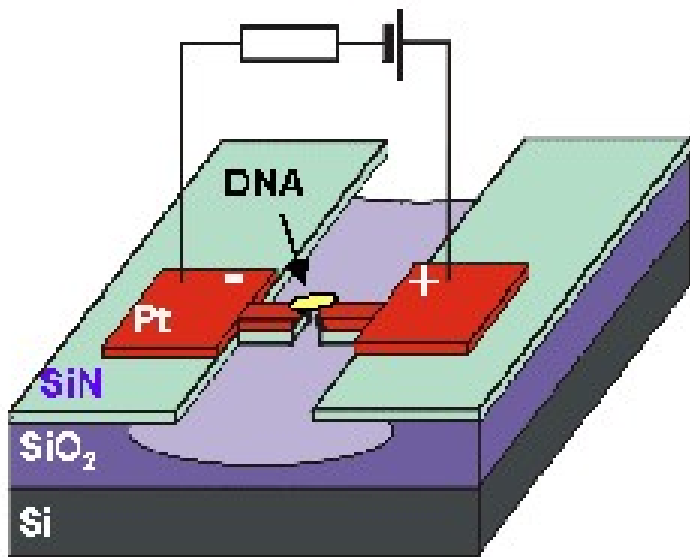
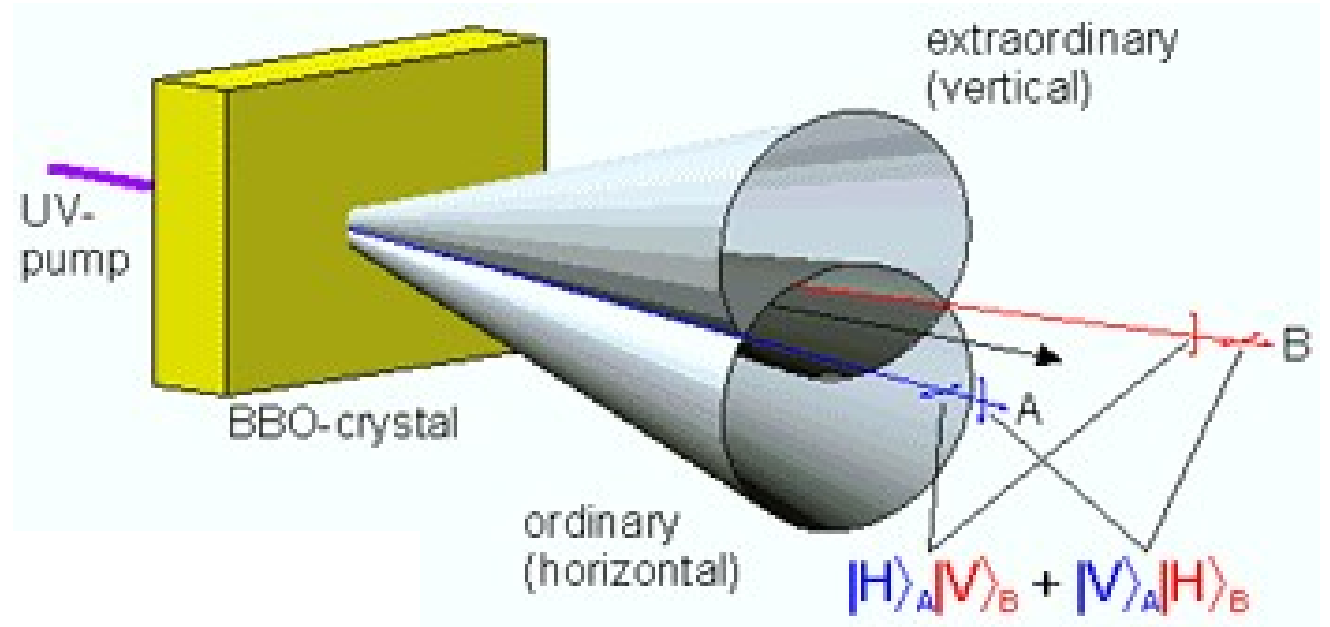


Figure combinations (data + illustration) can be very effective

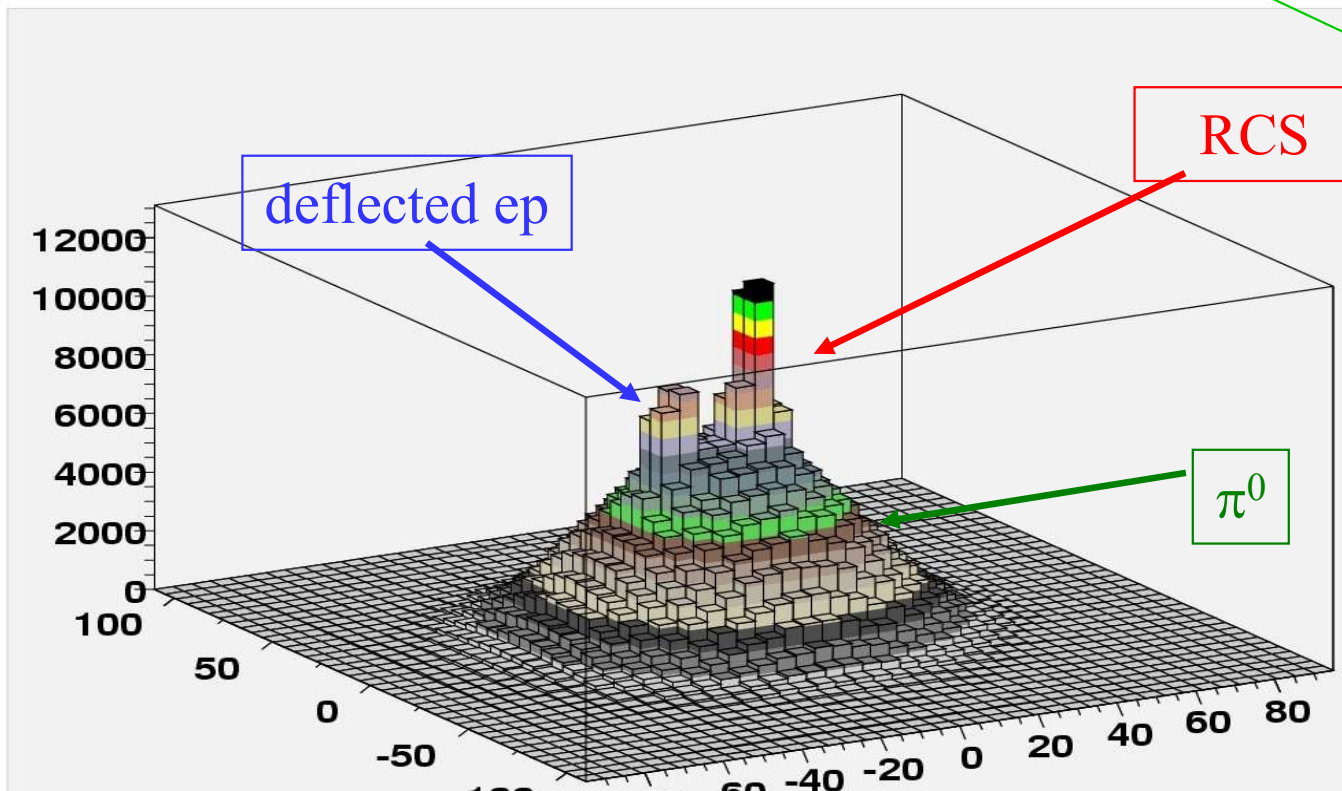
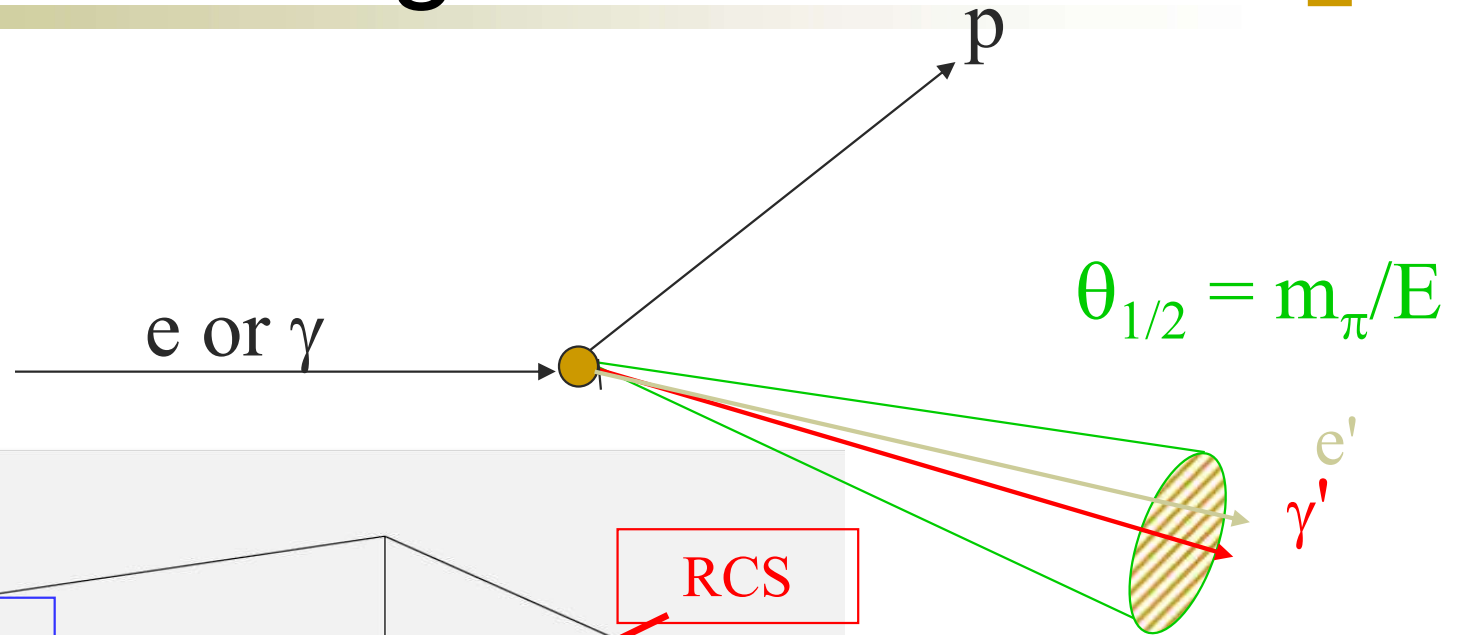
Figure combinations should all combine to tell the same story about your results!



Figures that show how something works

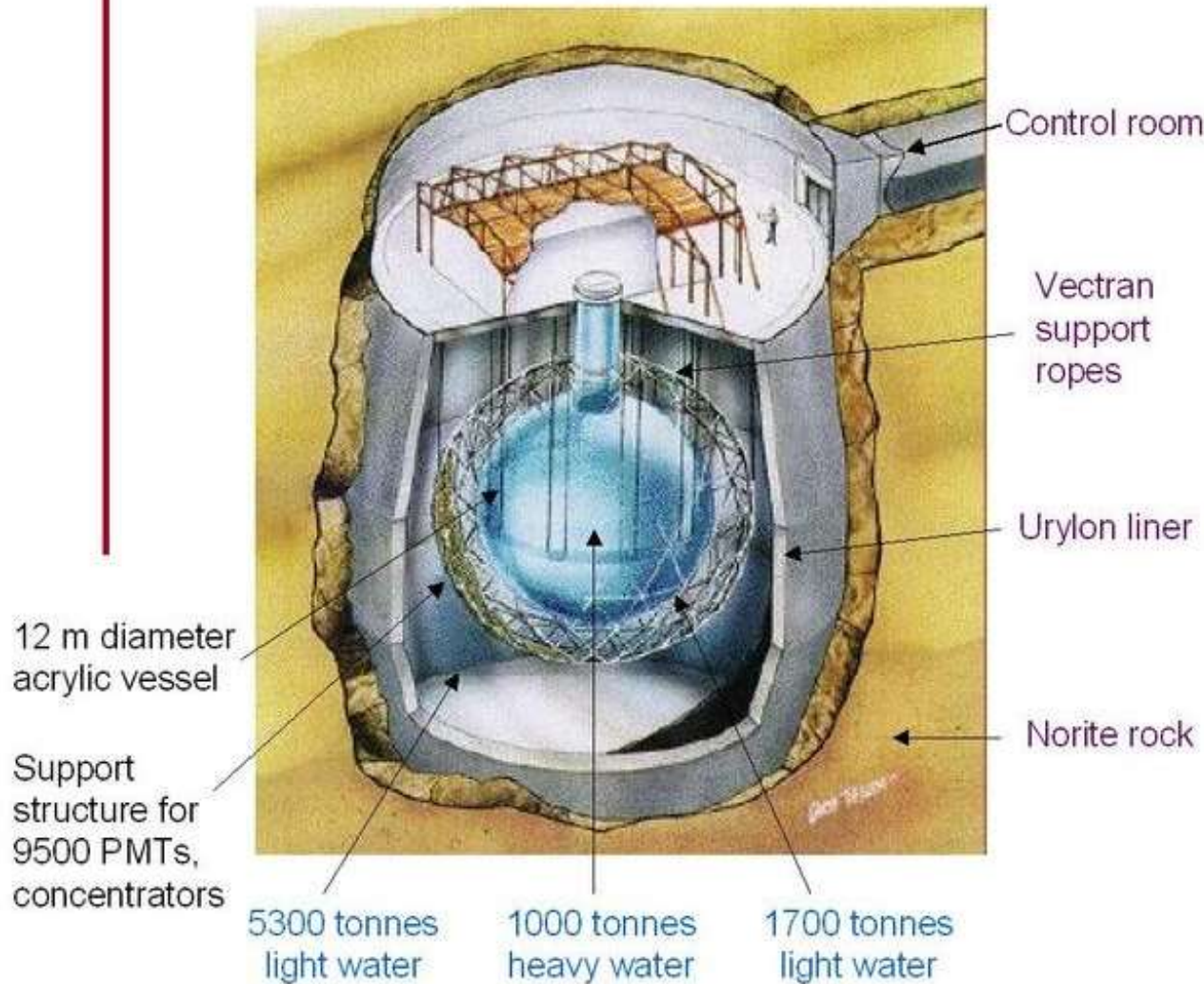


Combination figures that show how something works



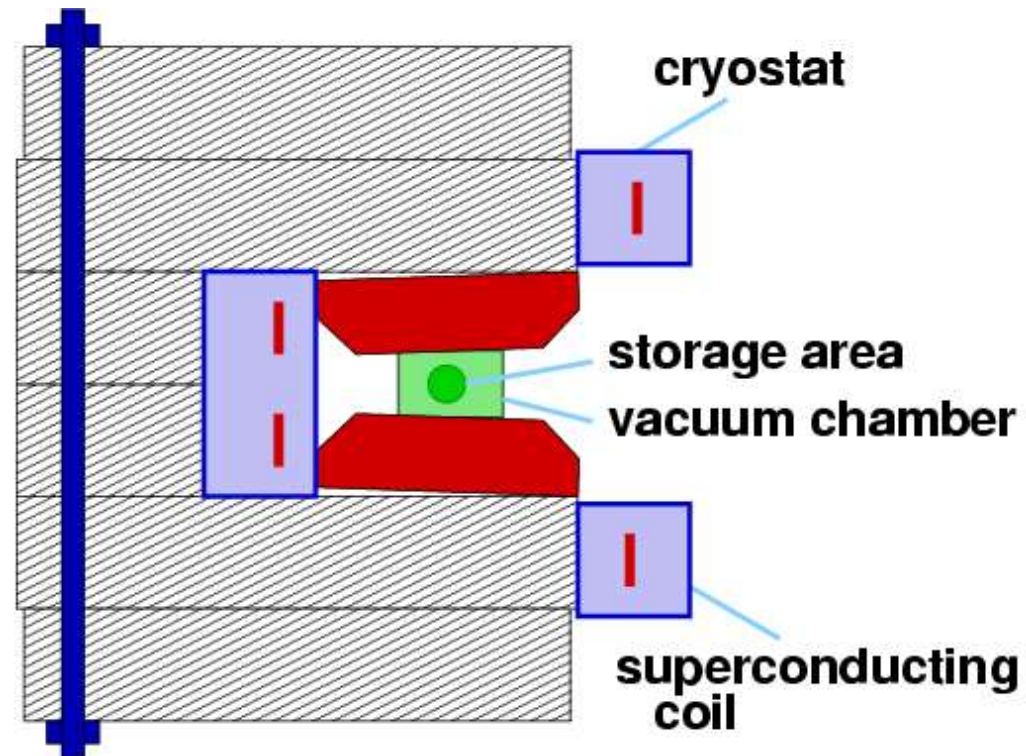
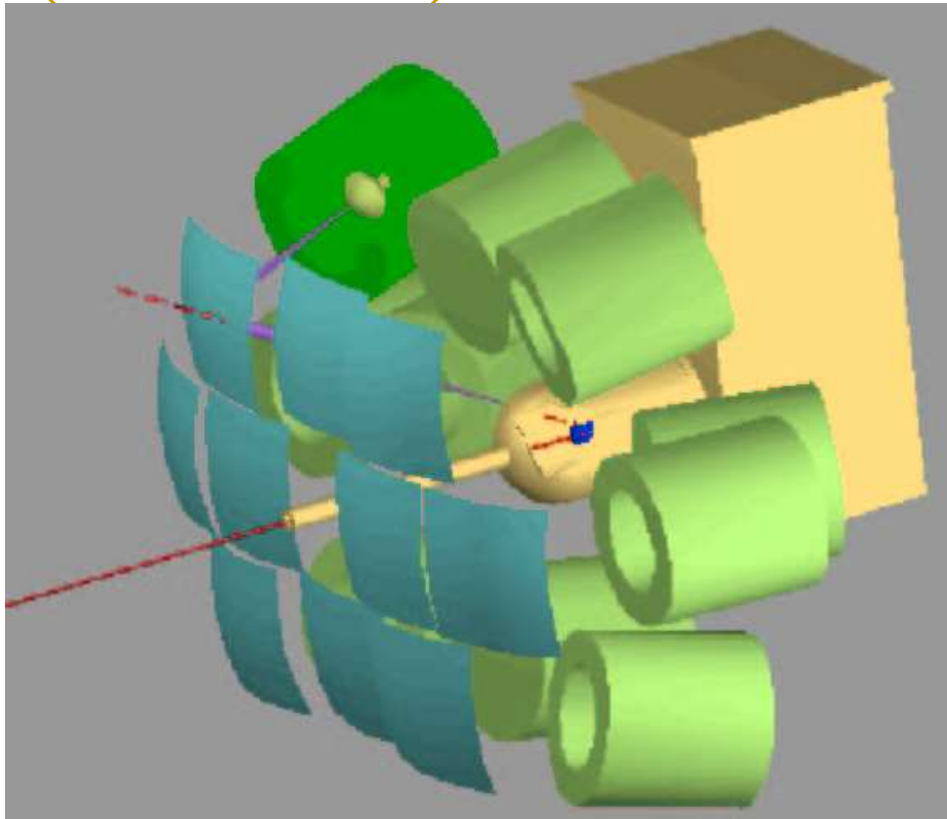
Figures that show scale

2039 m to surface
10¹¹ m to Sun

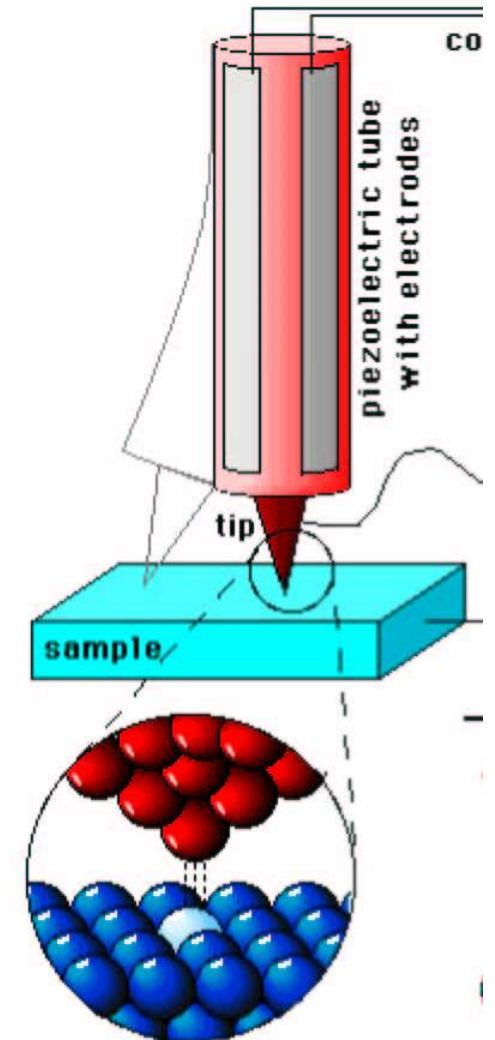
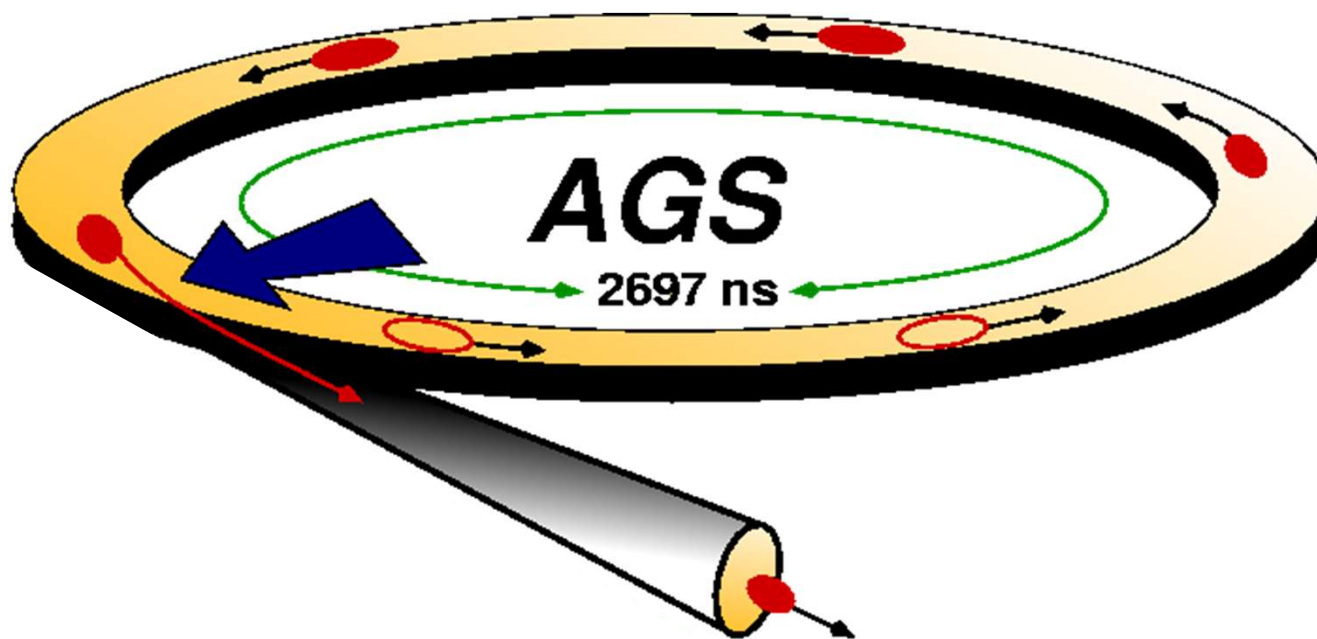


CERN - LHC

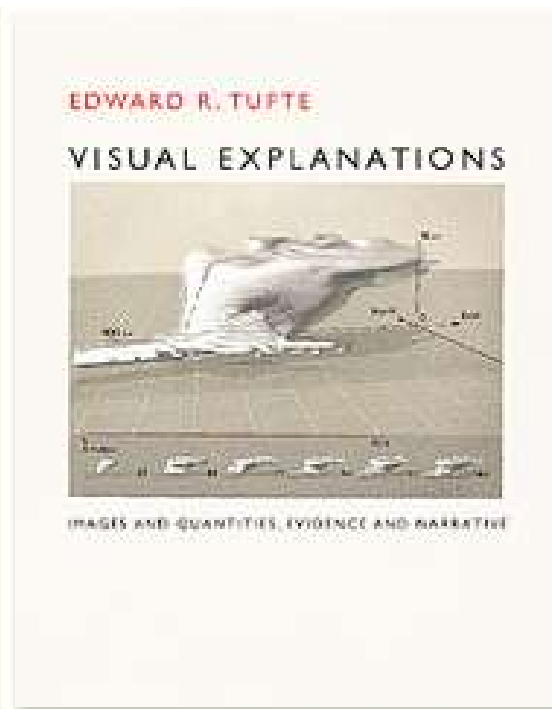
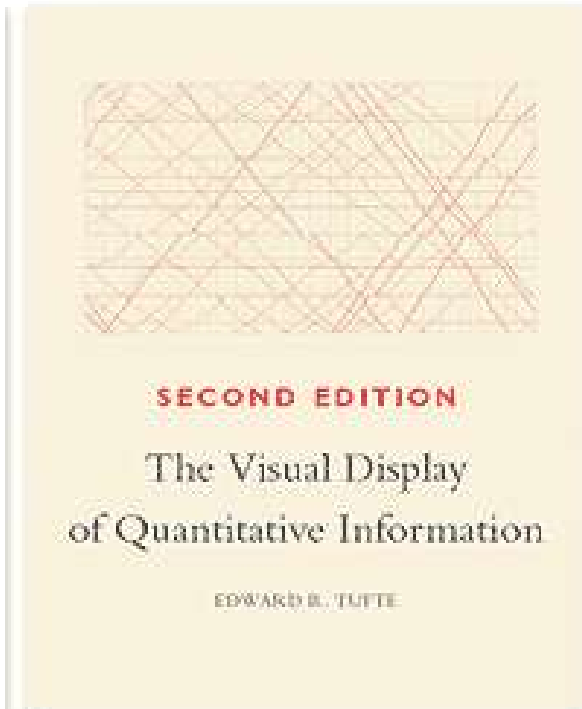
Figures that show equipment



Figures that “peer inside”



Resources



<http://www.mrl.ucsb.edu/~ses-hadri/PreparingFigures.pdf>