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. Use appropriate number of tics and labels. Make sure tics and labels are sufficiently large, particularly after reduction!

4. Use data curves that are sufficiently thick.

5. 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 multiples 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.
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

ΔG/G (%) vs. time (μs)

Labels and Units
Figures that display data

- Excess loss rate
- Constant loss rate
- Uncertainty, mostly due to protons

muon decay
Figures that show a process
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

\[ \theta_{1/2} = \frac{m_\pi}{E} \]

\[ \text{deflected ep} \]

\[ \text{RCS} \]

\[ \pi^0 \]
Figures that show scale

2039 m to surface
10^{11} m to Sun

Control room
Vectran support ropes
Urylon liner
Norite rock

12 m diameter acrylic vessel
Support structure for 9500 PMTs, concentrators

5300 tonnes light water
1000 tonnes heavy water
1700 tonnes light water

CERN - LHC
Figures that show equipment
Figures that “peer inside”
Resources

http://www.mrl.ucsb.edu/~seshadri/PreparingFigures.pdf