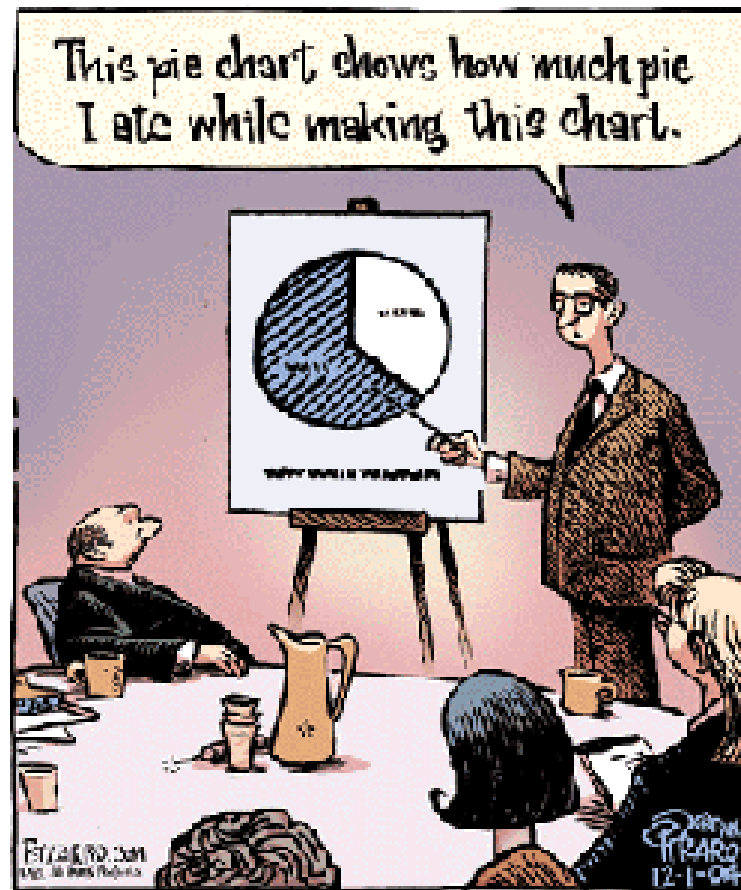


# Organizing a ~30-minute prelim/final talk



# The Oral Presentation for the Prelim or Thesis



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[www.phdcomics.com](http://www.phdcomics.com)

# How Do You Start Drafting Your Presentation?

**First, draft an outline for  
your presentation!!**

# Example organization of ~30-minute prelim talk

## Background and Introduction (7–9 minutes)

⇒ 5–6 slides

- ~1 Title slide - Your name, advisor's name, research title
- ~1 Outline slide – Organization of talk
- ~1 Overview slide – Why is this research important?
- ~2-3 Background slides – Provides essential background for non-experts

## Methods and Preliminary Results (7–9 minutes)

⇒ 5–6 slides

- ~2-3 Methods slides – Theoretical/experimental methods used
- ~0-3 Preliminary results slides – Proof-of-principle results

# Example organization of ~30-minute prelim talk

## Proposed Research (10–12 minutes)

⇒ 5–6 slides

~1-2 slides per proposed project

## Summary and Acknowledgments (1-2 minutes)

⇒ 2 slides

1 Summary slide - Review the main points

1 Acknowledgment slide – Acknowledge collaborators, funding agencies, helpful colleagues/staff, etc.

## Questions

⇒ 3–N back-up slides – Anticipate questions that might arise

# Tips for preparing your talk

**Adjust the presentation to your audience!** Your committee are not all experts...make sure you have sufficient background to orient all members

**You don't have to tell the committee everything about your research:** Identify the 2-3 main points you can reasonably convey in a 30-minute talk

**Create an outline of your talk, i.e., have a logical organization:** You can use the same outline as used for your prelim paper

**Make sure each slide has one key idea and that idea is important to your message**

Write the key point to make for each slide (often the heading)

If the slide doesn't have a point, eliminate it!!!



# Tips for preparing your talk (cont.)

Have only 1 idea per slide

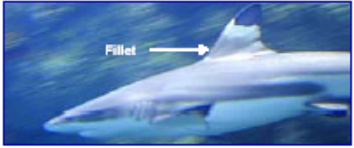
Use the header to state the main idea of the slide, and use the body of the slide to support that idea

Use well-labeled graphs and figures to illustrate your key points...this makes the slide more real and interesting to the audience

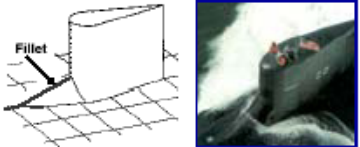
Avoid too much text....

**Fillets reduce leading edge vortices in nature and in engineering**


Fillet on dorsal fin of shark



Fillet on Seawolf submarine



[Devenport et al., 1991]



Literature Review

- Hefner developed a dynamic model of the thermal behavior of a power MOSFET using a temperature-dependent IGBT electrical model. The model is expressed in terms of the instantaneous power dissipation and the thermal capacitance of the silicon chip. The model was used to simulate the thermal behavior of the SABER circuit simulator.
- Adam et al. developed a model of the thermal behavior of a power MOSFET. The model takes into account the interactions between the heat sources, the heat sink, and the thermal conductivity of the walls and substrate. The model is used to determine which physical effects and level of detail are needed to accurately predict the thermal behavior of discretely heated enclosures.
- Chen, Wu and others are modeling of thermal and electrical behavior using several commercial softwares (I-DEAS, Maxwell, Flotherm and Saber) and 3-D, transient approaches.

**Too many words**

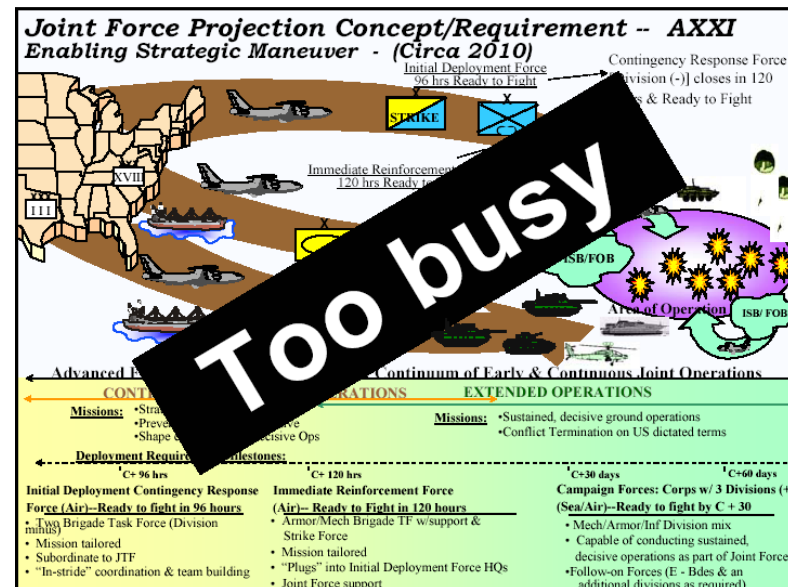
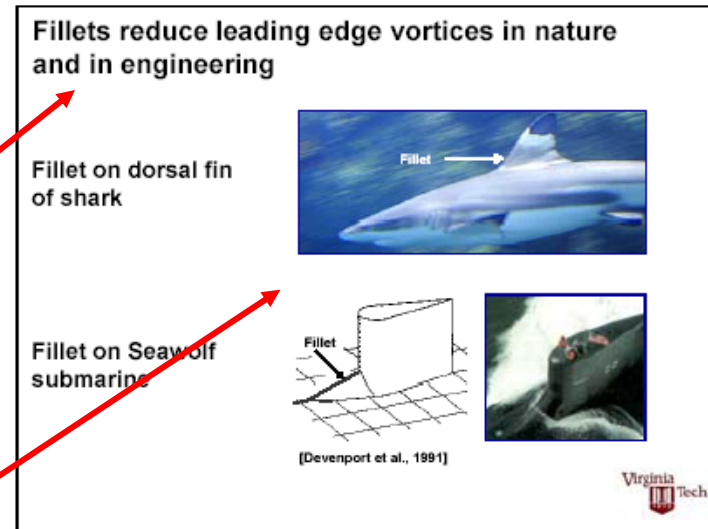
# Tips for preparing your talk (cont.)

Have only 1 idea per slide

Use the header to state the main idea of the slide, and use the body of the slide to support that idea

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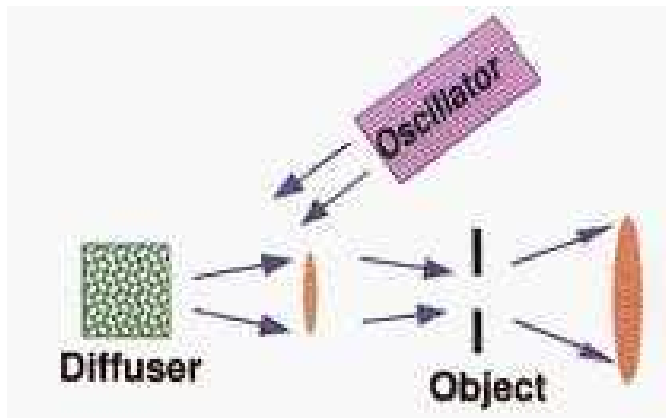
....or too many distracting images



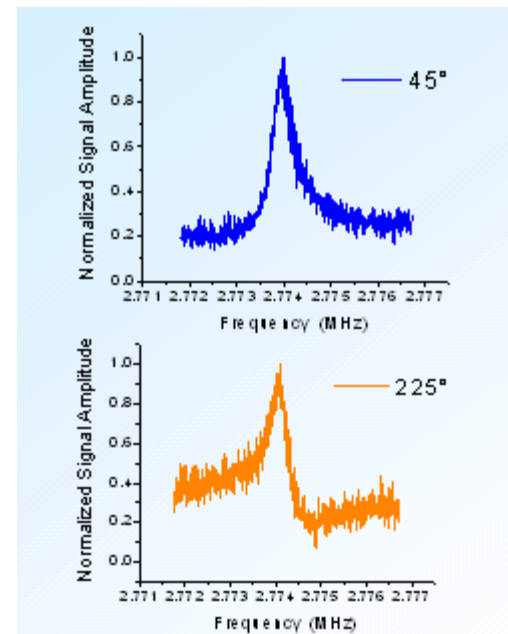


# Label all elements in a figure

- Point out important features
- Label both axes of graphs and show units
- Provide a brief caption
- Give credit to source



The Nike laser system uses discharge pre-amplifiers.  
(Courtesy US Navy)

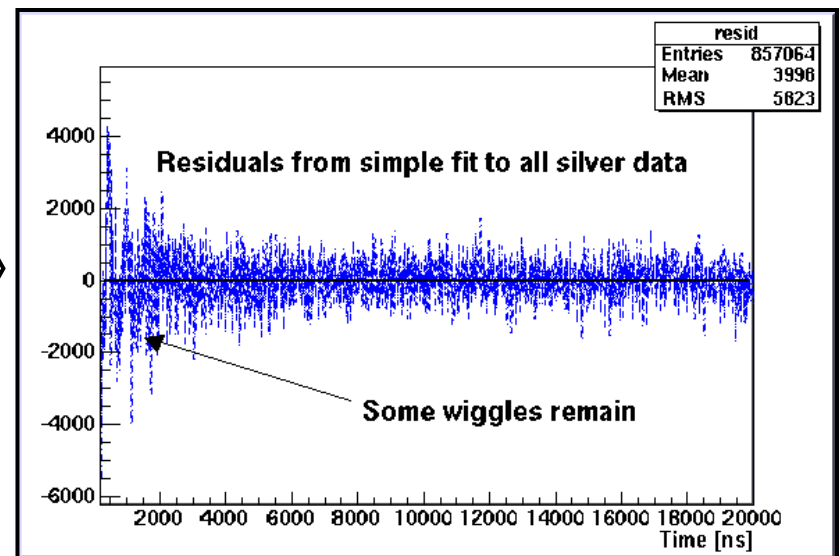
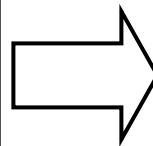
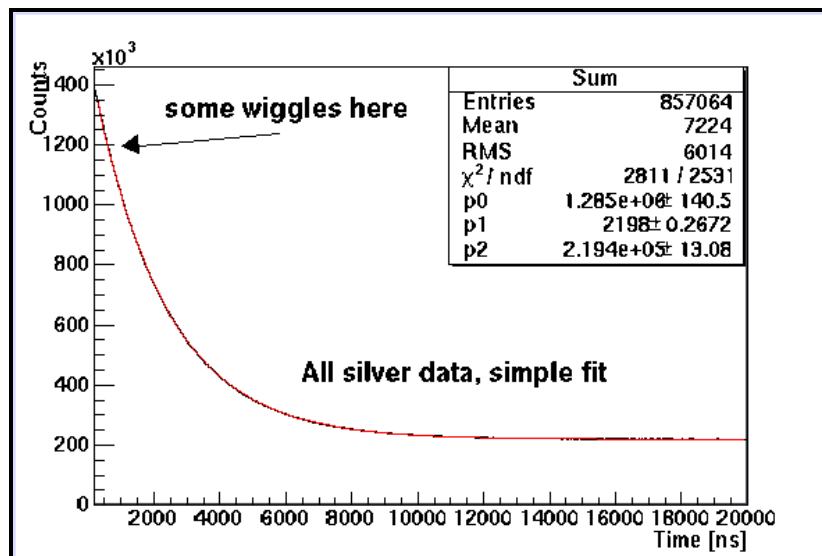


Sample normalized signals from the two-beam optical drive.  
(Courtesy C. Michael)



# Presenting data is your most important and challenging task

- Avoid copying a graph from a formal article – they have a different style, **e.g., labels are too small**
- Use color and make lines thick, labels legible
- Label axes and annotate important points with arrows and add words
- Use tables sparingly – if used, highlight important parts
- Remove unnecessary information from graphs/figures



# Use equations sparingly

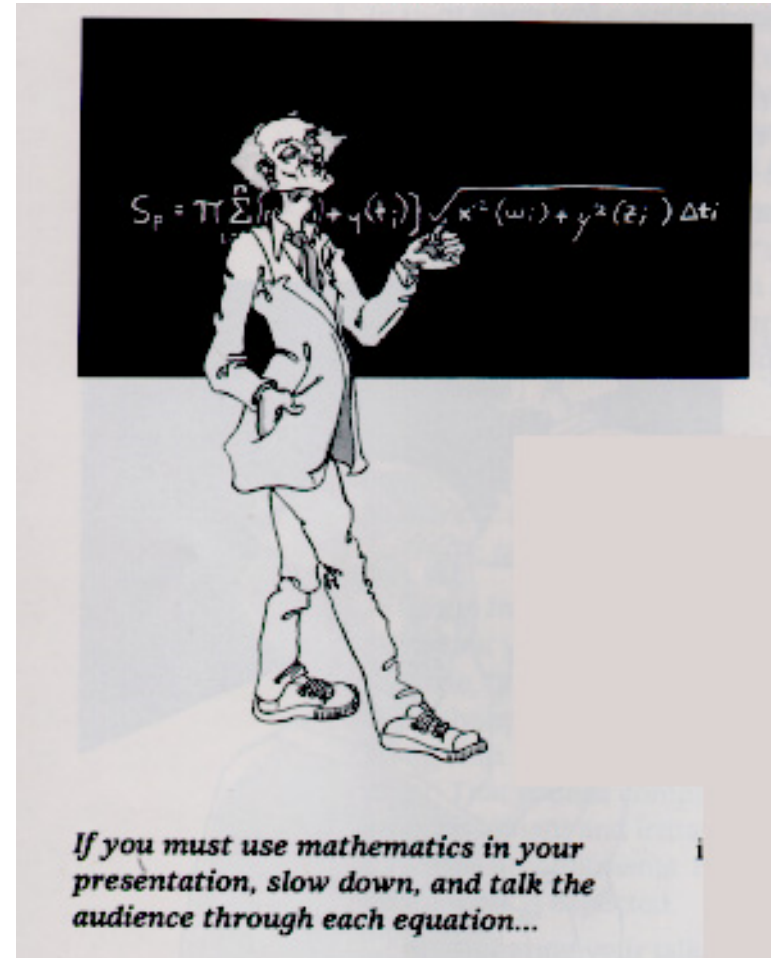
If you use equations

Define parameters

Provide physical explanations of different terms in equation

Provide an intuitive explanation of what the equation means

Combine the equation with a picture that illustrates the physical principle involved



Remember, your goal is to convey your ideas, so avoid distracting text and effects!

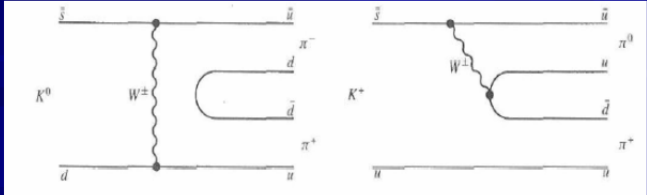
Don't overuse PowerPoint animations and sounds!

Make sure there is good contrast between text and background

Use simple (or no) backgrounds on slides

CP

- Parity invariance fails, combine it with charge conjugation to create a new invariant
- Converts the right-handed anti-neutrino into a left-handed neutrino- exactly what we observe in nature
- Neutral kaon experiment



The image shows two Feynman diagrams illustrating the decay of neutral kaons. The left diagram shows a  $K^0$  meson (quark-antiquark pair  $d\bar{u}$ ) decaying into a  $W^\pm$  boson, which then decays into a  $\pi^-$  meson ( $d\bar{u}$ ) and a  $\pi^+$  meson ( $u\bar{d}$ ). The right diagram shows a  $K^+$  meson (quark-antiquark pair  $u\bar{s}$ ) decaying into a  $W^\pm$  boson, which then decays into a  $\pi^0$  meson ( $u\bar{u}$ ) and a  $\pi^+$  meson ( $u\bar{d}$ ).



# Use “normal” colors

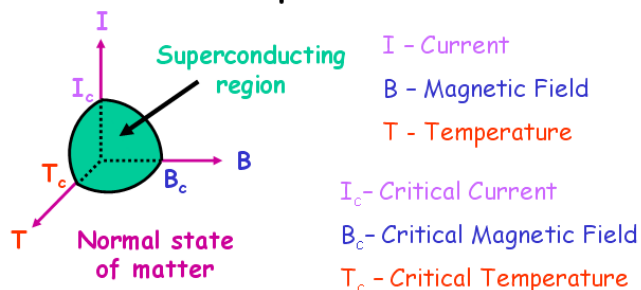
DON'T use red/green or red/blue as contrasting colors

Make sure colors looks the way you expect using an LCD projector!

Avoid neon colors and pastels

Don't use many random colors; people expect color to *mean* something

Superconductivity is an electronic state of matter that exists below certain currents, magnetic fields, and temperatures.



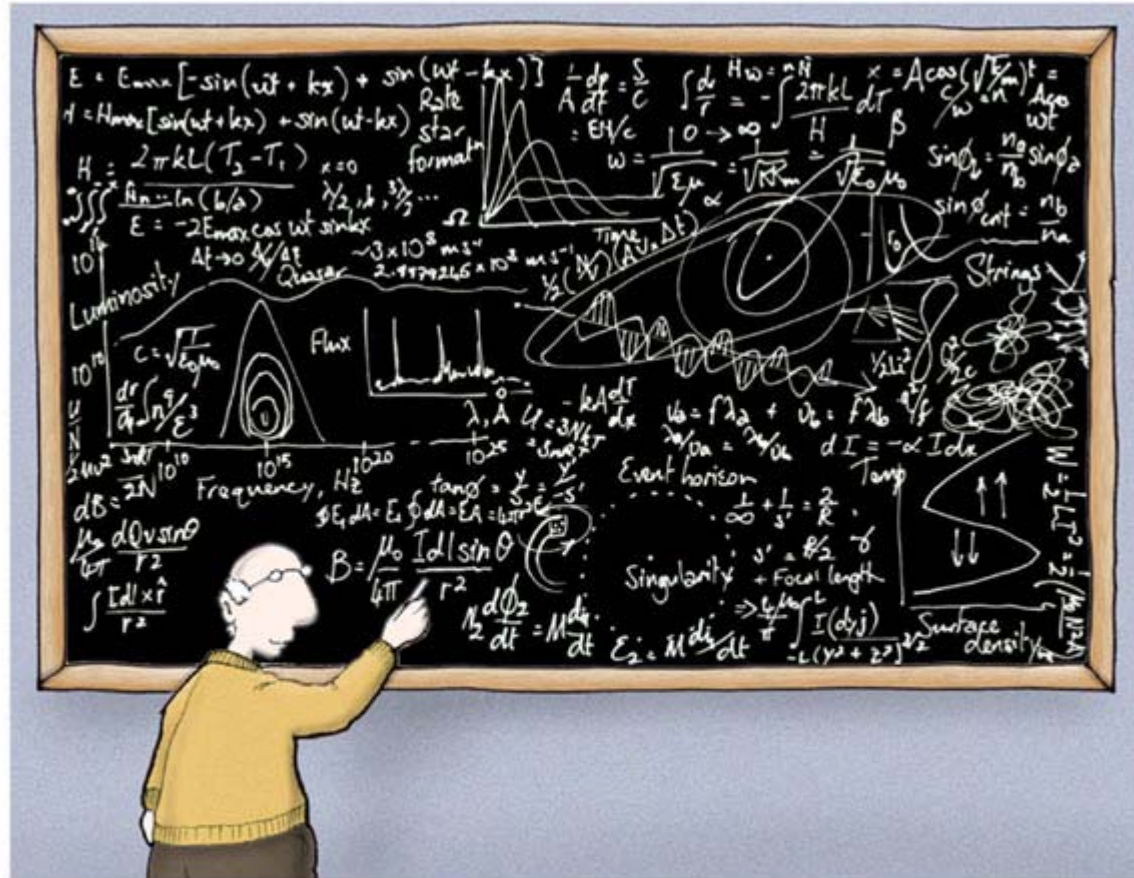
Strive for easy reading

Strive for easy reading

Strive for easy reading



# Tips for presenting you prelim/final talk



Astrophysics made simple



# Pointers for giving the best possible talk:

## **Maintain eye contact with audience**

Don't stare at screen or monitor

## **Do not read your talk!**

## **Avoid nervous mannerisms**

Pacing, bobbing, waving arms, jingling coins

## **Use laser pointer or stick directed at screen**

Don't point directly at overhead on projector

Don't block the screen

## **Train yourself to speak slowly and distinctly—practice!**

## **Avoid “fillers”: “uh”, “like”, “um”, “okay”**

## **Be enthusiastic!**

If you don't act excited by your results,  
don't expect the audience to be!



# Pointers for giving the best possible talk:

**Don't show any material on slides (e.g., figures, equations, text, etc.) you can't explain!! This will invite questions you don't want!!**

## **Rehearse how you'll end your talk**

Don't end with "Well, I guess that's it..."

Don't just stop and let the committee guess that you're done

Thank the audience!





# The best way to prepare for a talk is to Know Your Material

## Practice, practice, practice

Practice in front of friends and/or group members, encourage them to ask questions so you can get used to being interrupted

## Focus on communicating, not performing

Humor is good, but don't overdo it

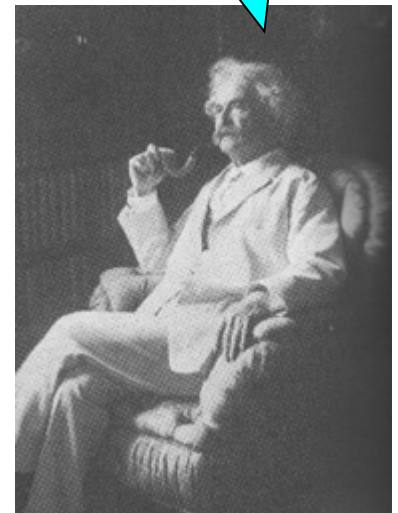
## Keep explanations simple

Emphasize the physics and intuitive explanations

## Prepare key phrases and words

If you notice you have trouble saying a physics phrase or term, practice saying it so you don't stumble over the term during your presentation

*It takes three weeks to prepare a good ad-lib speech*



# Check *everything* just before your talk

## Check the projector

- Make sure you know how to turn it on
- See that it is plugged in
- Check which way to position your slides
- Adjust the focus

## Check microphones, pointer, other tools

## Arrange your slides, notes, and other materials

- Be able to reach everything without moving
- Be able to go through your slides without fumbling

## Have a “clock” handy to check the time

