Organizing a ~30-minute prelim/final talk
The Oral Presentation for the Prelim or Thesis

ANATOMY OF A GROUP MEETING PRESENTATION

- pulled all-nighter, finished slides 5 minutes before meeting started.
- trying to come up with insightful question that will impress advisor.
- first year, only person actually paying attention, has no clue what's going on.
- relieved she doesn't have to explain why she hasn't done anything this week.
- starving, thought there'd be food at meeting.
- has written two proposals in his head since meeting started.

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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…. 

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* Helfter developed a dynamic model of the thermal behavior of a passive heat sink. He investigated the temperature-dependent IGBT electronics, which is a key component in grid-connected renewable energy systems. The model includes a key subcircuit, which is represented by a simple electrical circuit.

* A simple model can be used to analyze the thermal behavior of the heat sink. The model includes the thermal resistance of the heat sink, as well as the thermal conductivity of the materials used in the heat sink.

* The model is more accurate than previous models, because it takes into account the thermal resistance of the heat sink. This model can be used to predict the thermal behavior of the heat sink under different conditions.

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Literature Review:

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

2. Avoid too much text…. 

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Too many words

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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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Have only 1 idea per slide

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

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Avoid too much text….
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

....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
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.

$I_c$ - Critical Current

$B_c$ - Critical Magnetic Field

$T_c$ - Critical Temperature

$I$ - Current

$B$ - Magnetic Field

$T$ - Temperature
Tips for presenting your 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**