

BIOL/PHYS 438
Zoological Physics

• **Logistics:** last few lectures

• **Tutorials** on

▶ **Posters HOWTO**

▶ **Papers HOWTO:**

✧ **Physics:** Phys Rev & REVTeX

✧ **Biology:** *Nature* & Word

Last Few Lectures

- Th 22 Mar: Acoustic Mechanisms
- Tu 27 Mar: Review of Magnetism
- Th 29 Mar: How Animals Use E&M
- Tu 03 Apr: Poster Session in Hebb 32
- Th 05 Apr: Poster Session in Hebb 32
- Tu 10 Apr: Catch-up, Recap. & Review
- Th 12 April (last day of classes): **Papers Due!**

How to make a good POSTER

(Adapted from Michael Whitwick's advice to
 PHYS 409 students on Oral Presentations)

- **OBJECTIVE:** Present your results and conclusions in an interesting and convincing manner.
- **CONTENT:** Do's and Don't's
- **ÆSTHETICS:** Not Sufficient, but Necessary!
- **DELIVERY:** Stand by your poster and Sell it!

OBJECTIVES

- Display **competence & comprehension.**
- Show the **merit** of your work.
- Provide the scientific community with **new knowledge** and/or **understanding.**

CONTENT

- Introduce **subject** and **context**.
- Explain **what you did** (experiment, theory, interpretation).
- Use only essential **mathematical formulae**, and **explain each one thoroughly!**
- Use **pictures** and **graphs**, not 1000 words!
- Describe **your own experiment**, if any.
- Show your detailed **results** as a **graph**.
- Summarize vividly. "**Who cares?**"

AESTHETICS

- **Size matters!** All text should be legible from at least 4 m distance. Further is a whole lot better.
- Many an excellent piece of research has been ignored simply because the author(s) failed to present it pleasingly.
- **Neatness** and good **grammar** are essential, but "**layout**" is an **art!**
- Poster as **Literature**: **write well!**

DELIVERY

- When someone comes to look at your poster, **let them look at it!** Don't be a "**pushy salesperson**".
- When they **ask** a question, **answer the question!** The poster should speak for itself.
- When they **ask** for more information, show your enthusiasm, knowledge and wit. But watch for **saturation!**

How to write a good PAPER

- **Have something to say!**
 - Abstract
 - Introduction
 - Theory
 - Experiment &/or Data
 - Data Analysis & Results
 - Conclusions
 - Acknowledgements
 - References
- **Outline** first, then **fill in** →
- **Spelling, Grammar & Style**

Spelling

Any decent computer nowadays has a **spellchecker**.
Use it! If it has a choice of dictionaries that includes "Canadian English", lucky you! If not, choose "American English" (color and center) for *Phys Rev* and "British English" (colour and centre) for *Nature*.

But remember, a **spellchecker** can't tell if you are using the right word (there, their, they're) — only whether it is in the dictionary.

And remember, **apostrophes** are **part of spelling**.
 ("It's not 'it's', it's 'its'!" ← **To what does this refer?**)

Grammar

(We are not talking about your grandfather's wife.)

An extremely effective way of displaying your ignorance is to put up a poster full of bad grammar.

"Everyone does it" is a pathetic excuse.

Ignorance is no shame, but sustained ignorance is !

If you're not sure, **ask!**

Style

Is there a "proper style" for a paper in a scientific journal? At the practical level, yes, of course: if they won't publish it because of your style, that's "improper"! But each journal has a different style preference: some (like *Nature*) try to reach an audience of "any reasonably well-informed scientist", while others (like *Phys Rev*) are more tolerant of supposedly space-saving incomprehensible jargon. However, even *Phys Rev* editors and referees like to see a **lucid, "readable" explanation!** Above all, **never waste words!** "Padding" is an unforgivable sin. (The four page limit of *Phys Rev Lett* helps enforce "word economy".)

Phys Rev and REVTeX

See <http://authors.aps.org/revtex4/> and references therein. The REVTeX4 package is a set of command definitions to go with L^AT_EX, which is built upon T_EX — a typesetting program created "to make beautiful [math] books". Using any text editor, create a plain text input file including L^AT_EX **commands**; then send it to L^AT_EX to be turned into a printable file in 1 or 2 steps.

If you don't have L^AT_EX on your own computer, you can obtain free versions for any operating system — or you can just use any UNIX or Linux system such as the main Physics & Astronomy server.

Nature and Word

See <http://www.nature.com/nature/authors/> and references therein, especially the link entitled "How to write a scientific paper". *Nature* prefers manuscripts submitted in Microsoft Word (go figure!) and provides templates for same on their Website at <http://www.nature.com/nature/authors/submissions/template/>

Ironically, *Nature* has higher "literary" standards than most other journals. So *write well* if you plan to get published in *Nature*!