

Final writing tips

Should be tailored to the specific class.

Comments and feedback

- Feedback request

Some tips

(designed for specific class/questions)

- vs.: always spell out versus
- Noun/verb should go together
 - Can underline full paper
- Combine sentences where it makes sense
 - Break sentences when they are too long
 - Single idea/sentence
 - “It is” ; “There are”: weak sentences, rewrite with science as the subject
 - Focus paragraphs, often with first sentence as overview
- Parallel arguments
- locates” => “is located”
- Avoid “besides”
- Relative terms need a comparison

Tips on tenses

- Herczeg approach:
 - observations+data reduction in past tense, everything else in present tense
 - Citations to old papers: it depends on how they are being cited
 - “Galaxies are large”: usually present tense when describing the universe
 - Early universe: not sure! That was really in the past!
- A different approach, from a friend:
 - What we did (data reduction, analysis) in past tense.
 - The section of Observation and some parts in the results will be in past tense
 - if we want to describe our modeling approach, we usually write as “We applied xx model to...”
 - Description of the results (what we found) is usually in present tense.”

Big picture tips

- Be direct
 - Say what you mean
 - Don't be sensationalist, but be interesting
- Don't do everything
 - Cut papers down to size
 - nobody reads 20 page papers (and definitely not 30 page papers)
 - Focus your arguments
 - use appendices for random tangents and barely relevant details

Resources

- Common Mistakes in Writing Astronomy and Physics Literature in English
 - <https://arxiv.org/abs/1011.5973>
 - Mostly in Chinese
- Writing Scientific Papers in Astronomy
 - <https://arxiv.org/abs/2110.05503>
- Writing Centers
 - <https://owl.purdue.edu/>
 - <https://sites.duke.edu/scientificwriting>
- Each other!
 - Share drafts and proposals!

TYPES OF SCIENTIFIC PAPER



Idea generation and
types of papers:
<https://xkcd.com/2456/>

Where do ideas come from?

- New capabilities
- Creative looks at old ideas
- Improving techniques
- Parts of paper that don't fit
- Weaknesses in logic

Sources for new ideas include (a) gaps in logic in your work and papers of others, and (b) ideas generated by your paper.

Better editing will improve
your idea generation!

Outline

- Outline sections and paragraphs
 - Outline with plots
 - Let the reader see the outline
 - Section/sub-section headings
 - Introductions to sections/subsections, even paragraphs
- Tell a story
 - Every section, paragraph, and plot has a story
- Inverse pyramid
 - Big concepts come first
 - Introduce what will come next

Edit!

- Edit your own work heavily
 - Write quickly!
 - Thesaurus when editing
 - Spend 10x as much time editing as writing
- Logical flow
- Grammar
- Keep science and grammar edits separate
- Figures: spend time editing them!
 - Large fonts
 - Clear point that can be seen

Techniques:

- Read out loud
- Rely on others to edit
 - Can always share drafts with each other
- Underline looking for different things

Time allocation and your future

- Write quickly!
 - Take your time in editing
- If you have been at your desk for an hour and have not made progress, move on to something else
 - This applies to writing and everything else
 - Your time is precious
- Don't be paralyzed by perfection
 - Perfect is the enemy of the good
 - Don't drive yourself crazy
- Focus on logic, not grammar
- Work with others, accept criticism and feedback
 - Other people will strengthen your work
 - Identify flaws in logic
 - Add expertise that you lack – you cannot be an expert in everything
- **Enjoy sharing your discovery with others**
 - **Own your PhD topic.** It's yours, know it and love it!
 - Goal: you are the expert teaching your advisor