



# Paper Writing Workshop

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**Motivation:**

- Welcome participants and outline structure for the day:
  - 3 sessions, with breaks in-between
- slides to be available after, so participants should focus on actively participating
- questions are to be encouraged at any time, but extended discussions can be deferred to breaks

**Audience Participation:**

- None

# Session 1: Structure

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How to get started...



**Motivation:**

- Highlight that this session focusses on how to structure a paper and get the bulk of the writing process done

**Audience Participation:**

- None

# Why write a paper?



## **Motivation:**

- Engage with audience

## **Audience Participation:**

- Take suggestions and encourage conversation

# Why write a paper?

- Formalise your science and results
- Practise communicating your work
- Provide your results to the community
- Receive useful feedback and make new connections
- Improve your CV!



## **Motivation:**

- Highlight any points that weren't offered by students
- Add any of your own that are missing

## **Audience Participation:**

- None

# What's stopping you?

**Motivation:**

- If the audience is quiet, share some of your own concerns/troubles with writing

**Audience Participation:**

- Encourage audience to share what's difficult about writing

# Thoughts you might have...

- “Writing a whole paper seems really daunting...”
- “I don’t know how to start...”
- “Nothing I write sounds good...”
- “What do you mean I can’t include everything??”
- “How do I get people to read it??”

**Motivation:**

- Show audience that there are a broad range of concerns
- Add your own if you wish

**Audience Participation:**

- None

# Good news!

Writing can be rewarding!



**Motivation:**

- Encourage audience that their fears can be addressed...

**Audience Participation:**

- None

# Good news!

Writing can be rewarding!  
(depending how you approach it...)



**Motivation:**

- ...and that this session is about a particular writing process that they might not have previously tried

**Audience Participation:**

- None



# The stages of writing

Writing can be broken down into:

- Outline
- First Draft
- Revision



**Motivation:**

- There are three broad stages of writing

**Audience Participation:**

- None

# The stages of writing

Writing can be broken down into:

- Outline
- First Draft
- Revision

How long  
should  
you spend  
on each?



**Motivation:**

- Get participants to estimate how much they spend in each before revealing

**Audience Participation:**

- Give a few minutes to chat in groups of 2-3, then ask for answers

# The stages of writing

Writing can be broken down into:

- |               |     |
|---------------|-----|
| ■ Outline     | 70% |
| ■ First Draft | 10% |
| ■ Revision    | 20% |

How long  
should  
you spend  
on each?



## Motivation:

- This proposed method of writing places a large amount of emphasis on the outline (also known as pre-writing)
- Explain that you'll talk more about why the outline should take up most of the time

## Audience Participation:

- None

# Tasks for each stage

- Outline      Collect facts and organise your ideas  
(include figures, tables & references)
- First Draft      Turn your thoughts into full sentences
- Revision      Edit your sentences to make your  
thoughts clear to the reader

**Motivation:**

- Outline the goals of each stage

**Audience Participation:**

- None

# The detailed outline

- Think of this as the roadmap of your paper
- It's a collection of all of the information, results and conclusions that might end up in your paper

**Motivation:**

- Provide an overview of what the outline stage should look like

**Audience Participation:**

- None

# Why do it this way?

**Motivation:**

- Get audience to think about why this might be

**Audience Participation:**

- Encourage audience to speculate about why you might want to put so much time/effort/detail into the outline stage

# Why do it this way?

**Research and revision interrupts your writing!**



**Motivation:**

- Highlight that stopping to check or edit can slow you down

**Audience Participation:**

- None

# Why do it this way?

## Research and revision interrupts your writing!

- Have you ever stopped mid-sentence to look up a value you need?
- Have you ever spent ten minutes trying to find the perfect way to phrase a single sentence?



### Motivation:

- Highlight that stopping to check or edit can slow you down

### Audience Participation:

- Ask audience if these ring true — you could use show of hands or gauge whether people are nodding



# Why do it this way?

## **Research and revision interrupts your writing!**

- Have you ever stopped mid-sentence to look up a value you need?
- Have you ever spent ten minutes trying to find the perfect way to phrase a single sentence?

## **Both tasks distract you from the bigger picture!**



### **Motivation:**

- Highlight that these tasks distract you from fluent writing
- Collecting facts and organising thoughts is the most time-consuming part of writing, so encourage audience to give it the time it needs!
- conflating these tasks with writing makes the act of writing unpleasant when it can be rewarding

### **Audience Participation:**

- None

# The detailed outline

- Think of this as the roadmap of your paper
- It's a collection of all of the information, results and conclusions that might end up in your paper
- Several ways to approach
  - start with a broad structure and allocate info
  - collect information and rearrange into sections
  - whatever suits you!



## **Motivation:**

- Highlight that you might chip away at a roadmap over a long period of time
- Useful analogy:
  - artist might do a careful sketch in pencil to get perspective right before working in pen
  - planning first means they can be creative without needing to direct any mental effort to building a structure

## **Audience Participation:**

- None

# Traditional structure

- Abstract
- Introduction
- Data
- Methods
- Results
- Discussion
- Conclusion
- Appendix

**Motivation:**

- These are the traditional sections and their order of appearance

**Audience Participation:**

- None

# Traditional structure

- Abstract
- Introduction
- Data
- Methods
- Results
- Discussion
- Conclusion
- Appendix

What order  
should you  
roadmap in?



## **Motivation:**

- These are the traditional sections and their order of appearance

## **Audience Participation:**

- Ask audience to discuss in groups of 2-3 what order you should roadmap in
- Ask for suggestions after discussion

# Order of roadmapping

- |                             |                      |
|-----------------------------|----------------------|
| • Results                   | (define the scope)   |
| • Data and Methods          | (set up the results) |
| • Introduction              | (provide context)    |
| • Discussion and Conclusion | (interpret results)  |
| • Abstract                  | (sum up)             |



## Motivation:

- Emphasise that your results should set up the scope of your entire paper
- By roadmapping in this way, you don't waste time planning/writing content that doesn't directly link to your results, saving you time and effort, and resulting in a clearer paper.

## Audience Participation:

- None

# Figures

- Figures should define the structure of your paper
- Use captions and clear legends to make them self-explanatory
- Be wary of colour-blindness, particularly red-green
- Try to keep figures clear — too many colours or lines can confuse the reader



## **Motivation:**

- Explain that spending time on your figures is critical for conveying your message
- Reviewers and other scientists may only look at these, so it's important to get them right!
- Point out some general tips

## **Audience Participation:**

- None

# Figures — Exercise

- In groups of 2-3, look over the 10 figures
- Identify which figure is the best and which is the worst — give your reasons!
- Do you understand the figure without the paper?
- List what could be improved in each figure

**Motivation:**

- Introduce the figure exercise

**Audience Participation:**

- Give students some time to look over the figures provided and identify what makes a good and bad figure!

# Figures — Exercise

Best figure?

What was effective?

What was ineffective?

How much does the caption matter?



## **Motivation:**

- Summary of exercise

## **Audience Participation:**

- Get audience to contribute to the above questions
- Ask if anyone has tips to share with the group



# Results

- Aim for clarity! Readers often go here first
- Consider:
  - how can I present my results in the fewest figures?
  - what's the most appropriate format?
- The text should be a high level summary
- Remember to talk about negative or control results



## **Motivation:**

- Highlight the important points to focus on when roadmapping the results.
- Give any additional advice you have.

## **Audience Participation:**

- None

# Data and methods

- Give a clear overview of
  - where the data come from
  - how the data were analysed
- Give enough information to replicate the study
- Make life easy for the reader by
  - using subsections
  - using flow diagrams and tables in place of text



## **Motivation:**

- Highlight the important points to focus on when roadmapping the data and methods.
- Note that you might roadmap more than actually ends up in your paper — record everything you did in the roadmap, and then be selective about what appears in the first draft

## **Audience Participation:**

- None

# Introduction

- Usually 2-5 paragraphs
- Shape it around what you'll address in the paper
- Write for a general audience as much as possible
- Highlight the gaps in the literature
- Be specific about your aim/hypothesis and how you'll achieve it

**Motivation:**

- Highlight that the introduction should be more straightforward to plan once you know what's going in the results section.
- Only include what is necessary!

**Audience Participation:**

- None

# Discussion and conclusion

- Gives the interpretation of results
- Should cover
  - your findings and how they relate to your aim
  - how your results compare to the literature
  - the strengths and any limitations of your study
  - big-picture take-home messages and future work
- Focus on what your results prove, not what you hoped they would prove!



## **Motivation:**

- Highlight that the discussion should be linked to the background you provided in the introduction
- It can expand on the literature you might have introduced earlier, and go into more depth than is recommended for the introduction

## **Audience Participation:**

- None

# Abstract

- Most people use the title and abstract to decide if they'll read further
- Keep it concise — people can be turned off by long abstracts
- Convey the main finding and why it's important!
- Give highlights from each section of the paper and emphasise what is novel in your work
- Should be able to stand on its own

**Motivation:**

- Highlight best practice for abstracts — it's hard to teach this, so emphasise that the participants are likely to become better with practice.

**Audience Participation:**

- None

# Abstract — Exercise

- In groups of 2-3, look over the abstracts
- Which paper you would be most likely to read based only on the abstract?
- Can you identify any general strengths or weaknesses?

**Motivation:**

- Have participants understand good and bad qualities of abstracts

**Audience Participation:**

- Give students some time to look over the abstracts provided and identify which is the most interesting.
- Have a group discussion to finish up the exercise
- The abstracts can later be used as editing content at the end of the second session.

# The first draft

- Just write!
- Take your roadmap and turn it into full sentences
- If you find that your roadmap doesn't contain the information you need, go back and fill it in!



## **Motivation:**

- Last slide of the session — summarise
- Reiterate that the point of the roadmap is that you spend most of your time planning and collecting information/references, so that when you get to the first draft, you can largely write without thinking!
- This makes writing much more efficient, even if it doesn't seem it while you're doing the roadmap
- The work only really pays off once you get the the first draft
- Highlight that roadmapping forces you to clearly articulate what will appear in your paper, which produces a more cohesive paper overall.

## **Audience Participation:**

- None



# Paper Writing Workshop

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**Motivation:**

- Intro

**Audience Participation:**

- None



## Session 2: Grammar & Style

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How to edit...



### Motivation:

- Reflect that roadmapping helps to generate a quick first draft, and that all of the refining should be left to the editing stage, where you consider grammar and style.
- These make your core ideas more accessible to the reader

### Audience Participation:

- None

# Writing in the Sciences

- Much of the following content was adapted from the free online course “Writing in the Sciences” offered by Stanford University
- Visit <https://lagunita.stanford.edu/courses/Medicine/SciWrite-SP/SelfPaced/about> to learn more



## **Motivation:**

- Acknowledgements slide to writing in the sciences
- Goes into much more depth than this course

## **Audience Participation:**

- None

# The value of editing

- Writing papers is how we communicate our findings
- Writing clearly and concisely is the best way to do this
- Keeping style in mind means you can share your ideas with the reader without the text getting in the way!



## **Motivation:**

- Highlight that a writer should see editing as polishing already established content.
- Coming back to thinking about style and grammar after the first draft will produce a more cohesive and readable paper.

## **Audience Participation:**

- None

# Language is made up of...

- Verb: describes an action (is, write, listen...)
- Noun: names a thing (friends, author, school...)
- Adjective: modifies a noun (happy, clear, accurate...)
- Adverb: modifies a verb/adjective (very, only, quite...)

**Motivation:**

- Very quick overview of the parts of english language.
- Most students should be familiar with this, but it's good to define them upfront

**Audience Participation:**

- None

# Language is made up of...

- Verb: describes an action (is, write, listen...)
- Noun: names a thing (friends, author, school...)
- Adjective: modifies a noun (happy, clear, accurate...)
- Adverb: modifies a verb/adjective (very, only, quite...)

**We will now cover some common style tips**



**Motivation:**

- Mention that we'll focus on style first, which can be thought of as good writing practices

**Audience Participation:**

- None

# Active voice

- Active voice: subject, verb, object
- Passive voice: object, verb, subject



## **Motivation:**

- Highlight that the subject enacts the verb upon the object.
- After participation, come back to the point that it is easier for a reader to parse active voice than passive voice.

## **Audience Participation:**

- Get a student to give a simple active voice sentence and ask another to give the passive voice form of that sentence.
- Or could ask people to write an active voice sentence, and get their neighbour to write the passive voice equivalent
- Ask students for comments about these two forms, eg. when you might want to use active vs. passive

# Cutting clutter

- Clutter is everything that might distract the reader from the point you're trying to make
- If you can replace a phrase with a single word... do!

a majority of                      →                      most



## **Motivation:**

- Highlight that clutter distracts the reader, and that a large part of editing is cutting various forms of clutter
- often there is one word that will do!

## **Audience Participation:**

- None

# Cutting clutter

- Clutter is everything that might distract the reader from the point you're trying to make
- If you can replace a phrase with a single word... do!

a majority of	→	most
less frequently occurring	→	
give rise to	→	
due to the fact that	→	



## Motivation:

- often there is one word that will do!

## Audience Participation:

- Ask participants to write down the single-word replacements



# Cutting clutter

- Clutter is everything that might distract the reader from the point you're trying to make
- If you can replace a phrase with a single word... do!

a majority of	→	most
less frequently occurring	→	rare
give rise to	→	cause
due to the fact that	→	because



## Motivation:

- Show the examples, highlight that the simplifications are clear where the extra words can obscure the intention of the sentence

## Audience Participation:

- Feel free to encourage questions and comments here

# Cutting clutter

- It is an extra step to understand a negative phrase within a sentence, so try to eliminate these

does not have                      →                      lacks

**Motivation:**

- Highlight that “negative” in this context refers to negation, rather than whether a word is positive or negative
- Negation (often indicated by the word not) requires the reader to perform an extra step in evaluating meaning

**Audience Participation:**

- None

# Cutting clutter

- It is an extra step to understand a negative phrase within a sentence, so try to eliminate these

does not have	→	lacks
not important	→	
not harmful	→	
did not pay attention to	→	
not clear	→	
did not succeed	→	



## Motivation:

- Negation disrupts flow!

## Audience Participation:

- Ask students to write the phrases without the negation

# Cutting clutter

- It is an extra step to understand a negative phrase within a sentence, so try to eliminate these

does not have	————→	lacks
not important	————→	unimportant
not harmful	————→	safe
did not pay attention to	————→	ignored
not clear	————→	unclear
did not succeed	————→	failed



## **Motivation:**

- Highlight that the non-negated phrases are clearer

## **Audience Participation:**

- Feel free to encourage questions and comments here

# Writing with verbs

- Verbs make sentences go!
- Coupled with the active voice, they help the reader grasp the action
- Use descriptive verbs instead of nouns
- This is a common problem in academic prose and can lead to hollow and pretentious sentences!

undergoes expansion     $\longrightarrow$     expands



## **Motivation:**

- Emphasise that readers will often pay attention to the verb in a sentence.
- There is a tendency in scientific and legal writing to use a noun with a boring verb, rather than with an interesting verb.

## **Audience Participation:**

- None

# Writing with verbs

- Examples of weak nouns and their strong verbs

undergoes expansion	→	expands
provides emphasis	→	
offers confirmation	→	
provides a review	→	
makes a decision	→	
gives a description	→	



## **Motivation:**

- Writing with verbs gets to the point!

## **Audience Participation:**

- Ask participants to turn nouns back into verbs

# Writing with verbs

- Examples of weak nouns and their strong verbs

undergoes expansion	→	expands
provides emphasis	→	emphasises
offers confirmation	→	confirms
provides a review	→	reviews
makes a decision	→	decides
gives a description	→	describes



## **Motivation:**

- Writing with verbs gets to the point!

## **Audience Participation:**

- Feel free to encourage questions and comments here

# That vs. which

- The painting that was hanging in the foyer was stolen.
- VS.
- The painting, which was hanging in the foyer, was stolen.



## **Motivation:**

- These are often confused
- Read them with emphasis

## **Audience Participation:**

- Ask participants whether they can identify the purpose of that and which



# That vs. which

- The painting that was hanging in the foyer was stolen.
- VS.
- The painting, which was hanging in the foyer, was stolen.
- “that” is restrictive (defines the subject):  
there is only one painting in the foyer, it was stolen
- “which” is non-restrictive (extra information):  
there are possibly other paintings in the foyer, but only one was stolen



## Motivation:

- That is used when the information being added is necessary
- Which when the information is unnecessary
- Good rule of thumb is whether you feel the need for a comma (if yes — use which)

## Audience Participation:

- None

# Punctuation

- Punctuation allows you to vary your sentence structure, which keeps the reader's attention
- Order in terms of their power to separate clauses
- a clause is a group of words with a subject and a verb

colon :                      parentheses ()  
period .                  comma ,  
dash —                  semicolon ;



## **Motivation:**

- Thinking about punctuation in terms of power to separate clauses is often useful when deciding which element of punctuation you want to use.

## **Audience Participation:**

- Ask audience to rank these in their power of separation
- If it looks like they're confused, you can give a hint that a period (full-stop) has the most separating power, and a comma has the least (consider their ability to alter the flow of a phrase)

# Punctuation

- Punctuation allows you to vary your sentence structure, which keeps the reader's attention
- Order in terms of their power to separate clauses:

period > semicolon > parentheses > dash > colon > comma

**Motivation:**

- Resolve answer before going into more detail about each

**Audience Participation:**

- None

# Semicolon

- Used to connect two independent clauses
- Separates two ideas and lends emphasis to the second
- Adds variety and connects short, related clauses
- “The new spectrograph will have a higher resolution; it will observe one million new targets.”

**Motivation:**

- Semicolon can be thought of as one step down from the full stop.
- Good for clauses that are related

**Audience Participation:**

- None

# Parentheses

- Used to insert an afterthought or explanation
- Indicates that it's fine to skip over the information
- The sentence should make sense if you remove it
- “The simulation (completed in 2008) provides a clear picture of gas flow in galaxies.”

**Motivation:**

- Parentheses are good for additional information

**Audience Participation:**

- None

# Colon

- Used to introduce lists, quotes, explanations...
- It must follow a clause!
- Used to join two clauses if the second extends the first
- “I have visited three telescopes: the AAT, the UK Schmidt, and SkyMapper.”
- “We see similar results to the literature: changing the model influences multiple aspects of the analysis.”



## **Motivation:**

- Colon can be used in a number of circumstances.
- Take care when introducing a list -- don't use it with a preposition or verb that introduces the list eg. such as

## **Audience Participation:**

- None

# Dash

- Used to add emphasis or insert an abrupt definition or description
- Very versatile, but will lose its impact if overused!
- More relaxed than parentheses, but adds emphasis
- “I would be happy to help — I just need to finish this application!”

**Motivation:**

- The dash is good for casual text, it can be safely used in emails, but less appropriate for formal writing.

**Audience Participation:**

- None

# Paragraphs

- Should contain a single main idea
- Get to the point early!
- Should have a logical flow
  - sequential in time
  - general to specific
  - logical arguments
- Keep the paragraph short and the sentences varied!

**Motivation:**

- Finishing note on thinking about paragraphs.
- Lead into a longer sessions where students edit their own/each other's work.

**Audience Participation:**

- None



# Editing — Exercise

## ABSTRACT

We present a study of the links between star formation history and structural disturbance for a large mass-selected galaxy sample taken from the STAGES survey. Our sample contains galaxies of all morphologies inhabiting a very broad range of environments, from field galaxies to galaxies living in dense cluster regions. The galaxies' structure is quantified using Hubble Space Telescope (HST) images (Thisime et al. 2012), allowing us to divide the sample into undisturbed galaxies, disturbed but non-merging galaxies, and disturbed galaxies which are mergers. Moreover, a quantitative measurement of the degree of disturbance is calculated for each galaxy. As expected, we find that the vast majority of Elliptical and S0 galaxies in all environments probed have relaxed structure and show no signs of ongoing or recent star formation. We also find that structurally-disturbed galaxies have higher star-formation activity and younger stellar populations than their relaxed counterparts. These galaxies tend to avoid the lowest density regions. Conversely, cluster spiral galaxies with reduced/quenched star formation have significantly less disturbed (smoother) morphologies than spirals with "normal" star-formation activity. This is independent on whether these spirals are experiencing mergers or not. This finding suggests that these "passive" spirals have started their morphological transformation towards becoming lenticulars. Surprisingly, we also find that merging galaxies and equally-disturbed (but non-merging) galaxies have very similar specific star-formation rates and stellar ages. The degree of enhanced star formation in galaxies is thus linked to the degree of structural disturbance, regardless on its physical cause. Specifically, galaxies with equivalent degrees of "roughness" (i.e., equivalent deviations from a smooth profile) will have equivalent degrees of enhanced star formation, whether they are merging or not. This indicates that merging galaxies are not special in terms of their higher-than-normal star-formation activity. Any other physical process that produces "roughness", or, in other words, regions of enhanced density, will increase the star-formation activity in the galaxy with similar efficiency.



### Motivation:


- Sample abstract for people to edit

### Audience Participation:

- Give audience time to read and start editing -- maybe 10 minutes, but judge by feeling of the room

# Editing — Exercise

<p>Unsurprising — worth being in the abstract?</p> <p>Essential info — parentheses are a poor choice of separation</p>	<p><b>ABSTRACT</b></p> <p>We present a study of the links between star formation history and structural disturbance for a large mass-selected galaxy sample taken from the STAGES survey. Our sample contains galaxies of all morphologies inhabiting a very broad range of environments, from field galaxies to galaxies living in dense cluster regions. The galaxies' structure is quantified using Hubble Space Telescope (HST) images (Thisisme et al. 2012), allowing us to divide the sample into undisturbed galaxies, disturbed but non-merging galaxies, and disturbed galaxies which are mergers. Moreover, <del>a quantitative measurement of</del><sup>we</sup> the degree of disturbance <del>is calculated</del> for each galaxy. [As expected, we find that the vast majority of Elliptical and S0 galaxies in all environments probed have relaxed structure and show no signs of ongoing or recent star formation.] We <del>also</del> find that structurally-disturbed galaxies have higher star-formation activity and younger stellar populations than their relaxed counterparts. These galaxies tend to avoid the lowest density regions. Conversely, cluster spiral galaxies with reduced/quenched star formation have significantly less disturbed (smoother) morphologies than spirals with "normal" star-formation activity. This is independent on whether these spirals are experiencing mergers or not. This finding suggests that these "passive" spirals have started their morphological transformation towards becoming lenticulars. Surprisingly, we also find that merging galaxies and equally-disturbed (but non-merging) galaxies have very similar specific star-formation rates and stellar ages. The degree of enhanced star formation in galaxies is thus linked to the degree of structural disturbance, regardless on its physical cause. Specifically, galaxies with equivalent degrees of "roughness" (i.e., equivalent deviations from a smooth profile) will have equivalent degrees of enhanced star formation, whether they are merging or not. This indicates that merging galaxies are not special in terms of their higher-than-normal star-formation activity. Any other physical process that produces "roughness", or, in other words, regions of enhanced density, will increase the star-formation activity in the galaxy with similar efficiency.</p>	<p>Consider active voice?</p>
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CAASTRO  
ALL-SKY ASTROPHYSICS

## Motivation:

- Some example edits for the abstract
- Any remaining time can be spent encouraging students to edit their own work, or they can try and edit some of the other abstracts.
- Presenters can engage with individuals and give advice if it's needed.

## Audience Participation:

- Go over the annotated edits, ask students for other suggestions -- likely that each individual will see different things.



# Paper Writing Workshop

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**Motivation:**

- Holder slide

**Audience Participation:**

- None

# Session 3: Peer Review

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What to expect...



**Motivation:**

- Outline that for your first paper, the submission process can be daunting.
- There can also be a lot of variability when it comes to peer review.
- The aim of this section is to discuss some of the steps involved in publishing, and give students a better feel for what to expect from the process.

**Audience Participation:**

- None

# The submission process

- Now that you've written and edited your work, it's time to submit! But...
- Where should I submit it to?
- What is the referee's job?
- How should I respond when I get feedback?



## **Motivation:**

- Common questions about peer-review process

## **Audience Participation:**

- Feel free to ask students if they have more questions about peer review.
- Don't answer these yet, but keep them in mind in case you can elaborate on them during the presentation, or at the end of the session.

# Authorship

**Motivation:**

- Highlight that authorship is one of the first decisions you'll need to make.

**Audience Participation:**

- Do a quick poll to see if people have been first author or co-author on a paper.

# Authorship

- First author
  - did most of the work
  - wrote the paper
- Co-authors
  - contributed to the work or the broader project
  - e.g. provided data or analysis
- Acknowledgements
  - older collaborations responsible for your data
  - those who helped shape your paper



## **Motivation:**

- Talk through the difference between authorship and coauthorship.
- Any examples from your own work or your own advice are very welcome here!
- Note that some contributions may not justify authorship, but can be acknowledged -- things like scientific discussion or editing

## **Audience Participation:**

- None

# Picking a journal

- Consider the audience and scope of the journal



## **Motivation:**

- Highlight that different journals have different readerships.
- However, you may like to comment on how relevant you feel this is in the modern era when most articles are provided as open-access on the arXiv.

## **Audience Participation:**

- Ask the audience about what astronomy journals they're aware of
- Journals are often ranked by impact factor — ask for hands up if people know the actual definition of the impact factor or if someone would like to guess what goes into the impact factor. (Answer is on the next slide, so don't spend too much time on this!)



# Picking a journal

- Consider the audience and scope of the journal
- The impact factor:
  - average citations/paper for the past two years

$$\mathbf{IF}_y = \frac{\mathbf{Citations}_{y-1} + \mathbf{Citations}_{y-2}}{\mathbf{Publications}_{y-1} + \mathbf{Publications}_{y-2}}$$



Source: [https://en.wikipedia.org/wiki/Impact\\_factor](https://en.wikipedia.org/wiki/Impact_factor)

## Motivation:

- This slide describes the commonly used impact factor: number of citations for all published papers divided by the number of papers over the past two years. The next slide will show some astronomy journals and their impact factors.

## Audience Participation:

- None

# Picking a journal

Journal	2016 IF	Free?
Nature	40.137	No
Science	37.205	No
The Astrophysical Journal (ApJ)	5.533	No
Astronomy and Astrophysics (A&A)	5.014	Yes
Monthly Notices of the Royal Astronomical Society (MNRAS)	4.961	Yes
Physical Review D (PRD)	4.568	Yes
Publications of the Astronomical Society of Australia (PASA)	4.095	Yes



## Motivation:

- For each of the journals listed, discuss a little about the scope:
- Nature and Science: outstanding scientific importance, conclusions relevant to a wide readership
- ApJ, A&A, MNRAS, PASA: All aspects of astrophysics (planetary, stellar, galactic, cosmology, instrumentation, etc...)
- PASA NOTE: Large focus on project papers (like a survey white paper, or announcement paper)
- PRD: Specific focus on gravitation, cosmology, particle physics
- After going through the different journals listed feel free to add any anecdotes about your experiences with different journals, especially scope. Please keep this informative and positive.
- You may also like to mention other journals that you've published in as well.

## Audience Participation:

- None

# Types of papers

- First exploration
- Mid-way contribution
- Definitive answer
- Review paper
- Letters

**Motivation:**

- Briefly mention the different types of articles.

**Audience Participation:**

- None

# First exploration

- Emphasis on new phenomenon or new problem
- Not much to cite from before except context
- Example:

A bright millisecond radio burst of extragalactic origin  
Lorimer, D. R. et al. (arXiv: 0709.4301)

**Motivation:**

- Cover points as listed on slides, add anything relevant from your own experience

**Audience Participation:**

- None

# Mid-way contribution

- Emphasis on the main step moving the field forward
- Existing literature needs to be discussed
- Example:

The Parkes multibeam pulsar survey - VII.  
Lorimer, D. R. et al (arXiv: 1501.05516)

**Motivation:**

- Cover points as listed on slides, add anything relevant from your own experience

**Audience Participation:**

- None

# Definitive answer

- Emphasis on legacy left by new precision, completeness, or final measurements
- Lots of literature to take into account
- Example:

Nine-year Wilkinson Microwave Anisotropy Probe (WMAP)  
Observations: Final Maps and Results  
Bennett, C. L. et al. (arXiv: 1212.5225)



## **Motivation:**

- Cover points as listed on slides, add anything relevant from your own experience

## **Audience Participation:**

- None

# Review paper

- Almost short textbook style
- Stratospheric overview, attention to detail, full list of open questions
- Doing full justice listing and evaluating in context all existing literature
- Example:

A Universal Stellar Initial Mass Function? A Critical Look at Variations  
Bastian, N. et al. (arXiv: 1001.2965)

**Motivation:**

- Cover points as listed on slides, add anything relevant from your own experience

**Audience Participation:**

- None

# Letter

- Short paper (~5 pages), intended to be published quickly.
- Fast-track review and acceptance — good for discoveries.
- Example:

The Highly Unusual Chemical Composition of the Hercules Dwarf Spheroidal Galaxy  
Koch, A. et al. (arXiv: 0810.0710)

**Motivation:**

- Cover points as listed on slides, add anything relevant from your own experience

**Audience Participation:**

- None



# Formatting

- Journals have specific instructions for authors and LaTeX templates for you to use
- They often have style guides, which can help with language and grammar choices

## Spelling and grammar

Please use British English spellings – e.g. centre not center, labelled not labeled. For words ending in -ise/ysc or -ize follow this style: use -ise/ysc for devise, surprise, comprise, revise, exercise, analyse; use -ize for recognize, criticize, minimize, emphasize, organize, ionize, polarize, parametrize (note the spelling of this word in particular).

'None' is a singular word (none of the stars is a white dwarf), whilst 'data' is a plural word (these data show...).

Miscellaneous journal spellings: acknowledgements, artefact, best-fitting (not best-fit), disc (except computer disk), haloes (not hales), hotspot, none the less, non-linear, on to, time-scale.

For any other spellings, use whichever version is listed first in the Oxford English Dictionary.



Source: MNRAS instructions page

## Motivation:

- Comment that TeX templates can be found under information for authors, and that it is highly recommended that you read all instructions before submission.
- Following the style guide provided will save time when it comes to the proof stage of submission.

## Audience Participation:

- None

# Submitting online

- You will likely need:
  - LaTeX source files (including figures)
  - a compiled pdf/ps for the editor and reviewer
  - any information you'd like the editor to know

**Motivation:**

- Cover the things you'll need, include anything else not listed here that you've required in the past.
- If you've ever supplied extra information to the editor, give an example

**Audience Participation:**

- None

# Submitting online

- You will likely need:
  - LaTeX source files (including figures)
  - a compiled pdf/ps for the editor and reviewer
  - any information you'd like the editor to know
- Check for:
  - any final spelling mistakes
  - any mismatched references (figures and tables)
  - any incomplete citations

**Motivation:**

- Remind students that there are a number of things they should double check before submission. Add any others you think of.

**Audience Participation:**

- None

# Submitting to arXiv

- Entirely your (and your co-author's) choice about when to submit to arXiv
- There are pros and cons for submitting either before or after acceptance of the journal
- Seek advice from many and use your best judgement!



## **Motivation:**

- Speak to some of the pros and cons, and feel free to give your own thoughts on this issue.
- pro: feedback from authors before publication
- con: significant changes occur after referee report (extra work done, results change etc.)

## **Audience Participation:**

- Hold an open discussion about the pros and cons, or break people up into smaller groups to discuss these before coming back to the content.

# The referee

**Motivation:**

- Note that the referee can play a significant role in the publication process, so the next few slides will cover motivation and expectations.
- Note that the referee is likely to have a better scientific understanding of your paper than the editor

**Audience Participation:**

- Ask students for some suggestions about the goals of the referee (main two shown on next slide) don't spend too long on this.

# The referee

- The referee has two major aims:
  - help you improve your scientific contribution
  - reject your work if it is irrelevant or incorrect
- Their job is not to rewrite your work!

**Motivation:**

- Goals of the referee

**Audience Participation:**

- None

# The referee

- While reading your paper, they will wonder:
  - what does your paper contribute to the field?
  - have you made any major methodical mistakes?
  - are your results are believable?
  - are your ideas clearly presented?
  - have you made fair comparisons to the literature?



## **Motivation:**

- Some points that the referee may have in mind when reading your paper.
- Add any others that you think are relevant (or what you've specifically thought when reviewing a paper)

## **Audience Participation:**

- None

# Some criteria

Is the subject appropriate for the journal?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Is the content sufficiently significant to warrant publication in MNRAS?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Are the methods and results set out clearly?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Are all the necessary references given?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Is the summary sufficiently informative?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Can the paper be shortened without loss of clarity?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Are all the figures and tables necessary?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Are the figures and tables adequate?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
If there are colour figures, is colour reproduction essential? If so for which figures? Please leave details in the comments box below.	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
Is the paper in reasonable English?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
If the paper contains long tables, finding charts etc., can these be published in electronic form only?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure
<input type="checkbox"/> Do you want your name revealed to the authors?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unsure



## Motivation:

- This is taken from the MNRAS interface for editors, and shows some of the points a referee might use to make a decision.
- You may wish to speak to how a referee might evaluate any of these questions.

## Audience Participation:

- None



# Receiving the outcome

**Motivation:**

- Once you've sent a paper off, receiving the outcome is the next major interaction you'll have in the publishing process. Now cover the general outcomes that you might receive from a journal

**Audience Participation:**

- None

# Receiving the outcome

- Accepted with no changes (rare)

**Motivation:**

- Elaborate on accepted without changes

**Audience Participation:**

- None

# Receiving the outcome

- Accepted with no changes (rare)
- Accepted pending minor revisions



## **Motivation:**

- Elaborate on accepted pending minor changes (how minor is minor?)

## **Audience Participation:**

- None

# Receiving the outcome

- Accepted with no changes (rare)
- Accepted pending minor revisions
- Moderate/Major revision requested (most common)
  - this is a positive outcome!
  - you're just being advised to improve your work

**Motivation:**

- Elaborate on moderate/major revision

**Audience Participation:**

- None

# Receiving the outcome

- Accepted with no changes (rare)
- Accepted pending minor revisions
- Moderate/Major revision requested (most common)
  - this is a positive outcome!
  - you're just being advised to improve your work
- Rejected (no resubmission possible)
  - maybe your paper is not a good fit for this journal

**Motivation:**

- Elaborate on rejected

**Audience Participation:**

- None

# One paper, two reports - Exercise

- Reviewers may vary!
- Read over the two reports provided
- In this instance, the editor passed the paper to a new referee after initial revision
- What are some of the main differences between reports?

**Motivation:**

- Exercise relating to the two reports from different referees on the same paper

**Audience Participation:**

- Students don't need to spend too long on this -- just enough to get the idea that it's possible to have your paper sent to another referee in certain circumstances.

# Referee report - Exercise

- Reports from referees are often quite varied!
- Read the provided referee reports and note:
  - what are common features of the different reports?
  - how do the reports differ?
  - how broad or specific do the comments get?
  - how do referees structure their comments?

**Motivation:**

- Final slide leads into the exercise on reading referee reports.

**Audience Participation:**

- Give the students a large amount of time to peruse the reports, and then have a discussion.
- What surprised the students about the reports?

# Revision and resubmission

- Take some time away from the referee's comments so you can address them fairly!
- Resubmit with a response to the referee
  - start by thanking the referee for their feedback
  - state the comment and how you addressed it
  - if you don't want to change something explain why
  - be polite — being defensive won't help you!



## **Motivation:**

- Finish up with some advice about addressing referee reports.
- Feel free to add your own advice if relevant

## **Audience Participation:**

- You may wish to finalise with a less formal discussion with students, and answer any remaining questions they might have about the submission process, or any other part of the workshop.