



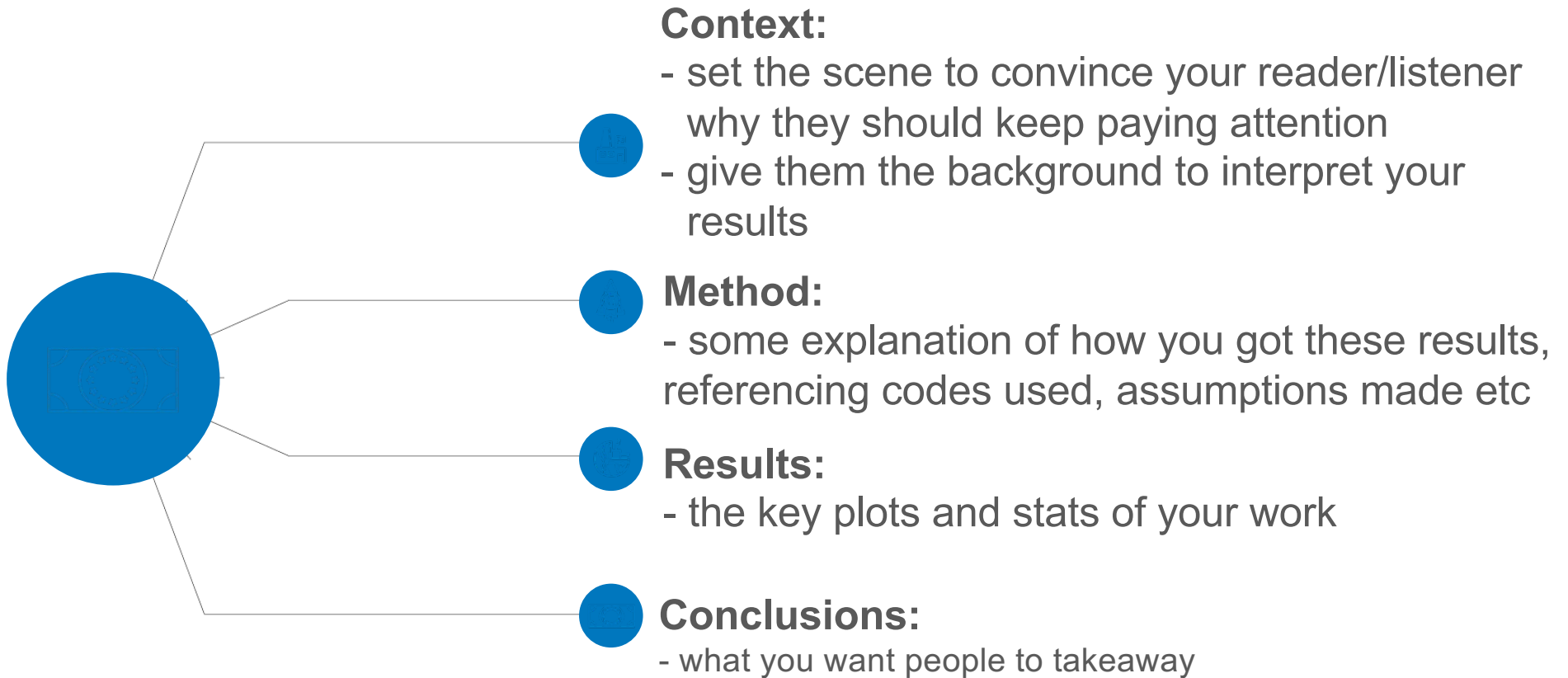
How to give a good presentation

La Silla Summer School 2025

Abigail Frost

Operations staff astronomer @ ESO

Every presentation, no matter the form, should cover some key areas



Presentations should be tailored to the specific audience e.g.



**School
child**



**General
public**



**General
Scientific
Audience**

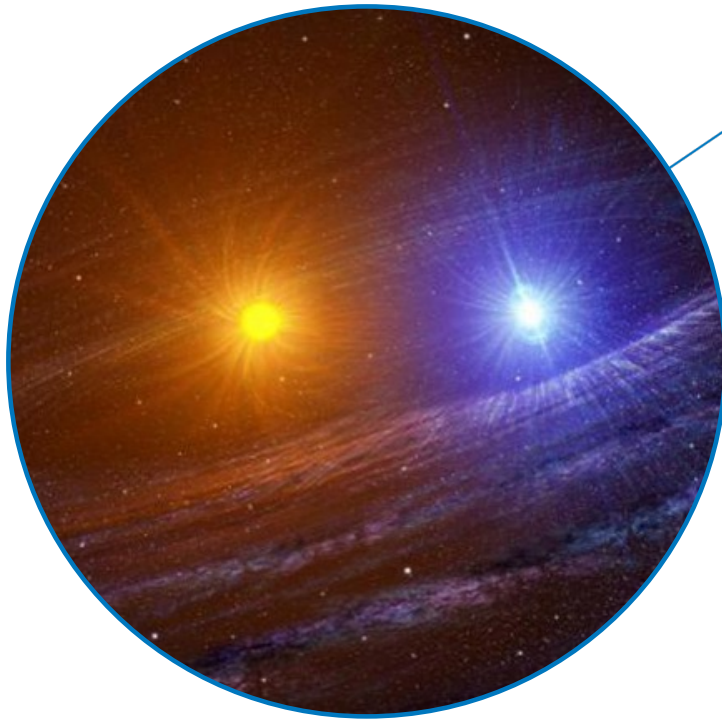


**General
Astronomy
Audience**



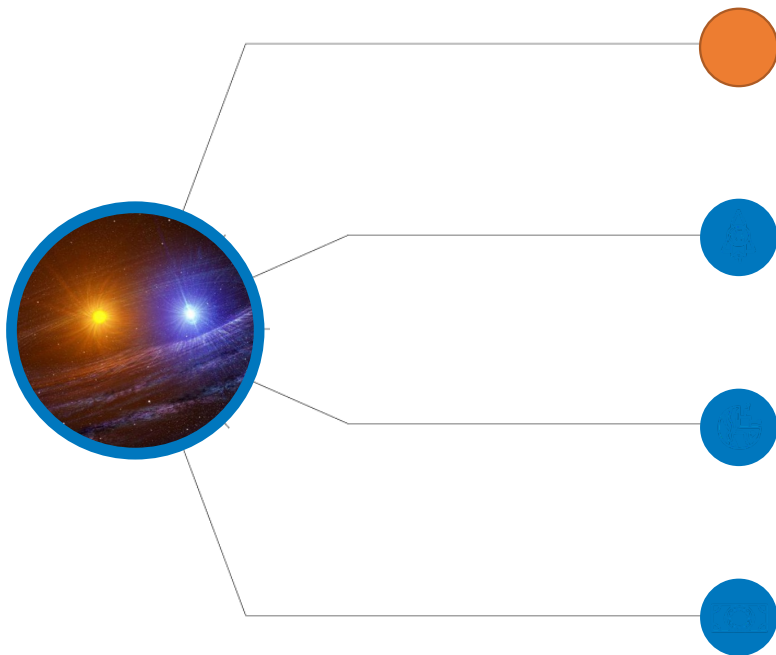
**Specialists
within the
field**

Case Study: Massive stellar multiplicity



How can this science be tailored to different audiences?

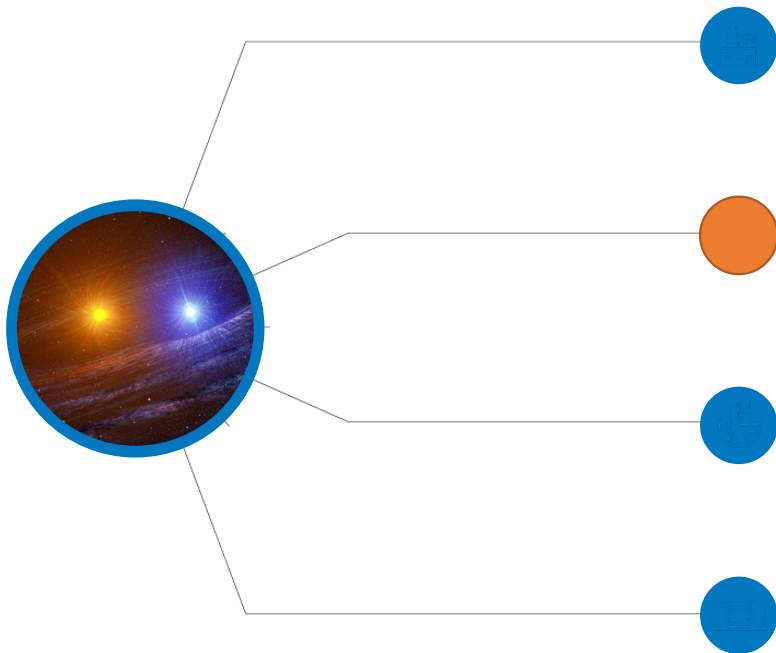
E.g. for a young child:



Context:

- What is a star? Stars in the sky are balls of superhot gas
- Sun is a star! We need it to live on Earth
- Sun is actually very small though, some stars are much bigger
- We care about these stars because they make lots of the stuff we are made out of (heavy elements) and cool explosions etc.
- If a massive star has a friend then this can change its whole life

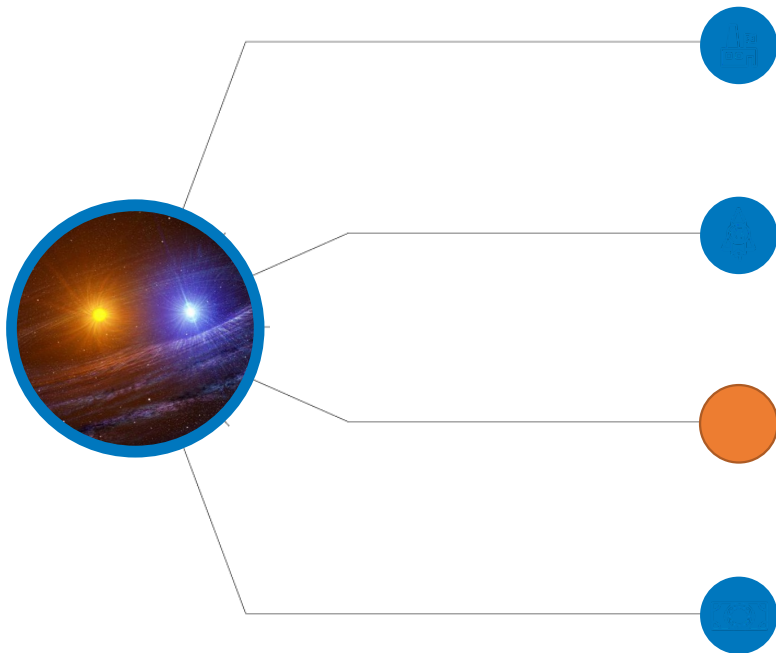
E.g. for a young child:



Method:

- Astronomers use telescopes to view stars that are very far away
- The light that we use to see is a form of 'radiation' but there are lots of different types we can use to view objects in space like stars e.g. we can spread the light out (spectroscopy), get pictures of it (images) etc.

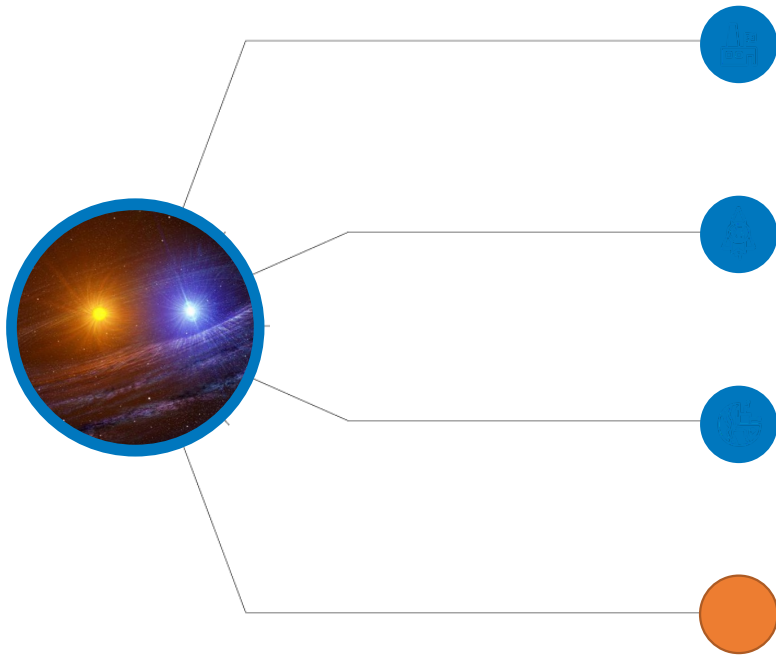
E.g. for a young child:



Results:

- e.g. by splitting the light we can see different parts of it moving in opposite directions and see if 2 stars are present (SB1/SB2)
- By doing this for lots of stars we found that e.g. a lot of the biggest stars are actually twins ($q \sim 1$ for O-type stars)

E.g. for a young child:



Conclusions:

- Massive stars often exist as twins and the way they interact affects how heavy they are and the light they produce

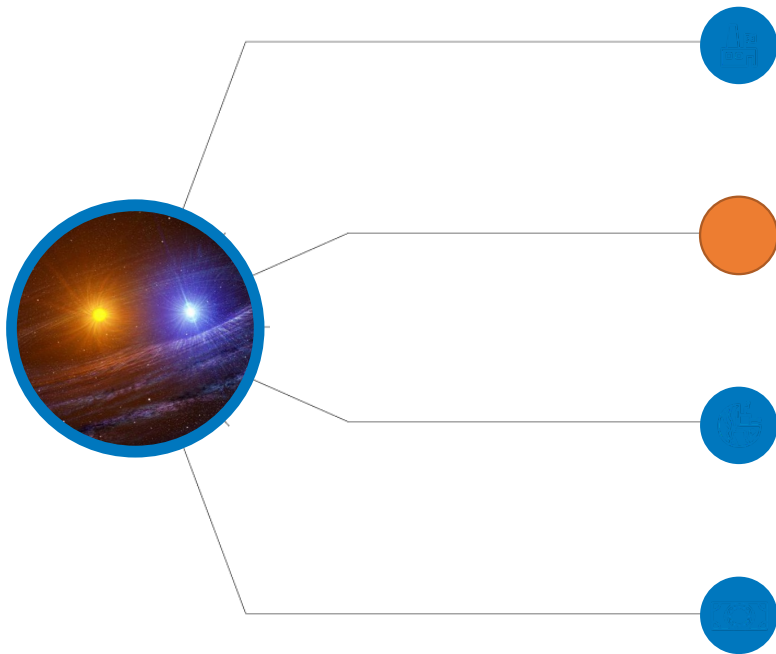
E.g. for a general astronomy audience at a conference:



Context - **still important!**

- Massive stars are the most influential stars in the Universe - stellar winds significant enough to effect galactic gas dynamics, sole creators of SNe and key enrichers of ISM and thus lay groundwork for planetary systems like our own etc

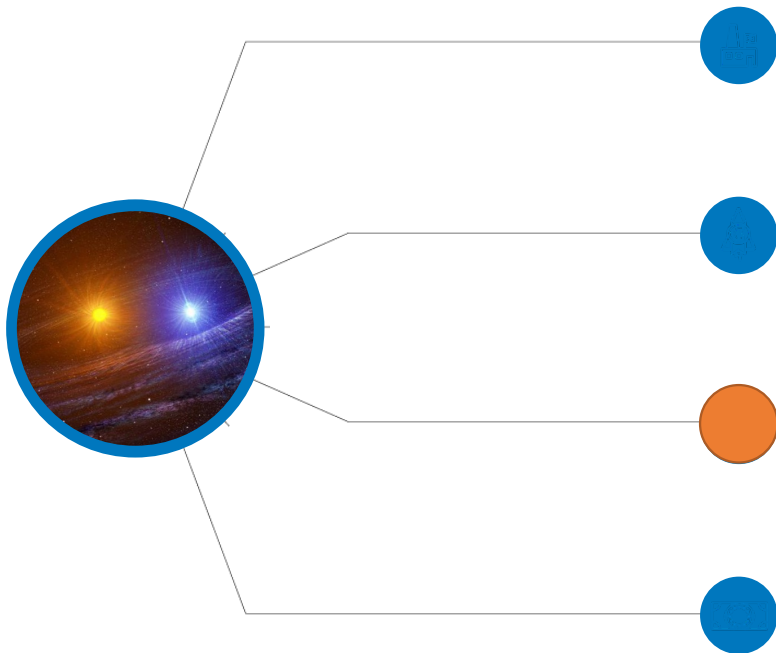
E.g. for a general astronomy audience at a conference:



Method:

- Niche technique? Introduce it!
- Don't assume the knowledge of your audience - spell out acronyms
- Equations tend to make people zone out - pick and choose carefully!

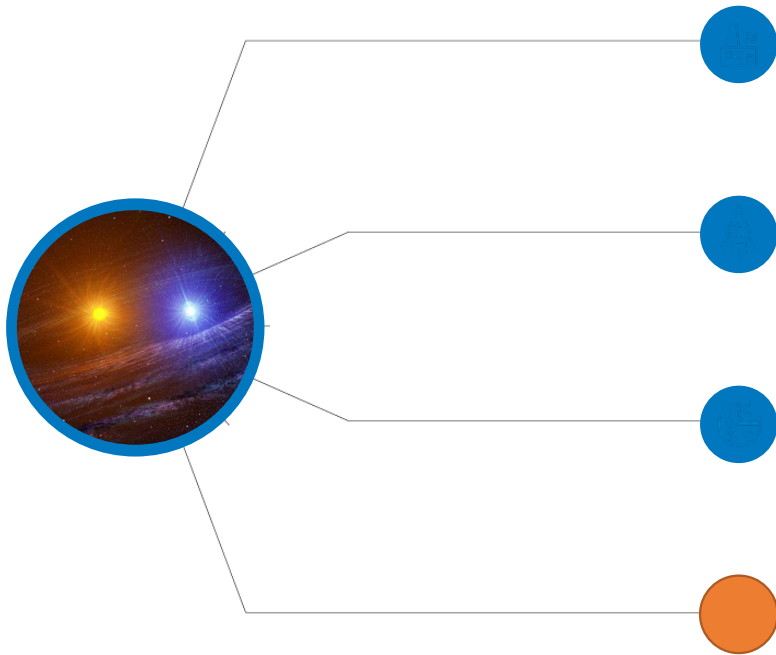
E.g. for a general astronomy audience at a conference:



Results:

- Include the key figures of your results or papers especially those which have the most impact/best illustrate you main results

E.g. for a general astronomy audience at a conference:



Conclusions/future work:

- Highlight the key results, the novelty of your work and where you're going from here

✦ In any format, readability is key!

Bad **Good!**

Bad **Good!**

Good!

In the rest of this talk I'm going to focus on two kinds of presentation



Posters



Oral presentations



Posters



Key considerations:

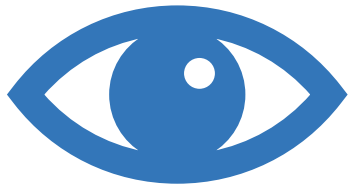
- No guaranteed/captive audience
- MANY other posters
- Often limited dedicated time for poster viewing & distractions (like coffee/snacks)
- So you **NEED** to grab peoples' attention



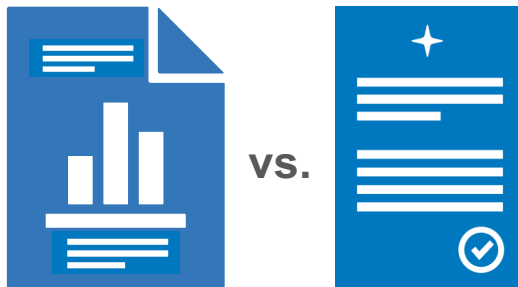
Designing a poster - NOT a paper printed in A0!



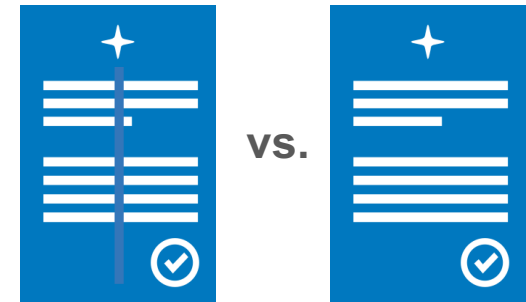
Make it **eye-catching!**



Can build a poster around a key figure/illustration of your work



Make it easy to read



Things to definitely include:

- Name, collaborators, institution, email

Things you could include:



Making the poster



Check resolution



- Set the page size in the application
- Make sure the resolution of your figures is good enough

Proof-read it!



Ask for your supervisors input



Leave enough time to get it printed!



- Some conferences will let you print there

Make sure you can get it there

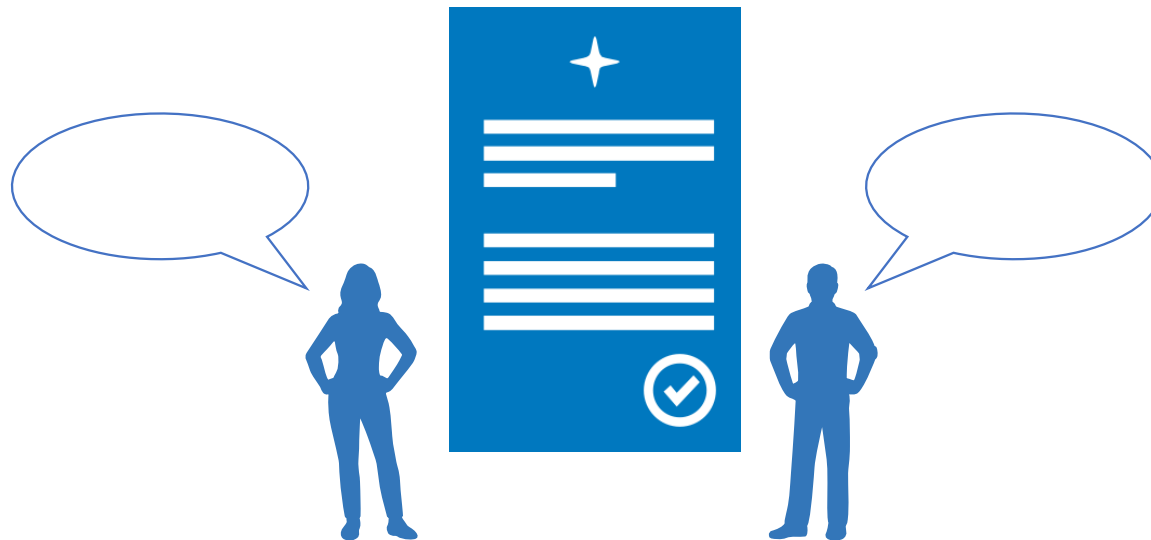


- Hand luggage/security requirements?
- Fabric posters

Presenting the poster



Be proactive - stand by it!



Have a short
summary/pitch ready

Poster 'flash' sessions



- <5 mins to advertise your poster to the audience of the oral presentations
- Often you will get one slide to show
 - **Don't just submit the poster as the slide** as it won't be legible
- **Don't overrun**
- **Include a recognisable part of your poster**
- Don't have to give it all away!



What about e-posters?

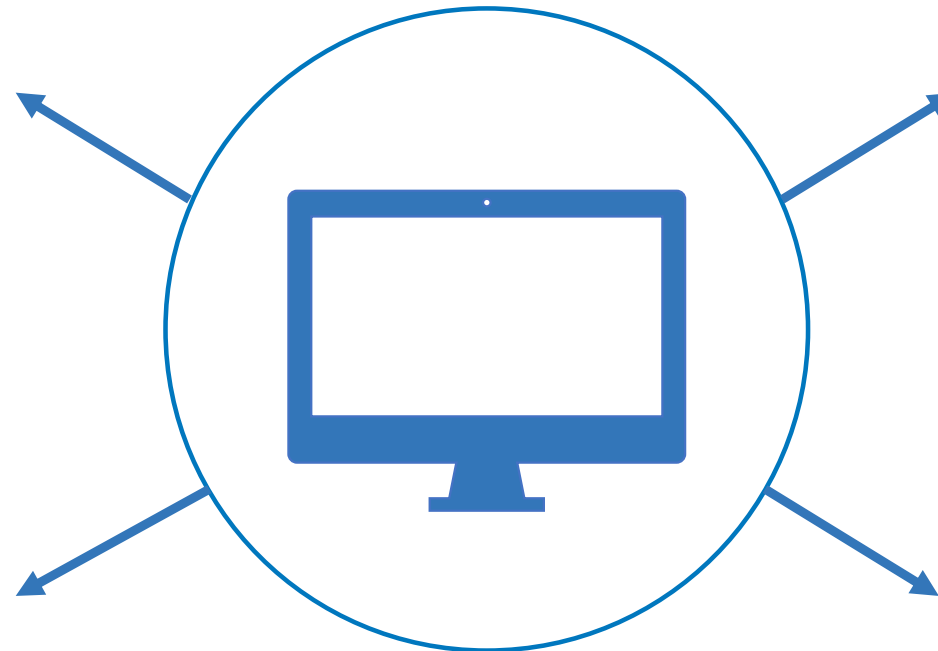


Exploit the virtual format

Include interactive figures, animations and videos

Often not as noticeable - advertise!

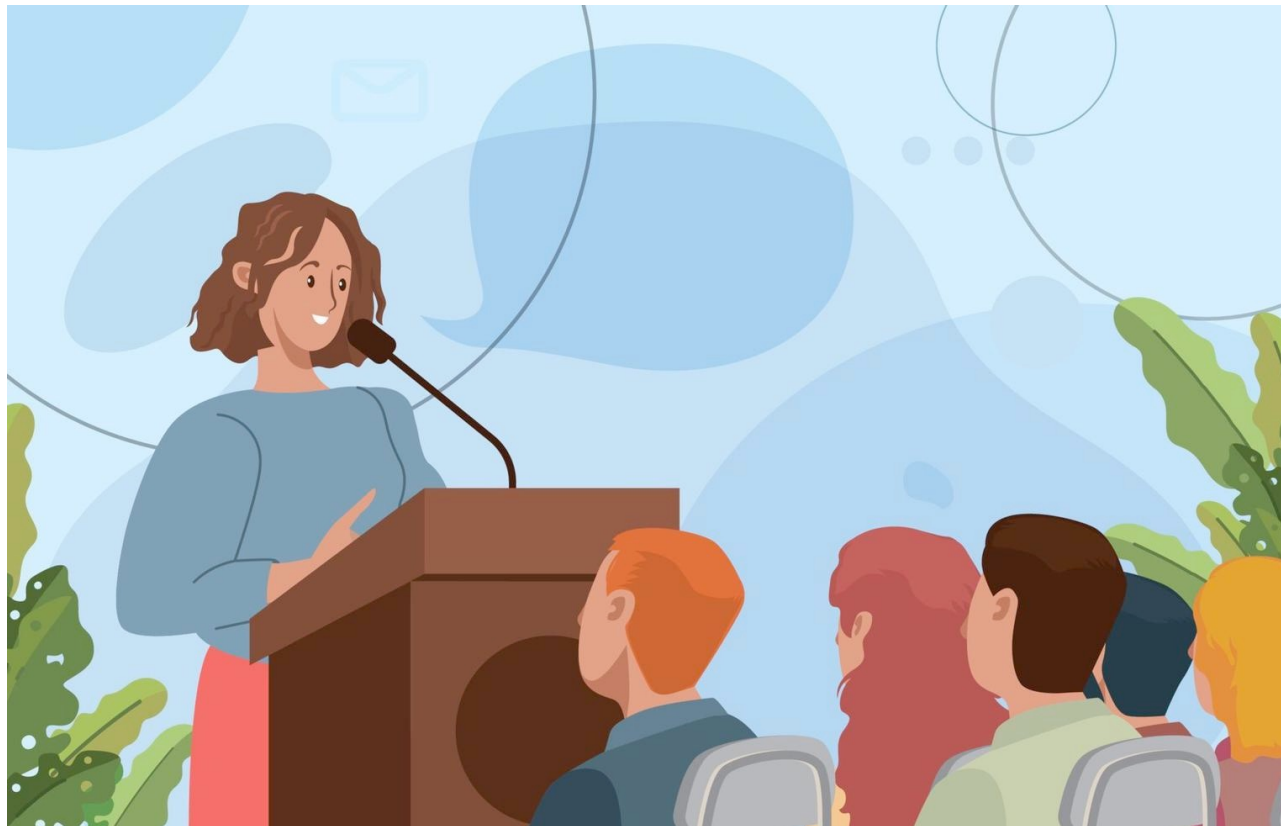
Mention them to people in person, share them on online spaces (e.g. Slack)



Ask for screen size display in advance

Respect upload deadlines to maximise exposure!

Oral presentations



Designing a talk



Tailor it to your audience

- Make sure you're on topic
- Even if the results you are presenting are the same between different talks, different sessions/conferences will have different themes



e.g.



FM4-5: Bridging the final stages of massive stars to supernovae and transients

Title

An interaction creates an enriched nebula around a massive magnetic binary system

Abstract

Understanding the effects of the interactions of stars in multiple systems is critical if we wish to understand the fates of massive stars, 90% of which are expected to exist in at least a binary system and 70% of which are expected to interact over their lifetime (Sana+ 2012). In this talk I will focus on massive stellar interactions as a catalyst for enrichment of their surroundings. I will present the case of the binary system HD 148937, a binary system consisting of two massive stars. This O-star binary system is a rarity amongst its class, displaying magnetism and harbouring a extended, complex bipolar nebula (Lim+ 2024) enriched with CNO process elements (Mahy+ 2017). Through a near-decade-long monitoring of the system with infrared interferometry and spectroscopy our team we constrain the orbit of the system in addition to the physical and atmospheric properties of its individual stars. We find that one star in the system appears significantly different to its companion despite their almost identical brightnesses - the primary star alone is magnetic and when placed on a Hertzsprung-Russell diagram appears ~ 1.5 Myr younger than its companion. Comparing of our results with hydrodynamical models, we determine that this star must have been formed through a merger and the surrounding nebula was also likely created during this event. Thus, the interactions of massive stars not only have the ability to affect their own fates through mass and rotation changes, but can also enrich their surroundings with the material of stellar interiors.

FM8-3: Advances and Challenges in Understanding the Solar and Stellar Dynamos

Title

Observational evidence that mergers in stellar multiple systems can create magnetism in massive stars

Abstract

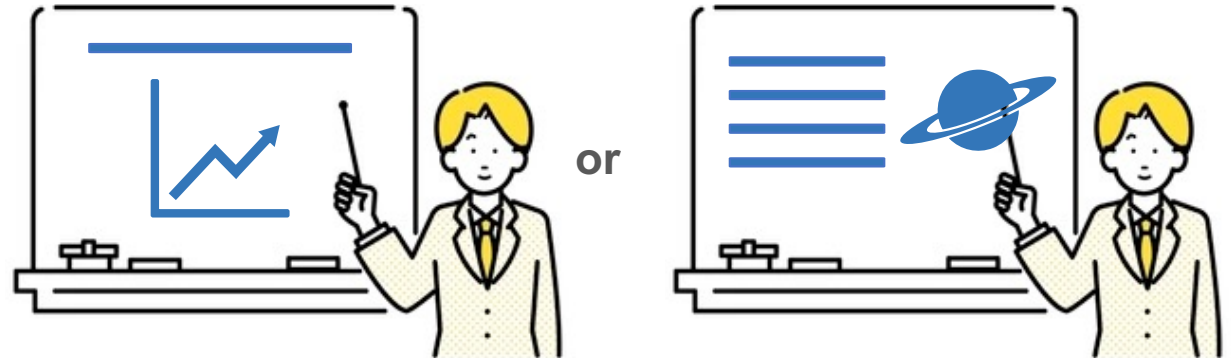
In stars like our Sun that have convective envelopes, the surface magnetic field is produced through a dynamo effect. Massive stars ($M \geq 8M_{\text{sun}}$) have radiative envelopes that cannot actively sustain such a dynamo and yet $\sim 7\%$ of massive stars (e.g. Wade+ 2016) display strong, large-scale, surface magnetic fields, the origins of which are not understood. In this talk I will present the results of a 9-yr interferometric monitoring with multi-epoch spectroscopic data, which have allowed the characterisation of the magnetic massive binary system HD 148937. Only one star of the pair is magnetic, and using its distant companion as an independent clock, we have found a self-consistent scenario in which magnetism originated in only one star in the system due to a merger event, that the system was originally a hierarchical triple system, and two stars of this previous triple merged to create the magnetic star in the current system. This scenario is supported by the presence of a complex bipolar nebula surrounding the binary, which is enriched in CNO process elements. This constitutes observational evidence that magnetic fields in massive stars can be generated through interactions in multiple stellar systems. Given that the fraction of O stars that are predicted to experience a merger is $\sim 8\%$ (de Mink+ 2014), very similar to the $\sim 7\%$ fraction which are observed to have magnetic fields, mergers may be a significant originator of magnetic fields in massive stars.

Designing a talk



Unlike my previous slide... **limit text!**

- Say it, not display it!
- Save text for **key points** and **highlights**
- Base slides around visuals



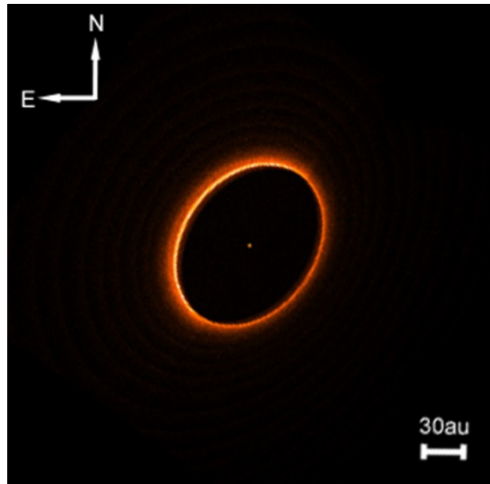
not



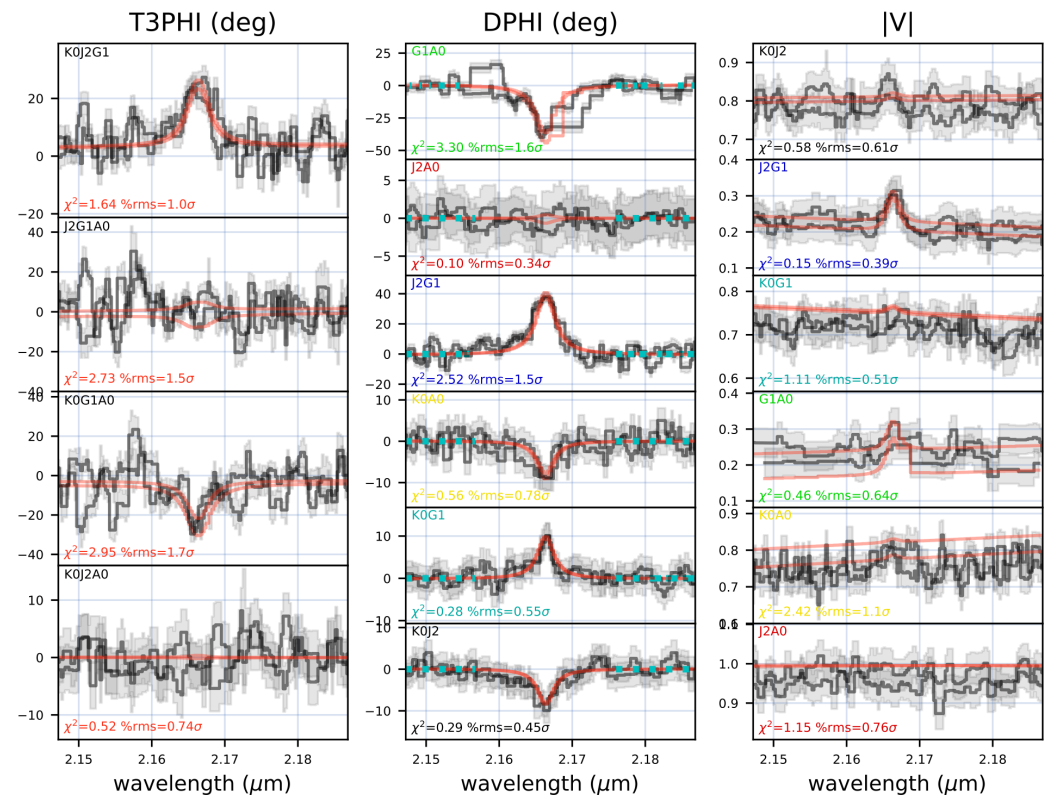
Designing a talk



Make sure you explain figures



VS.



Designing a talk



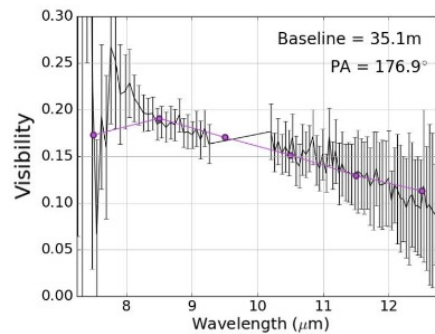
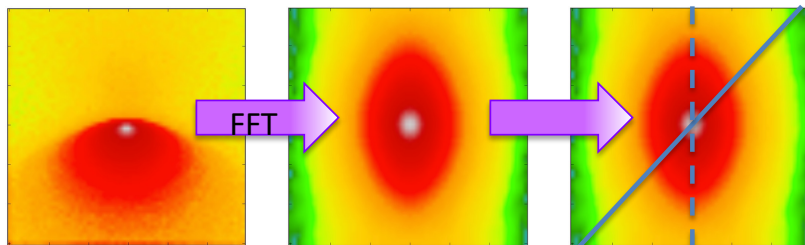
Make everything legible

- If needed, ask the presentation format before the talk



Designing a talk

Exploit the format - use movies/animations for emphasis



N.B. too many can slow you down/cause crashes
Make sure to test beforehand!

Designing a talk



Back-up slides

- Good for:
 - Obvious question point in your talk that might be of interest to specialists but not general audience
 - Details of method that you don't have time for
- Should NOT be used for any key information



Timing a talk



- **Don't assume the runtime of your talk**
 - Run it at least once and cut/expand as necessary
- ~1min a slide? Maybe...



What if my talk is too long?



- Things that can be cut for time:
 - Outlines
 - Personal intro
- **Results > methods**, especially if the paper is published
- Limit context to 1 slide
- Don't read summary slide



Before the talk



- If you want, do a practice run with your peers/supervisor to get feedback!
- Great for the first time you give a new form of talk e.g. interview
- Nervous? Practice makes perfect!



The day of the talk



- Test!
 - Organizers should give you an opportunity, if they don't - ASK
- If you have an adaptor/laser pointer, bring them just in case
 - If they are provided, test them as well beforehand
- Double-check aspect ratio so things aren't cut-off



Presenting the talk



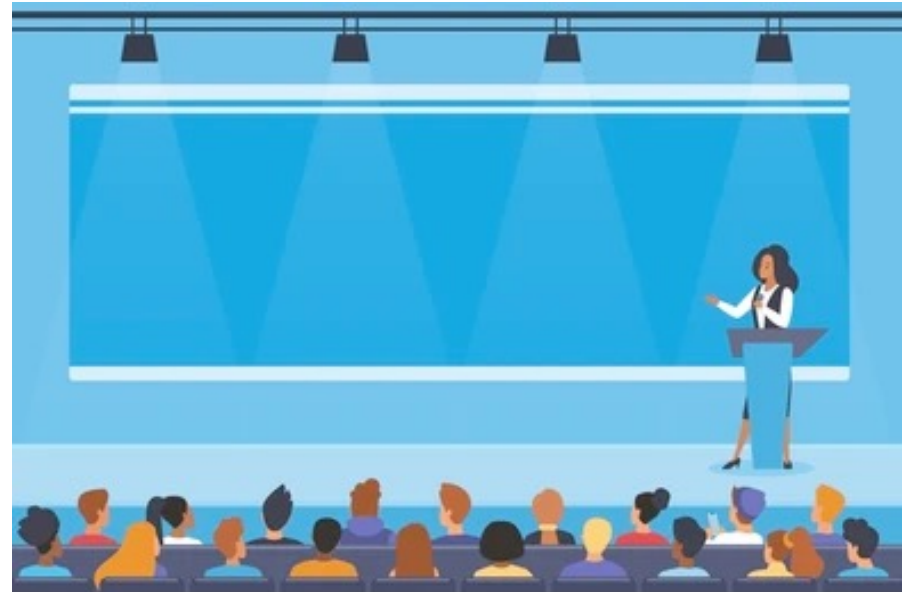
- **Being audible is key!**
 - Speak slowly and clearly
- Don't rush through it
 - If you have a complex figure, talk through it and give people time to take it in
- Eye contact?
 - Key for interviews



Presenting the talk



- **Speak into the mic!**
Especially if the meeting is hybrid
 - By not doing so you are self-limiting your audience
 - If people yell out questions without a mic, repeat them for people online/at the back
- Sound enthusiastic



Dealing with issues



- Pointer stops working? No problem!
 - Describe with reference to figures etc.
- Need to sit? Ask the local organising committee (LOC) beforehand
- Bring water to the stage
- Technical issues? The LOC should help you



Handling questions



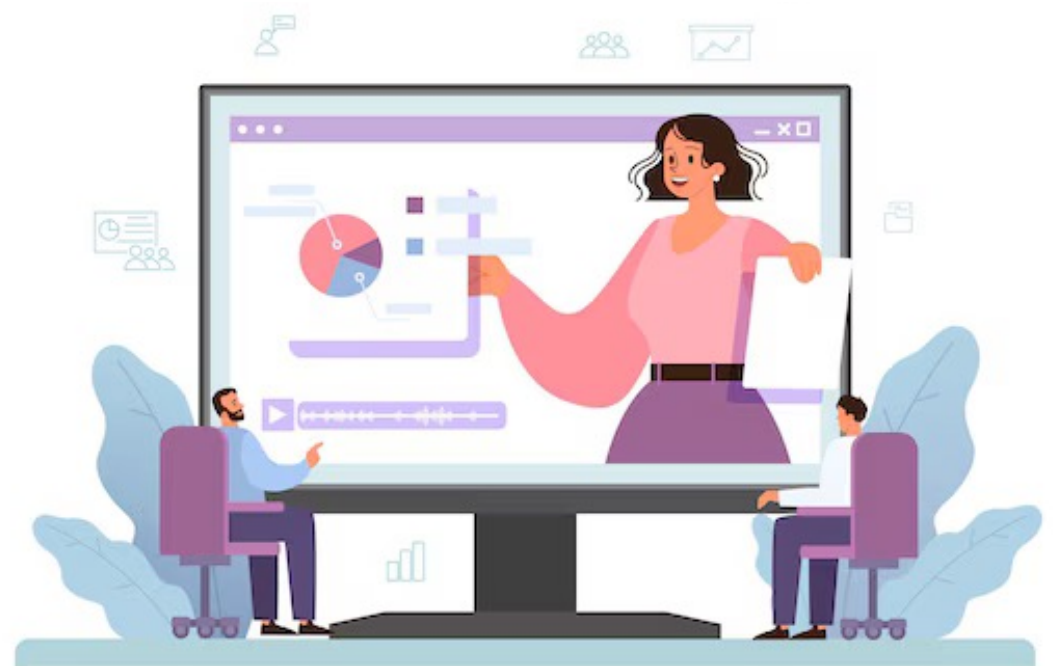
- It's ok to not remember something on the spot - just say so.
 - Better than making something up!
- Repeating the question gives you more time to think
- Bullying and degradation should not be allowed
 - Be aware of code-of-conduct procedure



Online talks



- Legibility is less of an issue if everything goes smoothly
- Be careful of background noise
- Try to ensure a stable connection
- Make sure you still look presentable
- Try and make sure your lighting is ok and you can be seen well
- Be careful when reading notes (people can tell)



Last-minute talks



- e.g. winning a poster prize and being given a talk slot with a couple of days notice
- Include more text or use presenter notes
- Adapt a previous talk rather than make it from scratch (if possible)



Takeaways

- **Plan** your presentations nicely in advance
- **Practice** always helps for oral presentations
- **Ask** for advice from your supervisors and peers
- **Check** presentations before you present/print them
- **Tailor** your presentation to the audience
 - Remember, you may know your work well but the audience won't
- Make sure it's **legible**
- Make sure it's **eye-catching/engaging**