

# PHY 517 / AST 443: Observational Techniques in Astronomy

## Lecture 6:

Proposals  
Time Allocation Committees  
Final Presentations

# Telescope time proposals

- writing (successful) proposals is an essential part of being a researcher
- ... at the latest, when you need to apply for funding
- observational astronomers need to submit proposals for telescope time

# Example: Hubble Space Telescope

- proposal deadline once per year (~April)
- typically ~1000 proposals
- ~20% success rate
- open to anyone

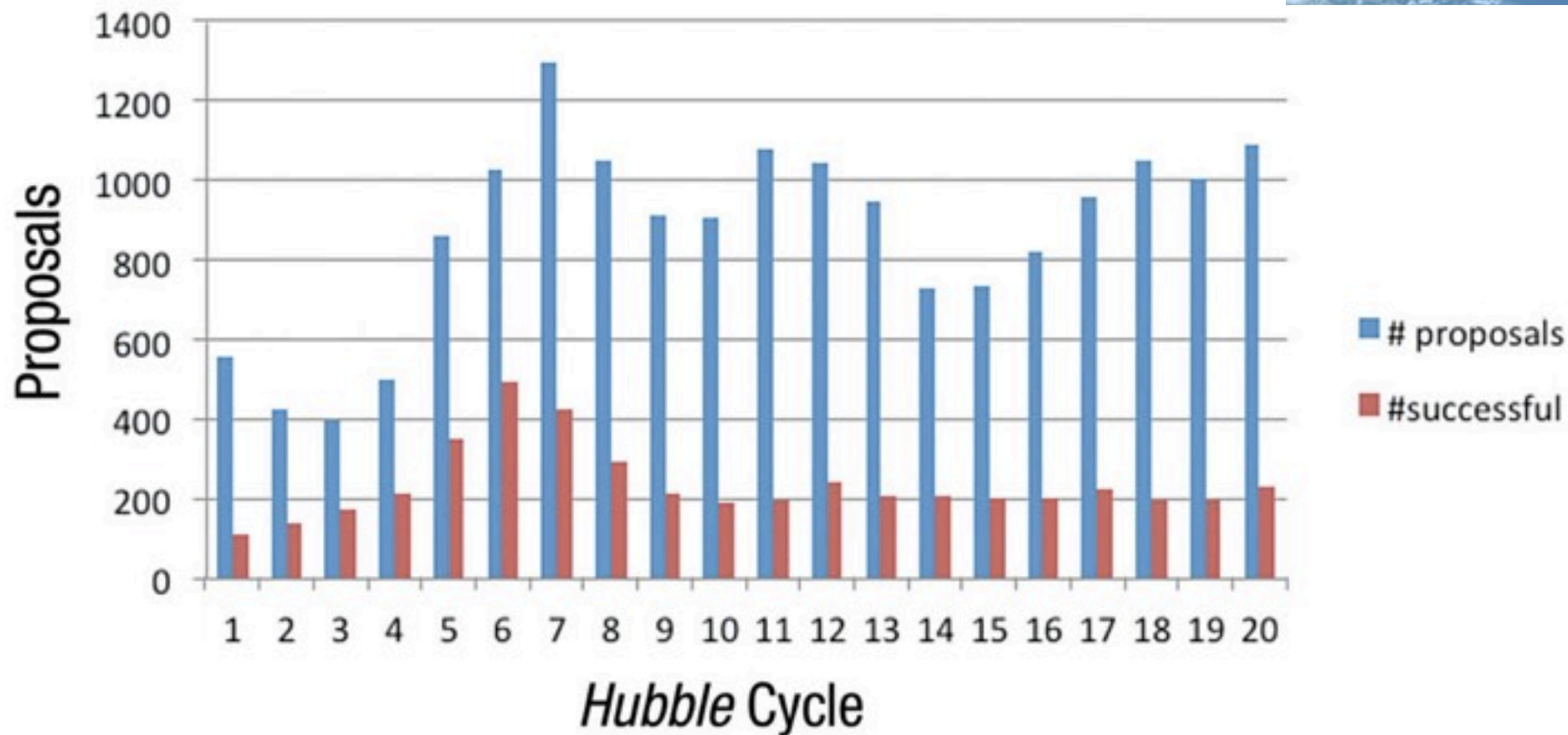


Figure 1: *Hubble* proposal pressure by number of proposals. The blue histogram shows the number of proposals submitted each cycle; the red shows the number accepted. The Cycle 7 statistics include the cycle 7N and 7AR proposals. The oversubscription ranges from 2:1 in Cycle 6 to more than 5:1 since SM4.

# NOAO

- NOAO = National Optical Astronomical Observatories
- US national research & development center for ground-based night-time astronomy
- manages most telescopes with US-wide access
- own facilities: Kitt Peak National Observatory (KPNO, Arizona), Cerro-Tololo Inter-American Observatory (CTIO, Chile)
- Calls for Proposals 2x per year; deadlines end of September and end of March





# ESO

- ESO = European Southern Observatory
- manages the Very Large Telescope (VLT; Chile)
- also open to anyone; preference for European projects only in direct conflicts
- Calls for Proposals 2x per year; deadlines end of September and end of March



# ALMA

- ALMA = Atacama Large Millimeter Array
- multi-national project
- proposals through respective managing facilities, e.g. for US: NRAO = National Radio Astronomy Observatory
- proposals  $\sim 1$  x per year





# Other

- some facilities are not open-access, but only available to researchers at the institutions / countries who built / finance them
- for example:
  - Keck telescopes (mostly CalTech, University of California + University of Hawaii)
  - Subaru telescope (mostly Japan + University of Hawaii)



# How to write a good proposal

- come up with a good idea!
- check:
  - has it been done before?
  - is the data already in a telescope archive?
- research what are the best instruments to use
  - sensitivity
  - field of view
  - resolution
  - ...
- figure out the technical details
  - what filters / gratings / bands
  - exposure times
  - observability



# Proposal Structure

- cover sheet
  - abstract
  - PI and Col names, addresses
  - time request
  - telescope / instrument / set-up request
- Scientific Justification
  - usually limited, 1-4 pages
- Technical Justification
- Figures, Tables, References, Object lists

# Scientific Justification

- describe your project to a knowledgeable, but non-expert audience
- make it exciting / important!
- build on (your) previous work / experience - make sure to convey that you have done all the preparations
- polish the text - typos and carelessness are distracting

# Technical Justification

- describe your proposed observational set-up in detail
- explain every part (telescope, instruments, filter, etc.)
- most important: explain and document the exposure time request
- most instruments have Exposure Time Calculators to relate signal-to-noise and exposure time

# Time Allocation Committees

- proposals are reviewed by panels of researchers, chosen by the responsible agencies (e.g. HST - STScI)
- panels are assembled by topical groups (e.g. cosmology)
- every panelist has to read every proposal assigned to that panel, typically ~80
- preliminary grades submitted online
- 2-day meetings to discuss all proposals and finalize grades



# AST 443 / PHY 517 proposals

options:

- write a proposal for one of the labs, using our equipment
  - another exoplanet?
  - saw something interesting - need more data for your original target?
  - your observations didn't work - need to re-do the lab?
- write a proposal on something different, using our equipment
- write a proposal for any telescope / instrument

# AST 443 / PHY 517 proposals

deadline: Wednesday, **Nov 14, 5pm** (strict!)

proposal template available on github:

[https://github.com/anjavdl/PHY517\\_AST443/wiki/Proposals](https://github.com/anjavdl/PHY517_AST443/wiki/Proposals)

**blind review:** list only your SBU ID as author!

# AST 443 / PHY 517 TAC

- date of TAC meeting: **Nov 26**
- you will be assigned a list of proposals to evaluate and grade
- you will have to send in grades and comments for all proposals on your list before **midnight, Nov 25** (also strict)

# AST 443 / PHY 517 TAC

- you will be primary reviewer for one proposal, and secondary reviewer for another proposal
- during the TAC meeting, the primary and secondary reviewers will lead to discussion of each proposal, but *everybody will be expected to take part*
- the PI of the proposal and their collaborators, as well as PIs of directly competing proposals, will leave the room



# AST 443 / PHY 517 TAC

- after each discussion, you will re-grade the proposal via secret ballot
- after the TAC meeting, the primary and secondary reviewer will collate the comments into a final evaluation of that proposal

# Final presentations

- last assignment in class: make a poster / give a presentation on one of your labs. Dec 3 + Dec 5
- graduate students: make a poster + 1 minute “lightning talk”
- undergraduates: give a presentation; 10 minute talk + 5 minutes questions
- undergraduates who have already fulfilled the SPK requirement: can do presentation or poster
- posters will also be asked to attend the poster session of the physics graduate lab (free food + talk to many people in the department), date TBD

# Final presentations

- your presentation has to be on a lab other than the one you wrote your proposal on
- undergraduates: if you do research in observational astronomy, you can present your research instead