

PHY 517 / AST 443: Observational Techniques in Astronomy

Lecture 5:

Proposals Time Allocation Committee

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

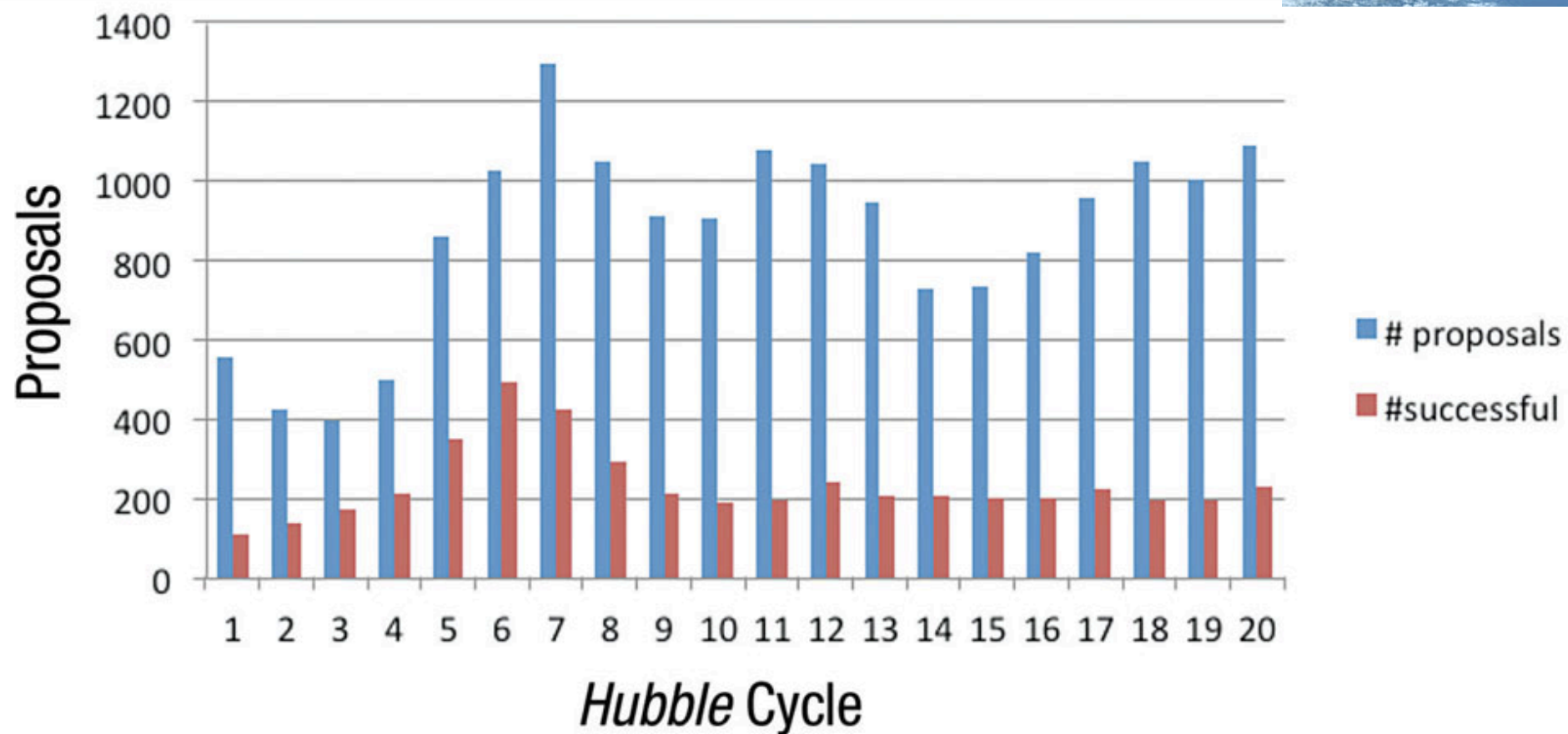


Figure 1: *Hubble* proposal pressure by number of proposals. The blue histogram shows the number of proposals submitted each cycle; the red shows the number accepted. The Cycle 7 statistics include the cycle 7N and 7AR proposals. The oversubscription ranges from 2:1 in Cycle 6 to more than 5:1 since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



PHY517 / AST443 proposals

- each of you will write a telescope proposal for your Lab 3 observations
- in Lab 1 and Lab 2, you have learned the 2 most common techniques used in optical astronomy: imaging and spectroscopy
- use your knowledge of these techniques to propose other interested measurements!
- note: the science goal has to be different than Lab 1 and 2

PHY517 / AST443 proposals

- Proposal deadline: **Tuesday, Oct. 15, 5pm (strict !)**
- Time Allocation Committee: **Monday, Oct. 21**

How to write a good proposal

- come up with a good idea!
- figure out the technical details
 - what filters / gratings / bands
 - exposure times
 - observability

Possible resource: AAVSO

American Association of Variable Star Observers (AAVSO):

- “alert”: call for observations by small telescopes, issued by scientists
- could pick one (or more) of these as basis for your proposal
- try to maximize science output (1 single 10-minute observations probably not very exciting)
- note: you will have to research the topic to write your science case

AAVSO Alert Notices for Observing Campaigns and Discoveries

Note: This page, together with the AAVSO Target Tool Alerts/Campaigns target list, replaces the following AAVSO webpages: AAVSO Alert Notice Archive, AAVSO Special Notice Archive, and the original Observing Campaigns webpage. - July 2017

An AAVSO Alert Notice is issued irregularly in order:

- to announce an **observing campaign** of short or long duration on one or more astronomical objects at the request of an astronomer or the AAVSO;
- to announce the **discovery** of an object such as a nova or a bright supernova;
- to report on **noteworthy or unusual stellar behavior**; or
- to provide **additional information as warranted** about a campaign or an object announced in a previous Alert Notice.

Alert Notices are distributed electronically and are posted on the AAVSO website. Subscription to the Alert Notice is free.

The page below contains links to AAVSO Alert Notices, ordered by issue number with the most recent issue first. Links are also given to AAVSO Special Notices, which were issued when needed to provide supplemental information about an observing campaign or a discovery, or to provide information about other stellar activity.

Observers should use the page below, along with information in the AAVSO Target Tool Alerts/Campaigns target list (button at right), to see what targets are in need of observations to support current observing campaigns and to help plan their observing schedules.

Alerts/Campaigns
target list

Note that a *Special Notice* is located under the *Alert Notice* with which it is associated. *Special Notices* that are not associated with events covered in *Alert Notices* are listed at the end of the year in which they were issued. Please note that, as of July 2017, AAVSO *Special Notices* are no longer being issued.

The format below is date (yyyymmdd), Alert or Special Notice number, Alert or Special Notice title/subject. (Missing dates to be added.)

For Alert Notices and associated Special Notices, jump to: [2019](#), [2018](#), [2017](#), [2016](#), [2015](#), [2014](#), [2013](#), [2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [2002](#), [2001](#), [2000](#), [1999](#), [1998](#), [1997](#), [1996](#), [1995](#), [1994](#), [1993](#), [1992](#), [1991](#), [PEP Alert Notices](#), [un-numbered Alert Notices](#)

For AAVSO *Special Notices* that are not associated with AAVSO *Alert Notices*, jump to [SpNt2017](#), [SpNt2016](#), [SpNt2015](#), [SpNt2014](#), [SpNt2013](#), [SpNt2012](#), [SpNt2011](#), [SpNt2010](#), [SpNt2009](#), [SpNt2008](#), [SpNt2007](#), [SpNt2006](#), [SpNt2005](#).

2019 Alert Notices


- 20190918 [Alert Notice 681](#) - Photometry of more symbiotic candidates requested
- 20190918 [Alert Notice 680](#) - Monitoring of J0139 (ZTF J013906.17+524536.89) requested
- 20190916 [Alert Notice 679](#) - Nova in Scorpius: N Sco 2019 No. 2 = PNV J17370958-3510211
- 20190911 [Alert Notice 678](#) - V694 Mon (MWC 560) photometry and spectroscopy requested
- 20190828 [Alert Notice 677](#) - Recurrent nova V3890 Sgr in outburst
- 20190814 [Alert Notice 676](#) - Nova in Orion: N Ori 2019 = PNV J06095740+1212255
- 20190802 [Alert Notice 675](#) - V386 Ser - second rescheduling of HST observations
- 20190725 [Alert Notice 674](#) - UU Aqr being observed with Chandra
- 20190725 [Alert Notice 673](#) - SS Cyg photometry and spectroscopy requested to complement TESS monitoring
- 20190719 [Alert Notice 672](#) - Monitoring needed of KIC 8462852 (Tabby's Star)

Possible Resource: ARAS

Astronomical Ring for Access to Spectroscopy (ARAS):

- observing campaigns and alerts, specific for spectroscopy
- could pick one of these as basis for your proposal
- note: you will have to research the topic to write your science case

← → ↻ ⓘ Not Secure | spectro-aras.com/forum/ ☆ ⓘ ASP

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It is currently Wed Sep 25, 2019 6:42 pm

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FORUM PRESENTATION	TOPICS	POSTS	LAST POST
Forum Description and General announcements	4	4	by admin Thu Jul 26, 2018 10:20 am
General Topics, Announcements, Forum Life	83	239	by Francois Teyssier Wed Sep 25, 2019 4:09 am
Petites Annonces Achat, Vente, Echange de matériel en relation avec la spectroscopie	3	5	by etienne bertrand Sun Nov 11, 2018 10:24 pm

FORUM	TOPICS	POSTS	LAST POST
Current Campaigns Subforums: Be Stars survey , Novae , Planetary Nebulae , Be Search , CH Cygni	316	1542	by J Labadie Bartz Tue Sep 24, 2019 4:56 pm
Outbursts and alerts Information about outbursts of eruptive stars, Be activity, ... Subforums: Novae , Symbiotic Stars , Supernovae , Cataclysmic Stars , Be Stars , Comets , Miscellaneous	228	3052	by umberto sollecchia Wed Sep 25, 2019 3:52 pm
Spectra, results, information on activity ... Show your spectra, your results ...	557	2670	by Robin Leadbeater Mon Sep 16, 2019 11:14 am
Spectroscopes and Softwares Design, construction, tuning of spectroscopes Information and discussion about softwares (telescope remote, autoguiding, acquisition, spectral processing ...) Subforum: MatLab	538	3074	by Serge Golovanow Tue Sep 24, 2019 7:46 pm
Astrophysics, Theory, Publications ...	43	130	by David Boyd Thu Sep 05, 2019 8:01 am

Possible Resource: basic astronomy

- think back to your introductory astronomy class (e.g. AST203)
- there are some “classic” measurements, e.g. color-magnitude diagrams
- you could choose one of these
- make sure that there is a measurement goal!
- *Q: What would you try to measure with a CMD?*

Possible Resource: astro-news

- check astronomy news (e.g. Sky & Telescope)
- are there new discoveries where you could contribute useful data?
- research the scientific background
- make sure that there is a measurement goal!
- example: “*I want to take a picture of this comet*” is not a quantitative measurement goal

Technical Feasibility

- as important as your scientific justification is the technical justification
- *imaging*: from Lab 1, you have an idea of what magnitude star requires what exposure time
 - can scale to other magnitudes with CCD signal-to-noise equation (recall that $mag \propto \log[flux]$)
 - make sure to justify choice of filter(s), too

Technical Feasibility

- as important as your scientific justification is the technical justification
- *spectroscopy*: from Lab 2, you have an idea of what emission line flux requires what exposure time (look up publications on your nebula)
 - for continuum emitters: look up exposure time guidelines in spectrograph manual
 - make sure to also justify choice of grating

Time Request

- the target observing period is Oct. 22 - Nov. 8 (+ a bit later if moonlight not a concern)
- make sure your targets are observable!
- we will schedule 3 nights for each group; you will observe on the first night with good weather
- try to be flexible in your time request
- if targeting transient sources: we cannot accommodate real Target-of-Opportunity requests (where your observations override somebody else's on a timescale of hours) - make sure you can do something with the nights you're given
- specify the nights you are *not* available (e.g. night before a mid-term / GRE)

Proposal Structure

- cover sheet
 - abstract
 - PI and Col names SBU IDs
 - time request
 - telescope / instrument / set-up request
- Scientific Justification
 - limited to 1 page
- Technical Justification (be concise)
- 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
- professional instruments have Exposure Time Calculators to relate signal-to-noise and exposure time

AST 443 / PHY 517 proposals

deadline: Tuesday, **Oct. 15, 5pm** (strict!)

proposal template available on github:

https://github.com/anjavdl/PHY517_AST443/wiki/Proposals

blind review: list only your SBU ID as author!

your labmates are your Co-Is, make sure to check their availability

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 TAC

- date of TAC meeting: **Oct. 21**
- 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, Oct. 20** (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

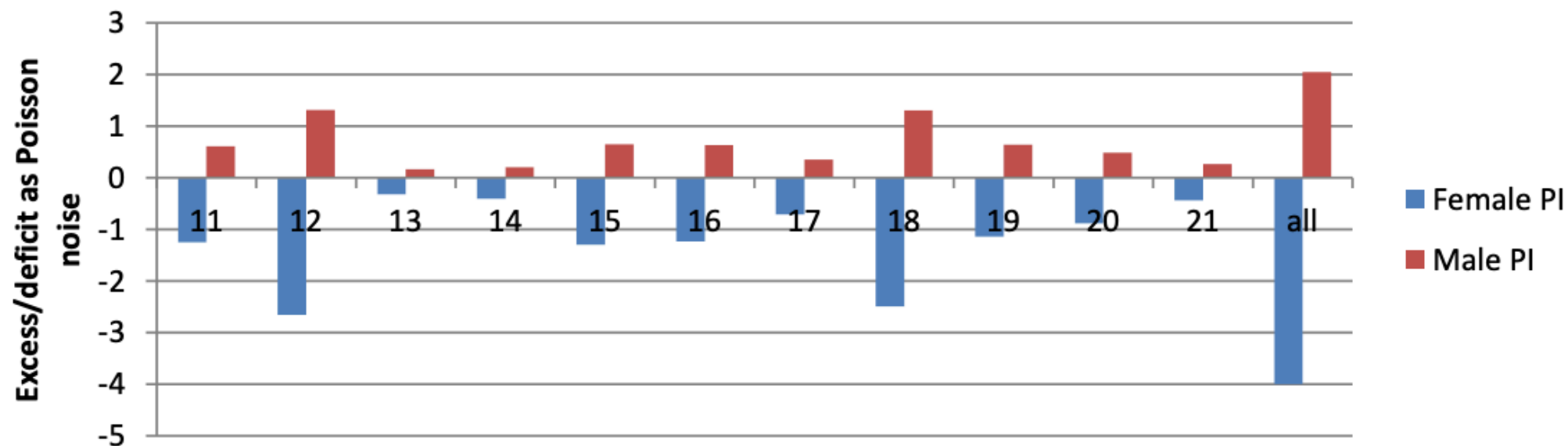
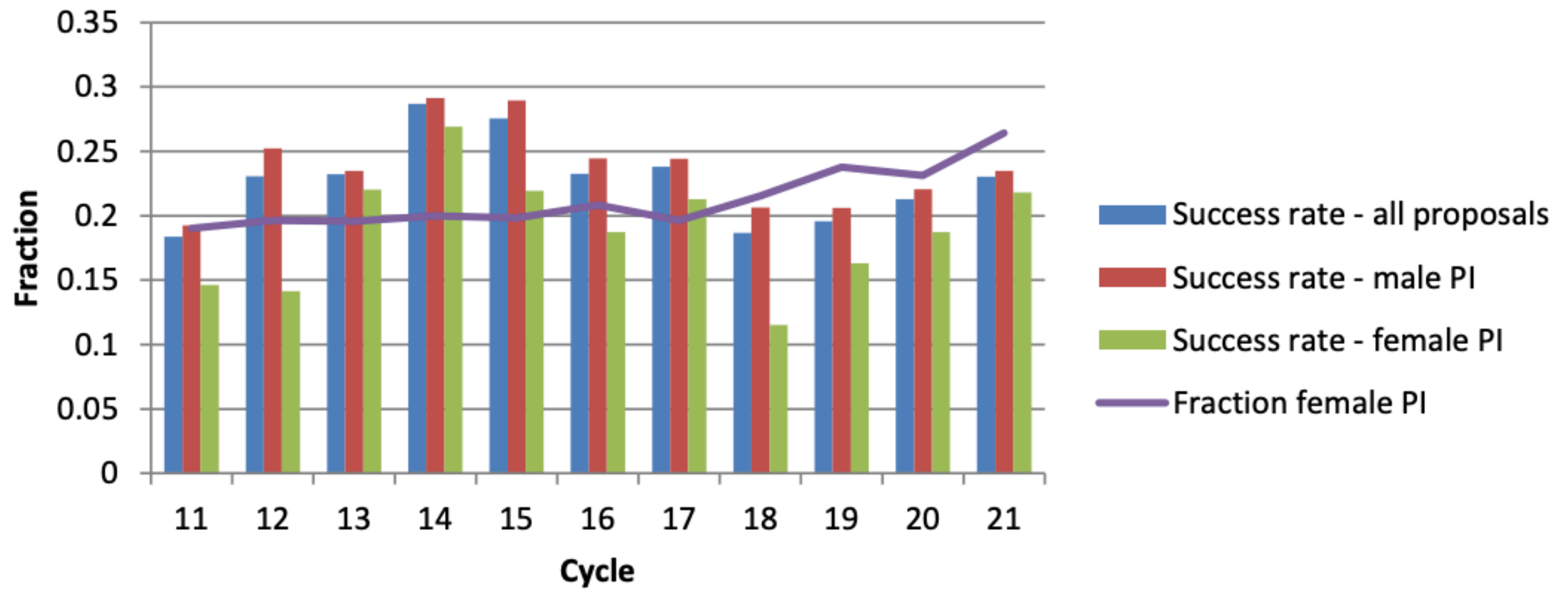
AST 443 / PHY 517 TAC

- after each discussion, you will re-grade the proposal via secret ballot
- we will rank the proposals based on the final grade
- *each group observes its top-ranked proposal* (if technically feasible, and schedulable)
- after the TAC meeting, the primary and secondary reviewer will collate the comments into a final evaluation of that proposal

Avoiding unconscious bias

- Unconscious / implicit bias: our judgment is biased by stereotyped expectations
- has been well documented in much of society, e.g.:
 - identical applications / teaching evaluations with female / colored names are ranked worse than those of males / whites
- Reid (2014): success rates of Hubble proposals by female PIs systematically lower than those by male PIs

Avoiding unconscious bias

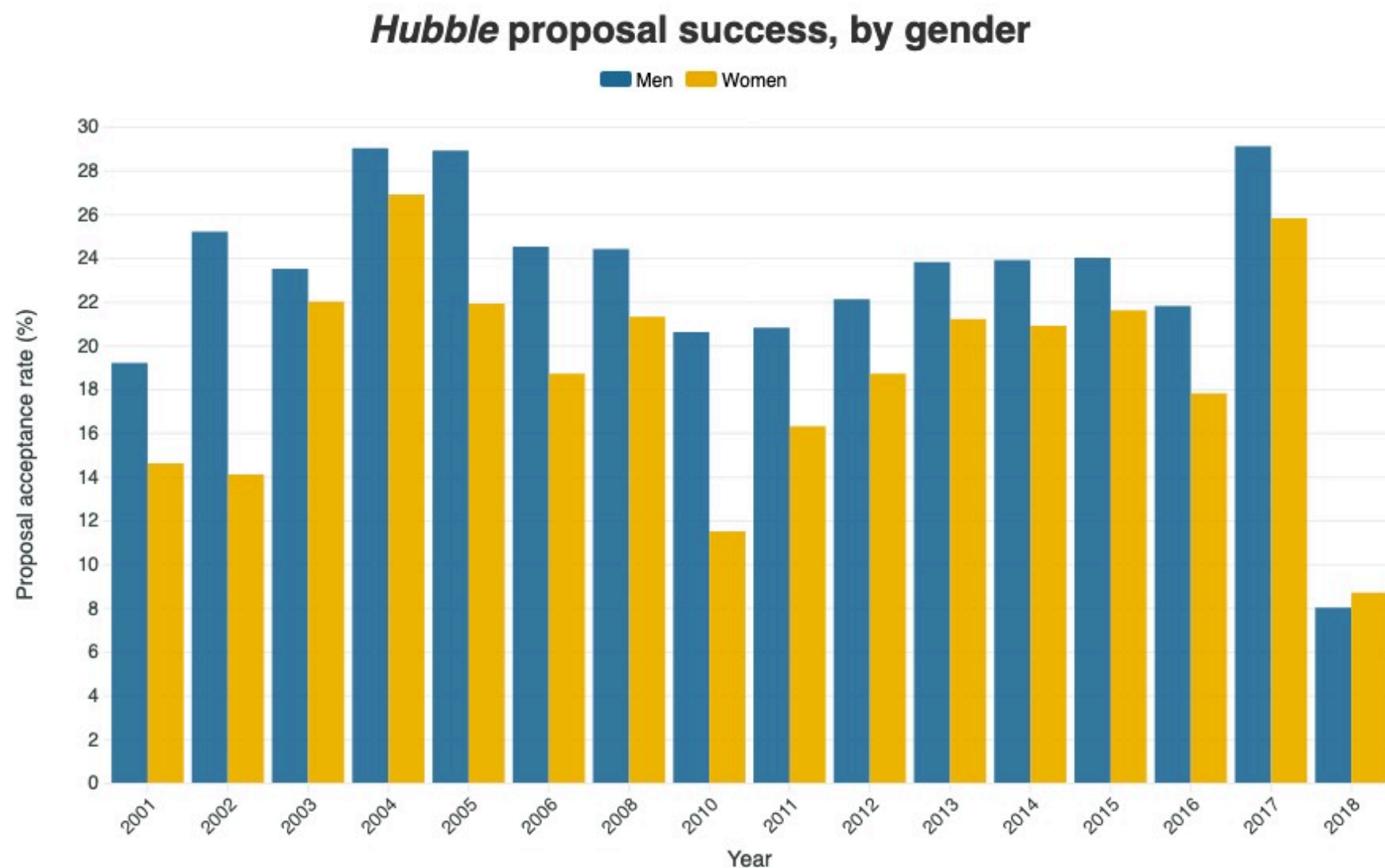


Avoiding unconscious bias

- In 2018, the Hubble TAC was conducted dual-anonymously
- PIs were not identified; had to avoid identifying themselves in the narrative
- Reviewers were told not to guess the proposers

Avoiding unconscious bias

- In dual-anonymous review: male/female success rates were even!



Strolger &
Natarajan 2019

- Implementation for other observatories being considered

Further Reading

- Reid 2014: Gender-based Systematics in HST Proposal Selection. <https://ui.adsabs.harvard.edu/abs/2014PASP..126..923R/abstract>
- Strolger & Natarajan 2019: Doling out Hubble time with dual-anonymous evaluation. <https://physicstoday.scitation.org/doi/10.1063/PT.6.3.20190301a/full/>