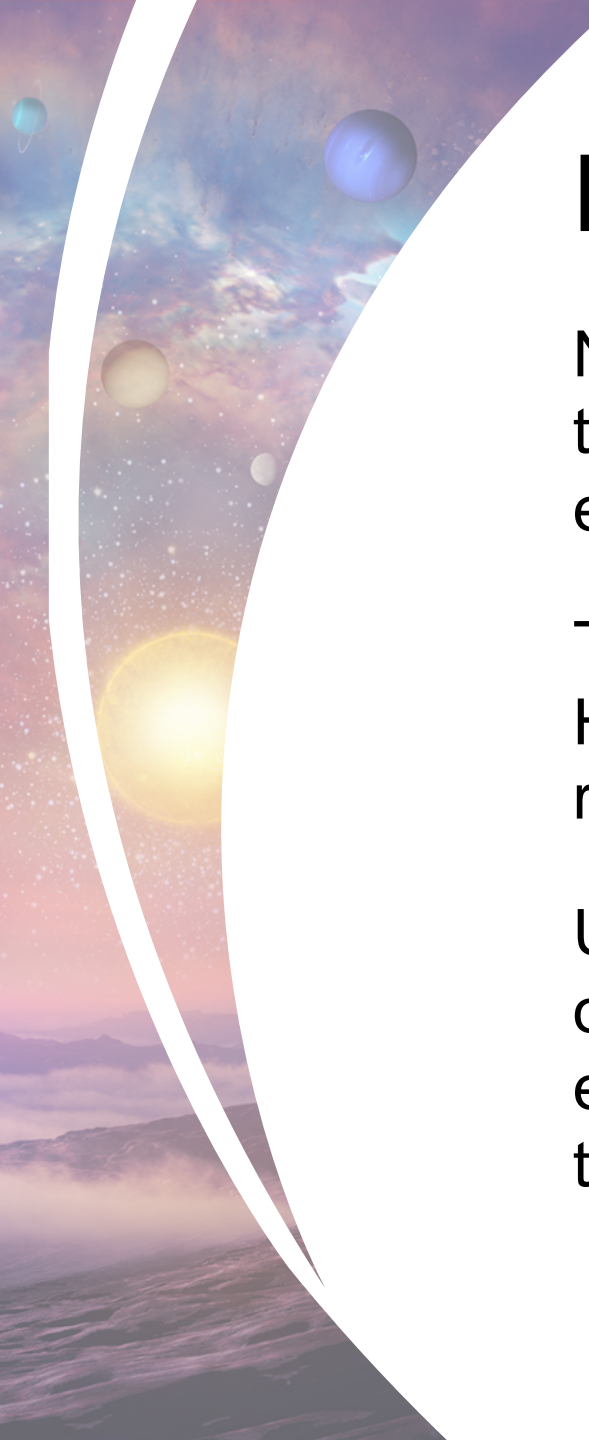


EXPLORE SOLAR SYSTEM & BEYOND

Update on Dual-Anonymous Peer Review at NASA

Dan Evans, Asst. Dep. Associate Administrator for Research, Science Mission Directorate, NASA
CSSP Virtual Spring Meeting | March 25, 2021



Making Peer Review Better

NASA's Science Mission Directorate (SMD) is strongly committed to ensuring that the review of proposals is performed in an equitable and fair manner.

To this end, and motivated by a successful study conducted for the Hubble Space Telescope, SMD is adopting dual-anonymous peer review (DAPR) for numerous programs.

Under this system, not only are proposers unaware of the identity of the members on the review panel, but the reviewers do not have explicit knowledge of the identities of the proposing team during the scientific evaluation of the proposal.



Overview



WHAT IS DUAL-
ANONYMOUS PEER
REVIEW?



WHICH PROGRAMS
ARE CONVERTING TO
DUAL-ANONYMOUS
PEER REVIEW?



ANONYMIZED
PROPOSALS



ANONYMIZED
REVIEWS



Motivation





1. It is difficult to completely interrupt bias through training.

2. Structural changes are also needed.

Double-Blind, aka Dual-Anonymous Review



“In 1970, the top five orchestras in the U.S. had fewer than 5% women. Today, some... are well into the 30s.”

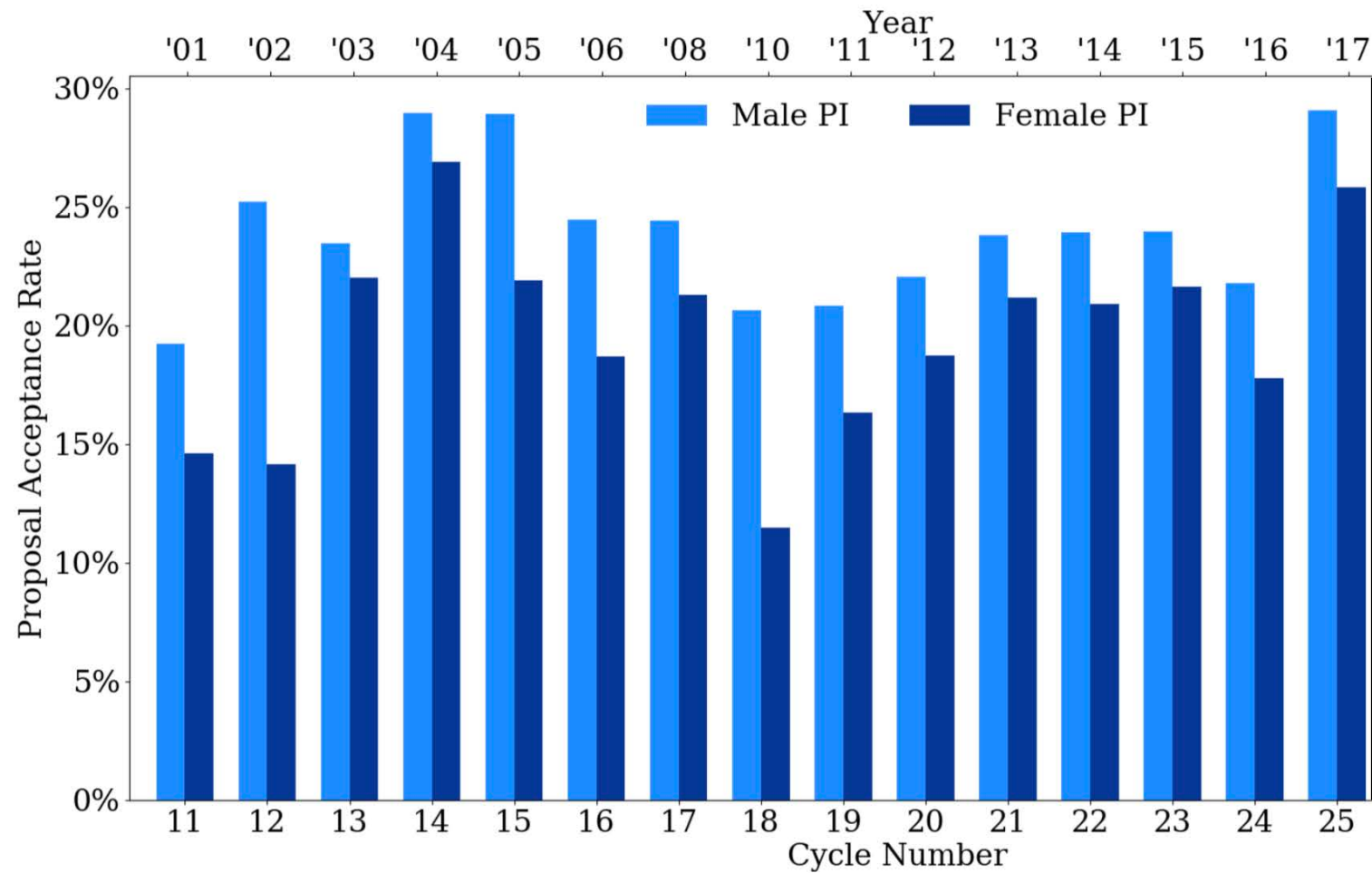


Behavioral Ecology switched to double-blind review, resulting in a significant increase in female first-authored publications

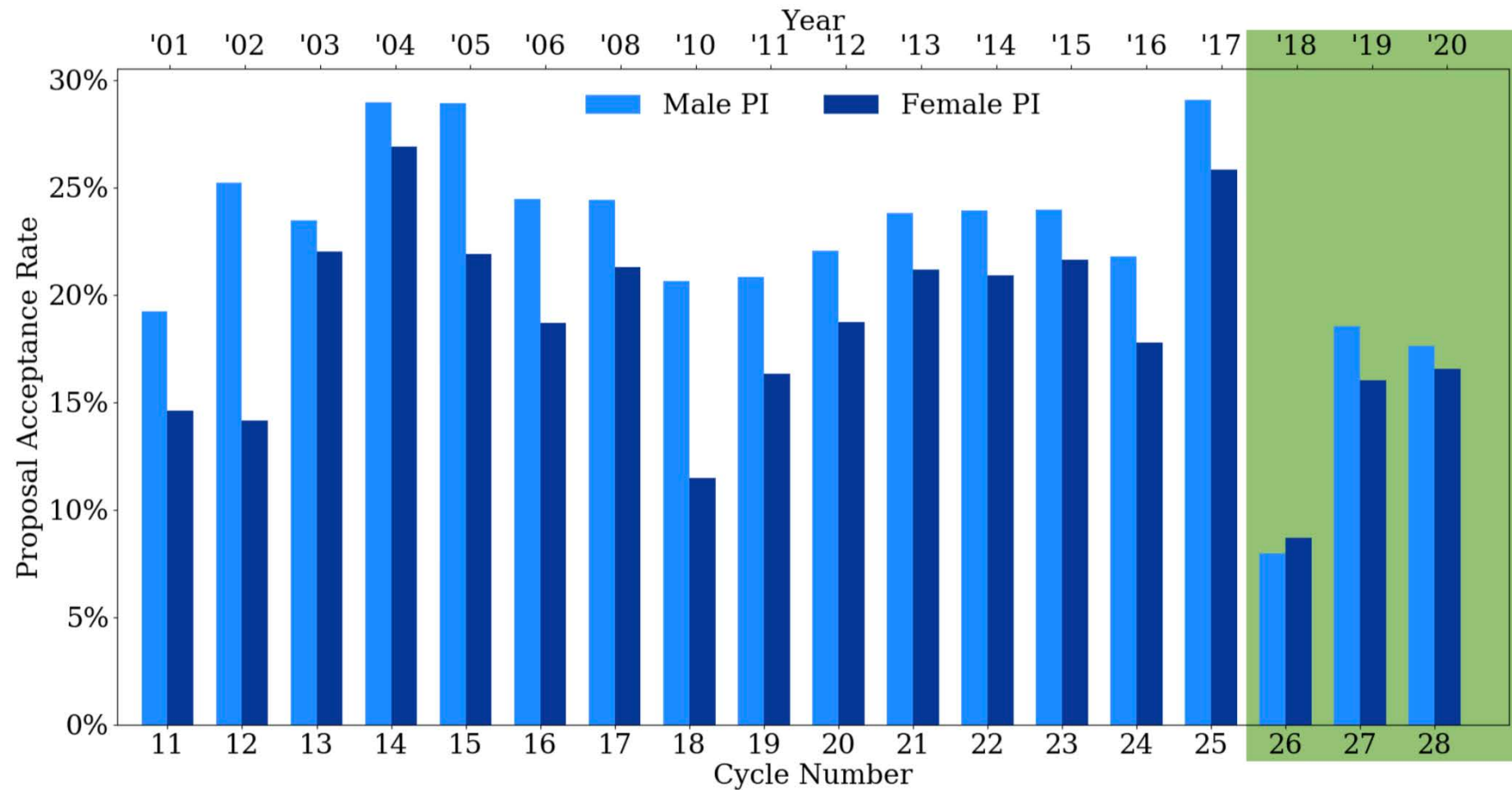


Hubble

Hubble Switch to Dual-Anonymous



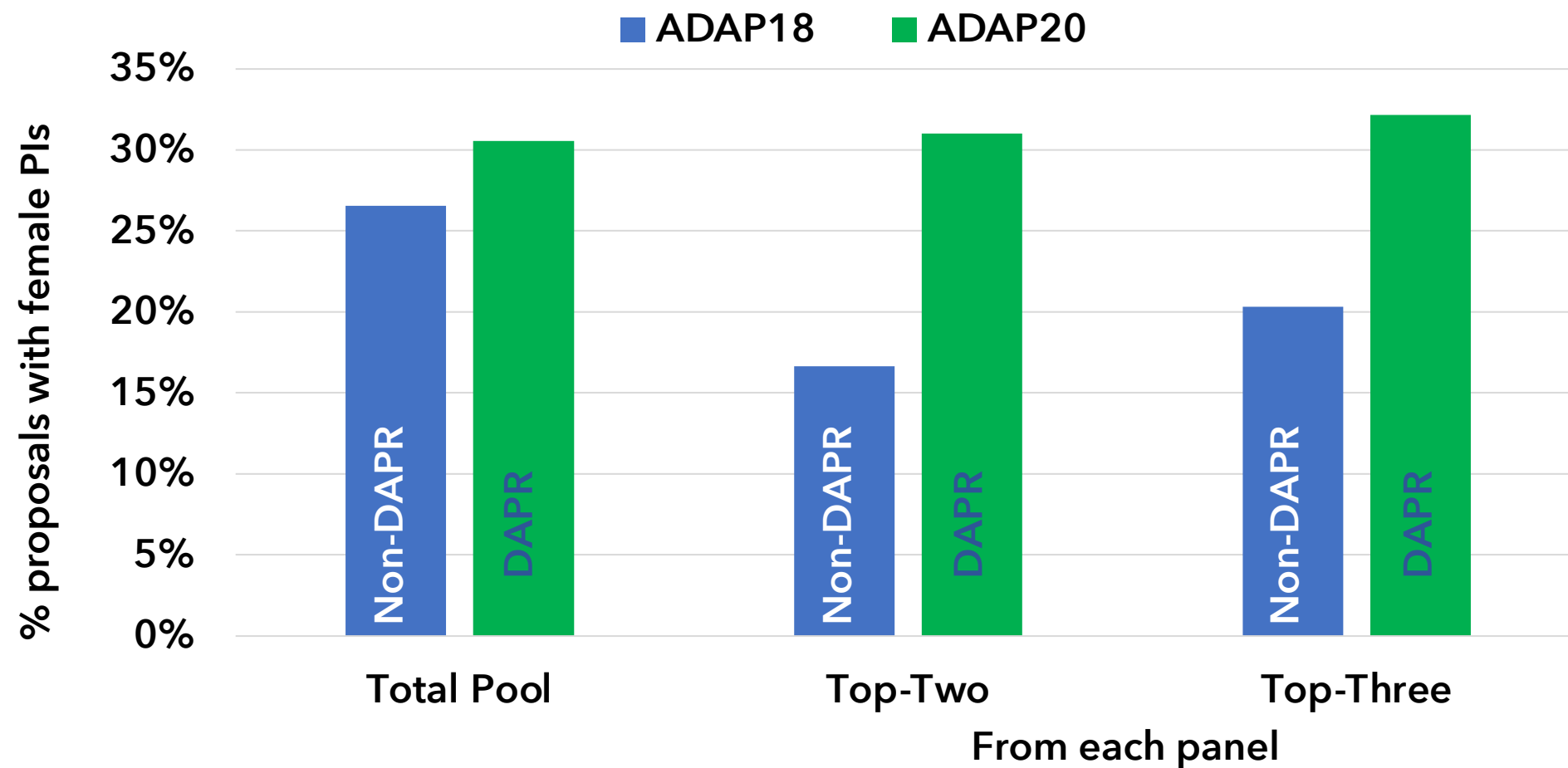
Hubble Switch to Dual-Anonymous



Cycles 11-25
 $\langle \Delta \rangle = 5\%$

Cycles 26-28
 $\langle \Delta \rangle = 1\%$

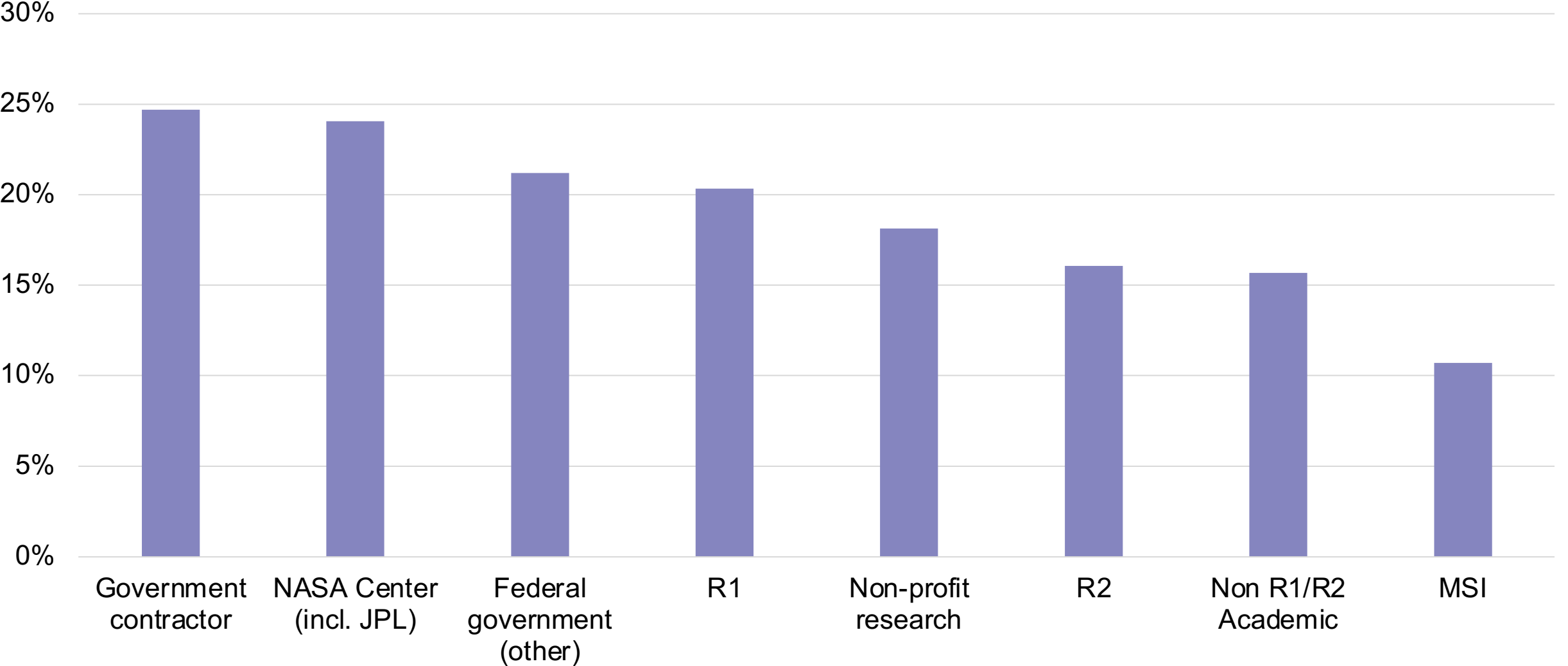
Recent Astrophysics Data Analysis Program (ADAP) Results



Gender



Success Rate by Institution Type for ROSES Programs Prior to 2020 SMD Pilot (ADAP + Earth USPI + Habitable Worlds + Heliophysics Guest Investigator)



A key goal of dual-anonymous peer review is to level the playing field for everyone.

We want to create a change in the tenor of discussions, away from the individuals on the proposing team, and toward the proposed science.

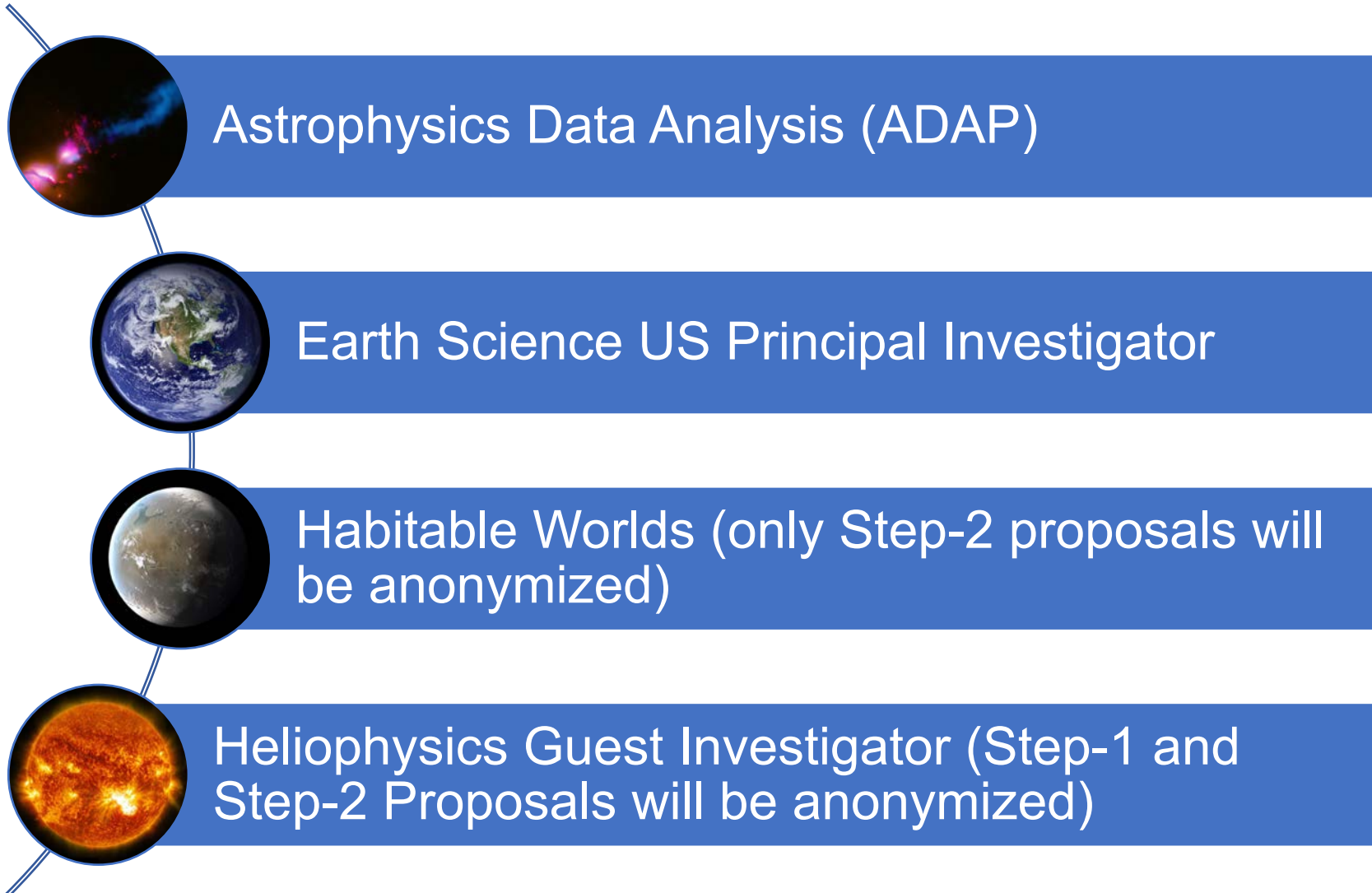
However, dual-anonymous peer review is not a silver bullet.



Which Programs Are Converting to Dual-Anonymous Peer Review?



2020 NASA SMD Pilot





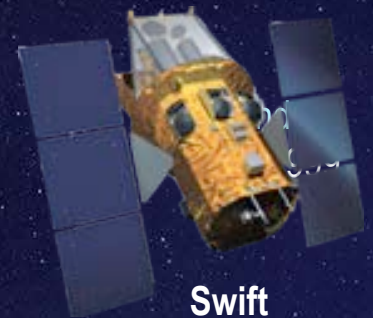
Chandra
Dual-anonymous in 2021
(separately solicited)



NuSTAR
Dual-anonymous
since ROSES-19



Webb
Dual-anonymous
already underway
(separately solicited)



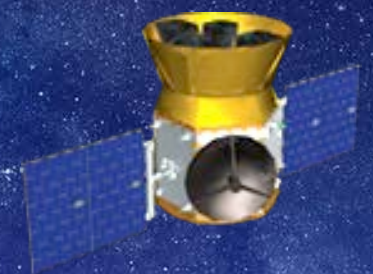
Swift
Dual-anonymous
since ROSES-20



NICER
Dual-anonymous
since ROSES-20



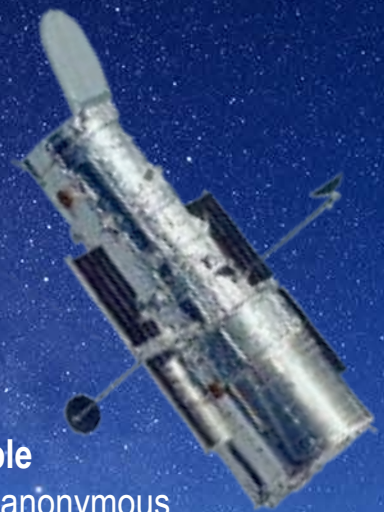
Fermi
Dual-anonymous
since ROSES-20



TESS
Dual-anonymous
since ROSES-20



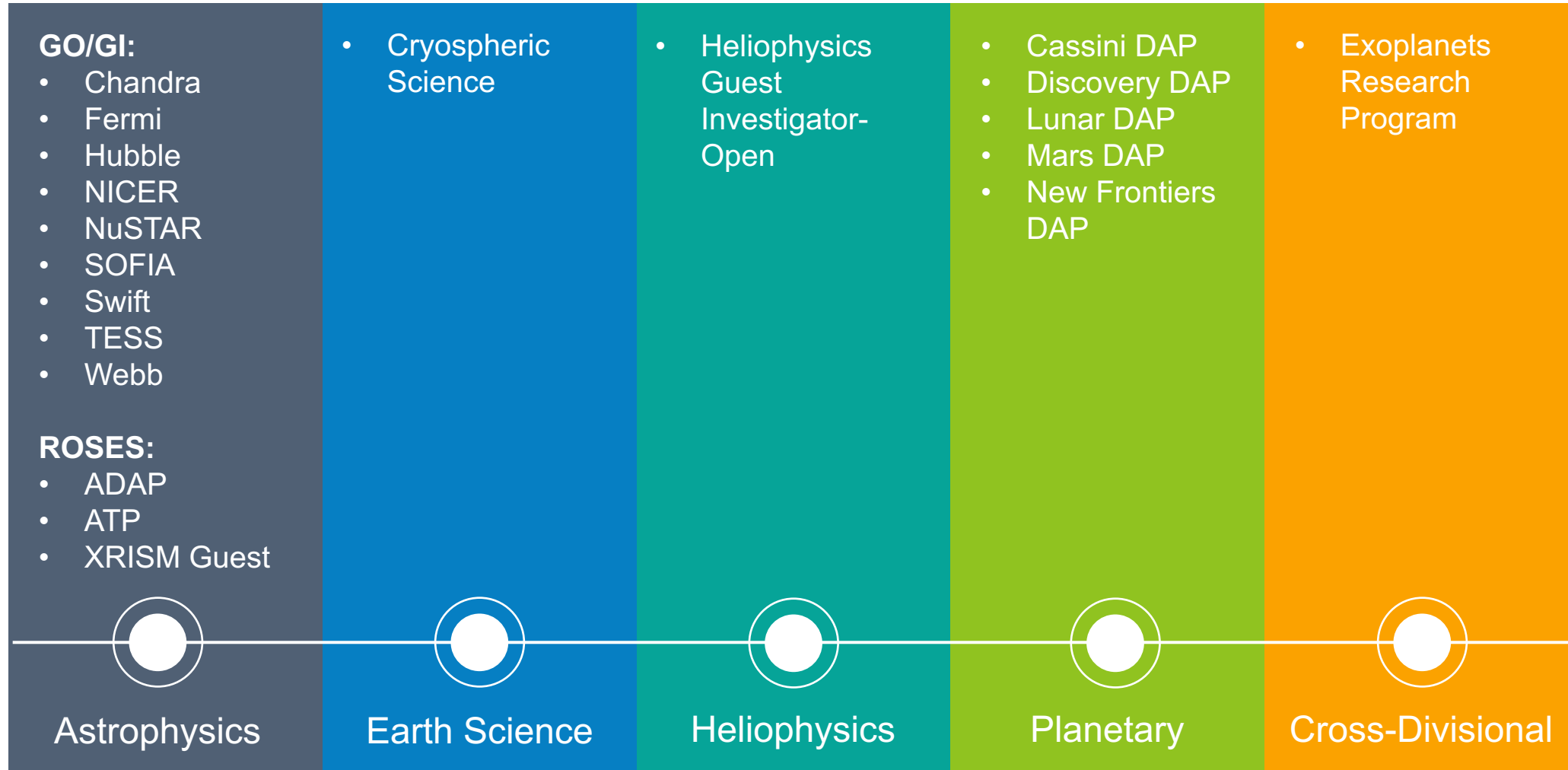
SOFIA
Dual-anonymous already underway
(separately solicited)



Hubble
Dual-anonymous
already underway
(separately solicited)

Astrophysics GO/GI Programs are permanently converting to dual-anonymous peer review

2021 Dual-Anonymous Programs





Proposal and Review Process



Detailed Guidance



The program element text contains specific instructions on how to prepare an anonymized proposal for that program. In addition, the NSPIRES page of each program element contains a document entitled “Guidelines for Anonymous Proposals” describes in detail the specific requirements of anonymous proposals.



A quick-start tutorial, as well as frequently asked questions, may be found at:

<https://science.nasa.gov/researchers/dual-anonymous-peer-review>

Submission of Anonymized Proposals



Exclude names and affiliations of the proposing team, including in figures and references to personal websites.



Do not claim ownership of past work, e.g., “my previously funded work...” or “our analysis shown in Baker et al. 2012...”



Cite references in the passive third person, e.g., “Prior analysis [1] indicates that ...”.



Do describe the work proposed, e.g., “We propose to do the following...” or “We will measure the effects of...”



Include a separate not-anonymized “Expertise and Resources” document.

Example of Anonymization

In Rogers et al. (2014), we concluded that the best explanation for the dynamics of the shockwave and the spectra from both the forward-shocked ISM and the reverse-shocked ejecta is that a Type Ia supernova exploded into a preexisting wind-blown cavity. This object is the only known example of such a phenomenon, and it thus provides a unique opportunity to illuminate the nature of Type Ia supernovae and the progenitors. If our model from Rogers et al. (2014) is correct, then the single-degenerate channel for SNe Ia production must exist. We propose here for a second epoch of observations which we will compare with our first epoch obtained in 2007 to measure the proper motion of the shock wave.

Here is the same text, again re-worked following the anonymizing guidelines:

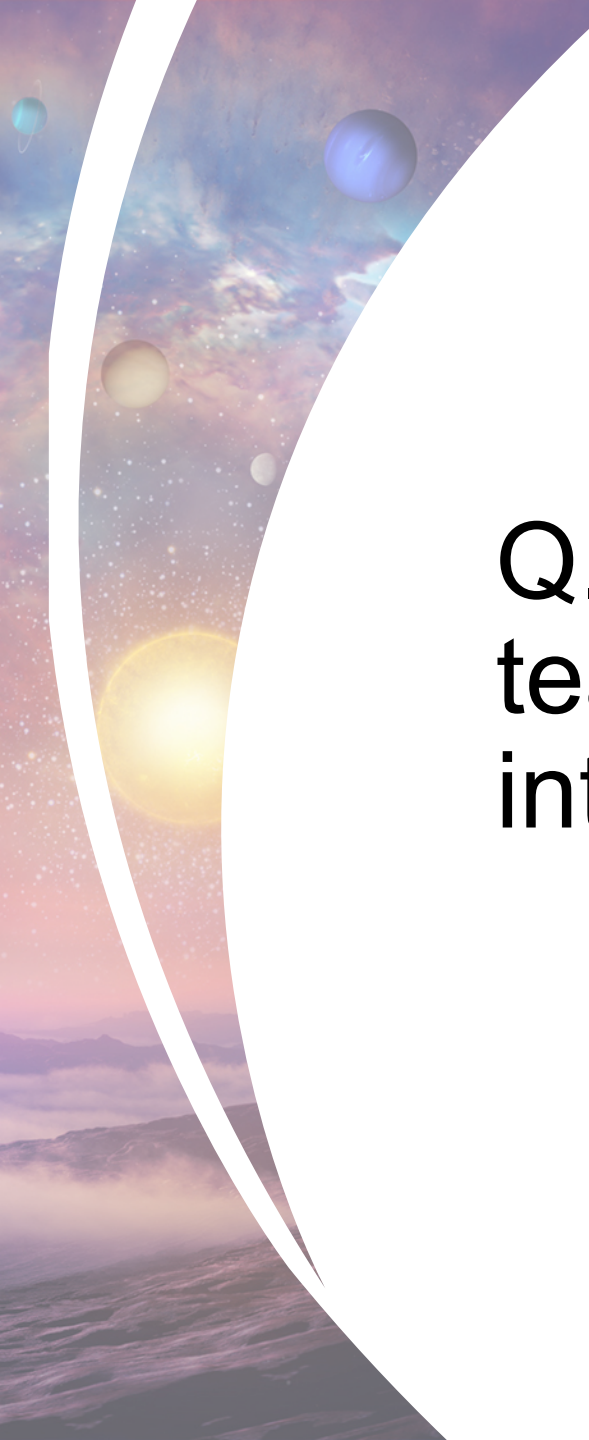
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Q. But... how is the capability of the team to execute the investigation taken into account?





Review of Proposals



Flow of the Review



The anonymized scientific review takes place. All assessments are complete, grades finalized, and panel summaries written.



The “Expertise and Resources – Not Anonymized” document is **revealed** to panelists for a subset of proposals (typically the top third). Panelists assess the team and resource capability to execute the proposed investigation.

Discussion of “Expertise and Resources - Not Anonymized” Document

1. Scientific evaluation of the all proposals is completed.
2. The “Expertise and Resources – Not Anonymized” document is distributed to panelists for a subset of proposals (typically the top third, according to the distribution of assigned grades and the projected selection rates.) PMEFs are also distributed to the review panels, if the program requires them.
3. Panelists assess team capability to execute proposed investigation using a three-point scale, e.g.:

Vote	Overall Team and Resources Capability	
	Uniquely qualified	The E&R document demonstrates that the team is exceptionally capable of executing the proposed work, <u>and</u> has singular access to resources upon which the success of the investigation critically depends. Appropriate allocations of team members’ time are included. A comment from the panel must be written that clearly justifies the choice of this grade.
	Qualified	The team has appropriate and complete expertise to perform the work, and appropriate allocations of their time are included. Any facilities, equipment and other resources needed are available to execute the work. <u>NASA sets the expectation that the vast majority of proposals will fall into this category.</u>
	Not qualified	The E&R document demonstrates severe deficiencies in the necessary expertise and/or resources to execute the proposed investigation. A comment from the panel must be written that clearly justifies the choice of this grade.

4. Panelists must tick “not assessed” if they did not assess the Expertise and Resources document.



Success Metrics and DAPR Experience So Far



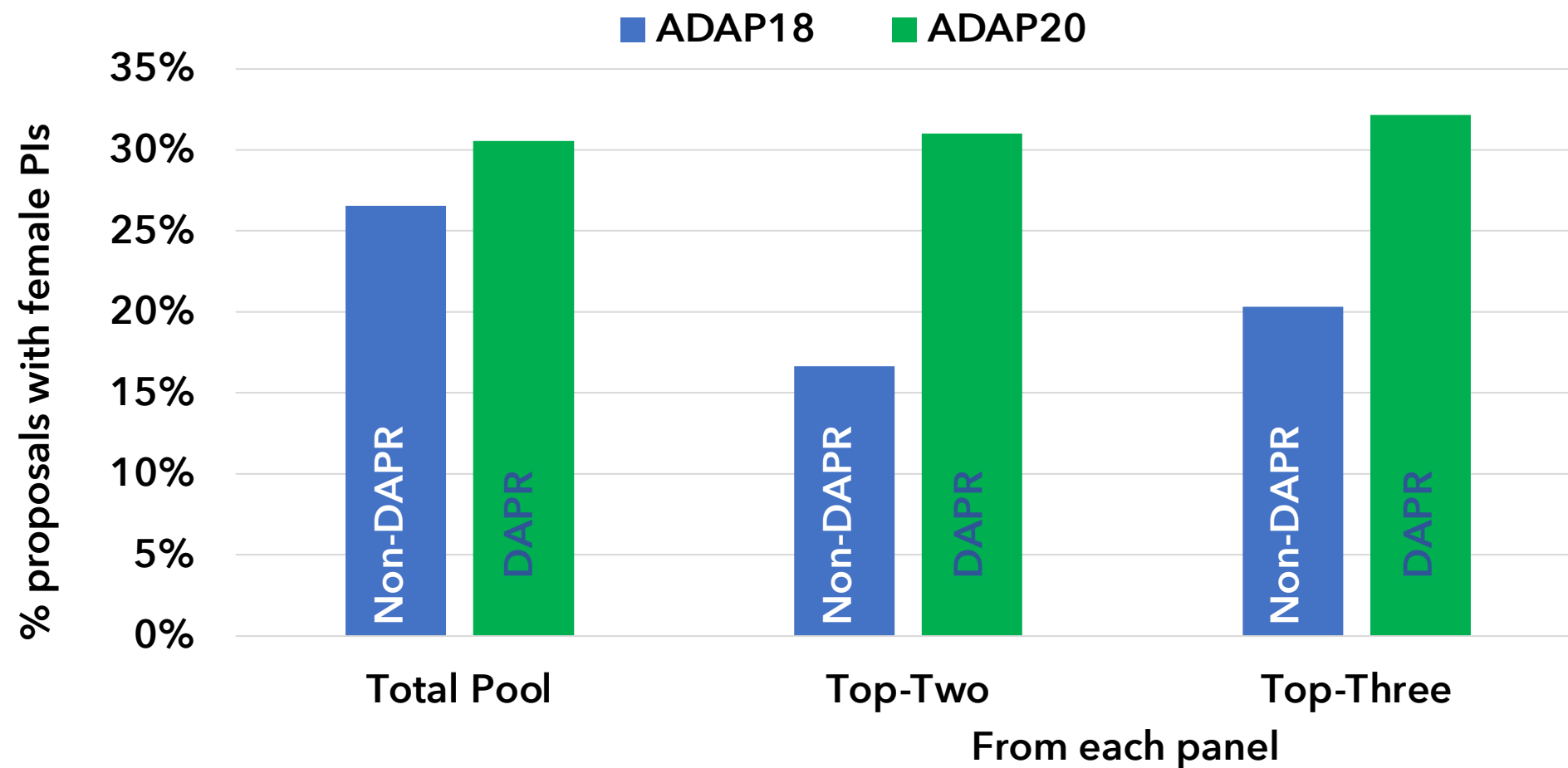
Success Metrics



DAPR Experience So Far

- Only three egregious violations of anonymization guidelines, which resulted in the proposal being returned without review.
- Common (minor) pitfalls we see in proposals about 10-15% of the time:
 1. Claiming ownership of past work (e.g., "our previous analysis", "PI has an established record").
 2. Including metadata (e.g., PDF bookmarks) that reveal the name of the PI.
 3. Recycling proposals prepared prior to dual-anonymous peer review and not carefully anonymizing the text.
 4. Providing the names of investigators on the contents page.
 5. Providing the origin of travel for professional travel (e.g., conferences).
 6. Mentioning the institution name in the Budget Narrative.
 7. Including the PI or co-I names in budget tables.

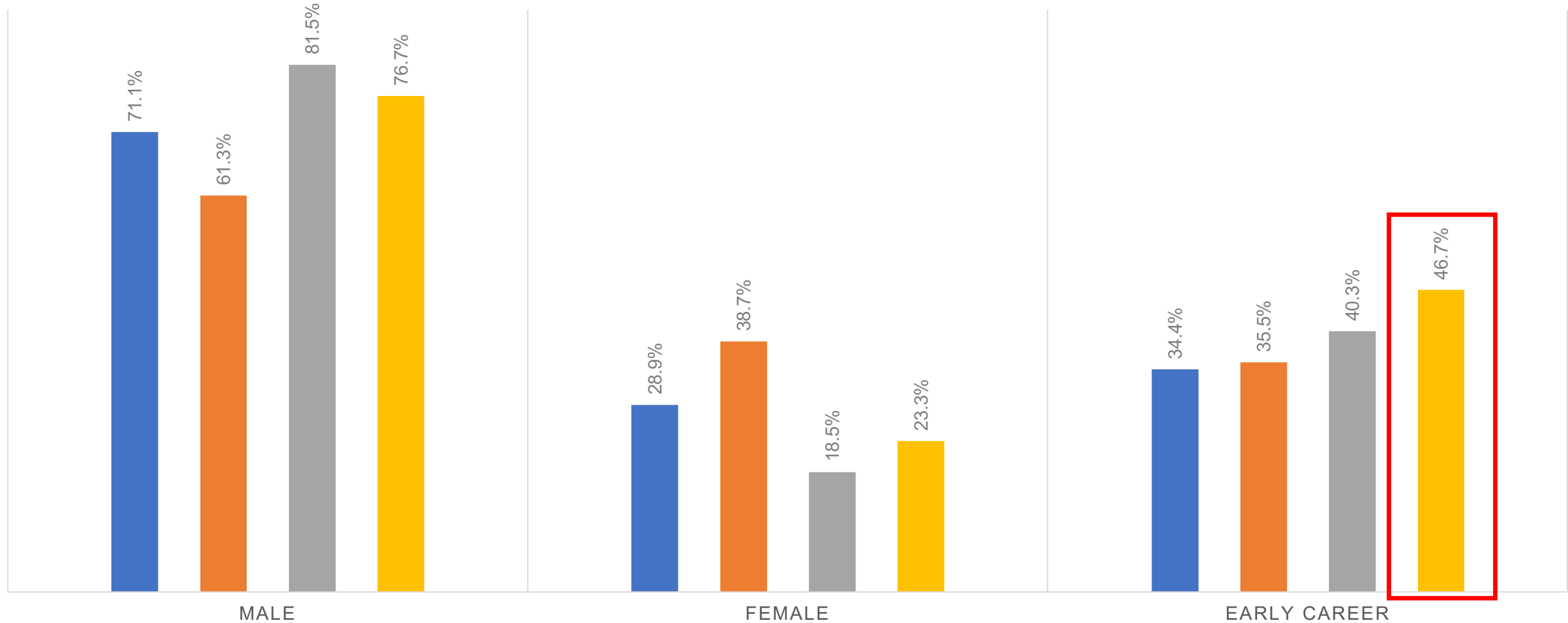
Recent Astrophysics Data Analysis Program (ADAP) Results



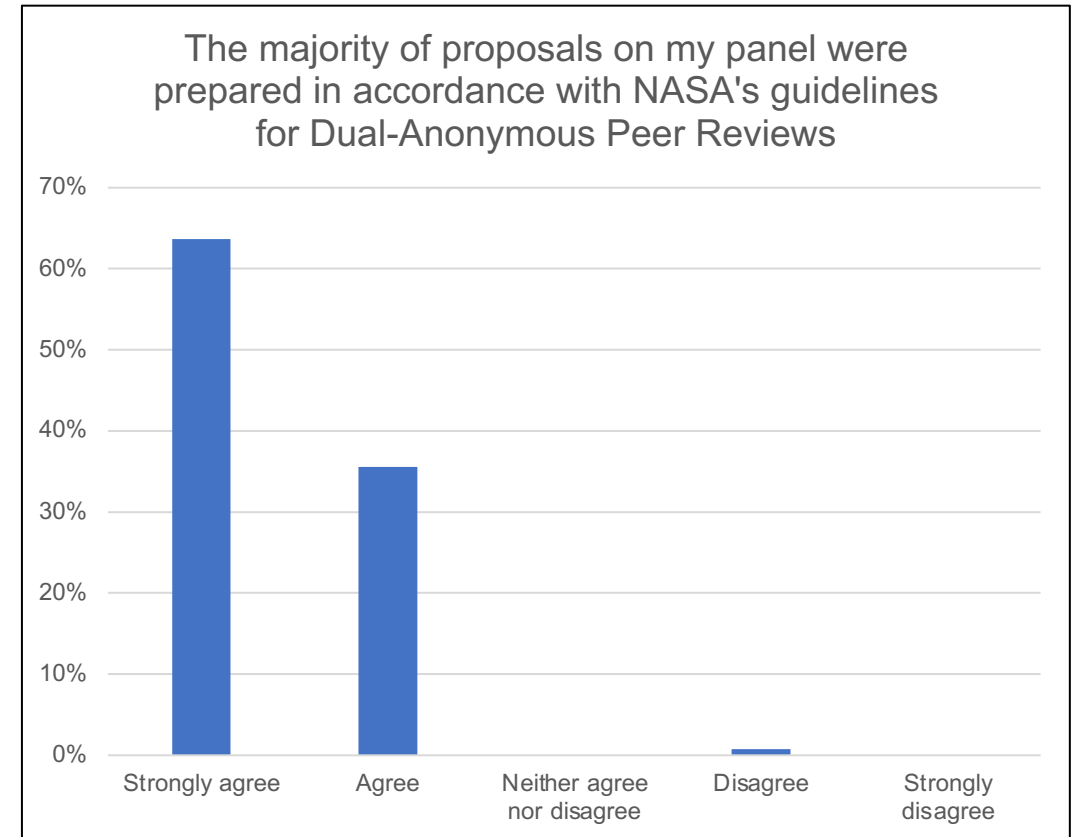
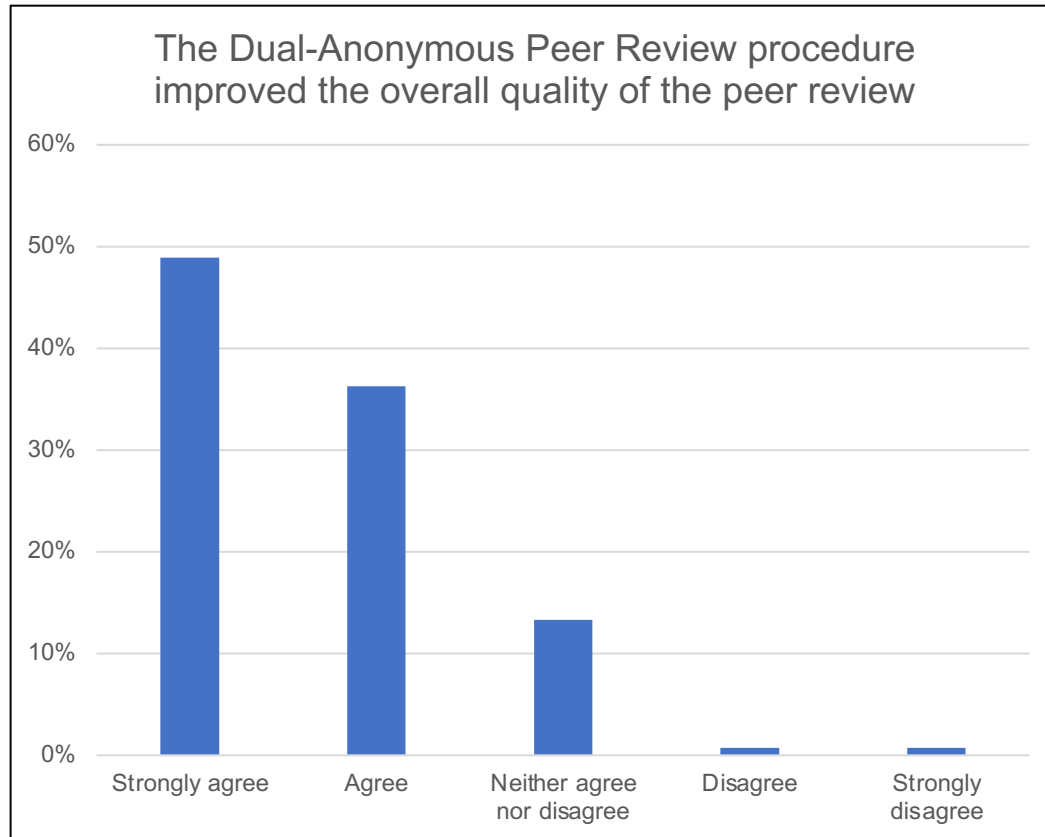
HGIO DAPR COMPARATIVE STATISTICS

2019: PRE-DAPR/2020: DAPR

■ 2019 Submissions ■ 2019 Awards ■ 2020 Submissions ■ 2020 Awards



Reviewer Surveys





Final Remarks



Final Remarks

- NASA is proud to be leading in the implementation of dual-anonymous peer review for federal proposal evaluation.
- NASA understands that dual-anonymous peer review represents a major shift in the evaluation of proposals, and as such there may be occasional slips in writing anonymized proposals. However, NASA reserves the right to return without review proposals that are particularly egregious in terms of the identification of the proposing team.
- NASA further acknowledges that some proposed work may be so specialized that, despite attempts to anonymize the proposal, the identities of the Principal Investigator and team members are readily discernable. As long as the guidelines are followed, NASA will not return these proposals without review.
- We look forward to expanding dual-anonymous peer review in 2021 and beyond.