National Aeronautics and
Space Administration

EXPLORE SCIENCE

NASA Astrophysics GO/GI Programs Dual-Anonymous Peer Review Town Hall

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- NASA's Science Mission Directorate (SMD) is strongly committed to ensuring that the review of proposals is performed in an equitable and fair manner that reduces the impacts of any unconscious biases.
- To this end, and motivated by a successful study conducted for the Hubble Space Telescope, over the next year Astrophysics General Observer / General Investigator (GO/GI) programs will convert to dual-anonymous peer review (DAPR).
- 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?

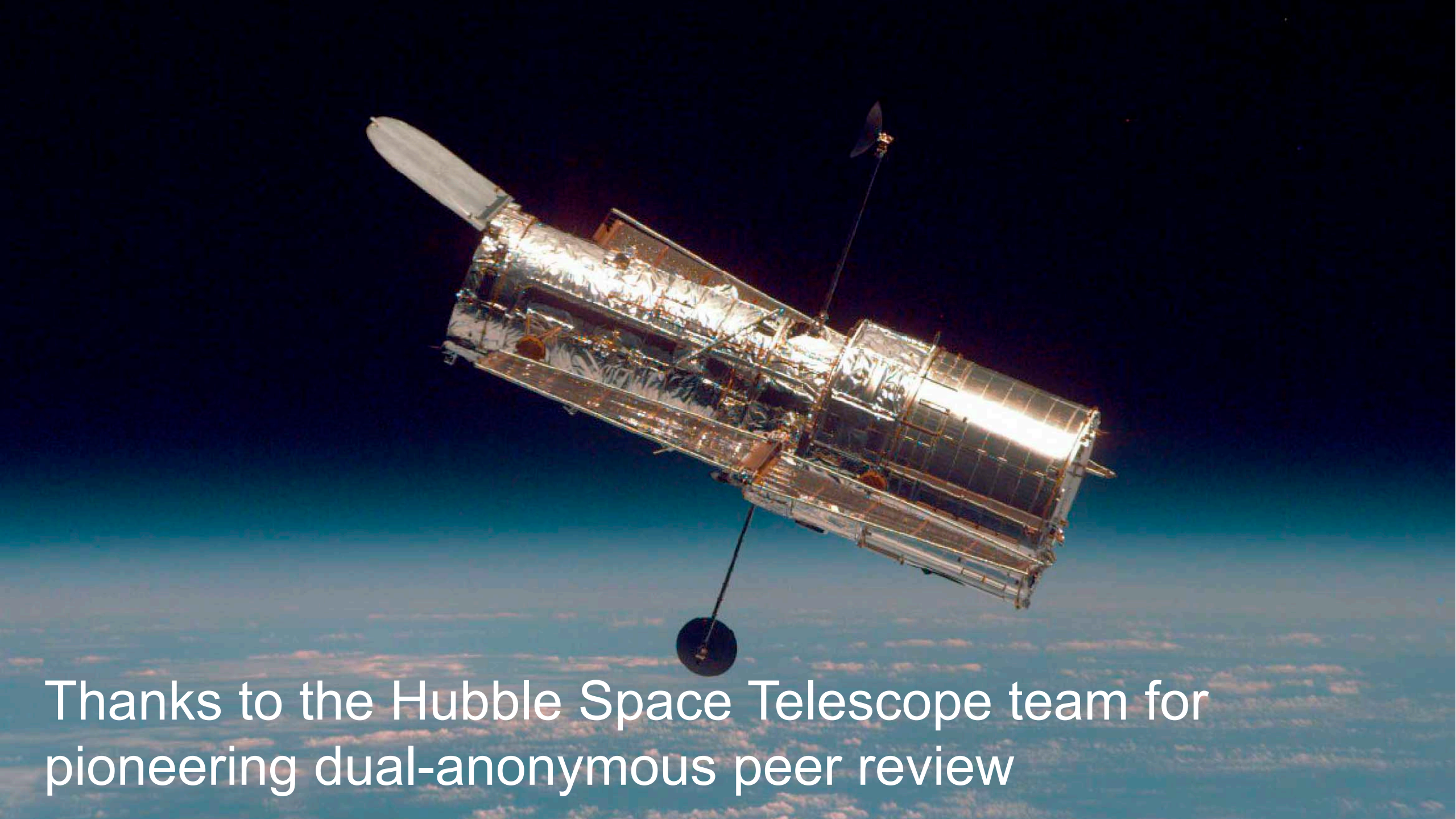
WHICH PROGRAMS ARE CONVERTING TO DUAL-ANONYMOUS PEER REVIEW?

HOW DO I MAKE MY PROPOSAL COMPLIANT?

HOW IS MY PROPOSAL GOING TO BE REVIEWED?

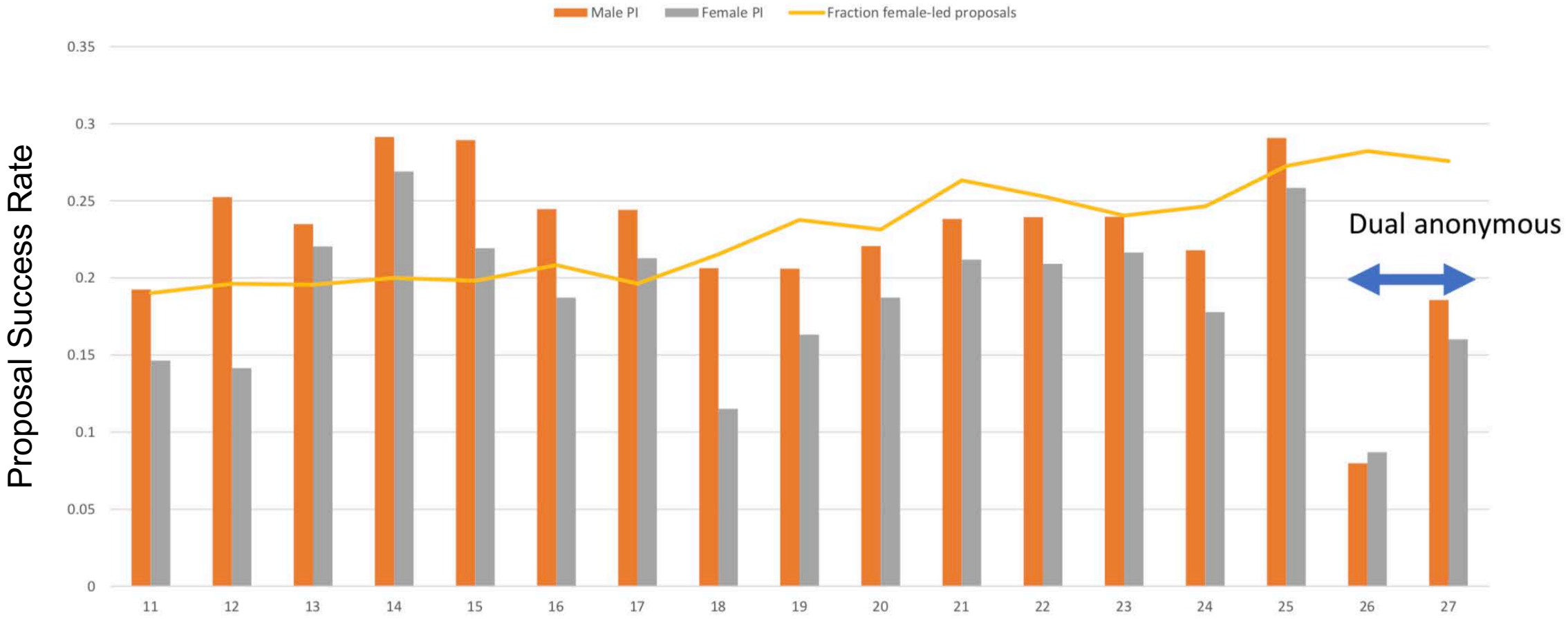
Motivation: What is Dual-Anonymous Peer Review?

BUILDING AN EXCELLENT WORKFORCE
PI RESOURCES WEBPAGE
MISSION PI WORKSHOP
PRE-REVIEWS OF MISSION PANELS
THOMAS ZURBUCHEN NATIONAL SYMPOSIUM
CODE OF CONDUCT FOR SMD-SPONSORED CONFERENCES
AWARD TERMS AND CONDITIONS
DUAL-ANONYMOUS PEER REVIEW
INFORMATION SESSIONS AT CONFERENCES
IMPLICIT BIAS TRAINING FOR ROSES PANELS
ASTRO2020 STATE OF THE PROFESSION

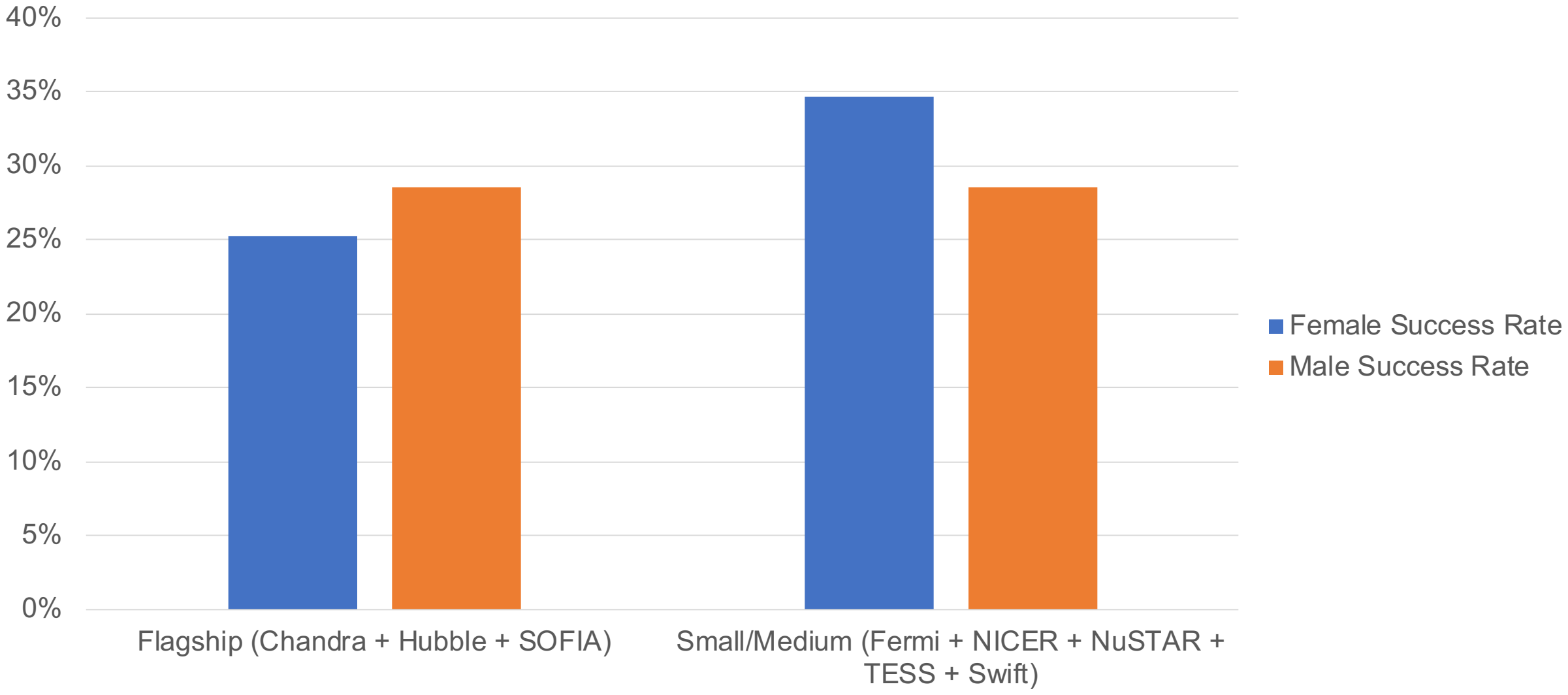


Thanks to the Hubble Space Telescope team for pioneering dual-anonymous peer review

Overall Statistics

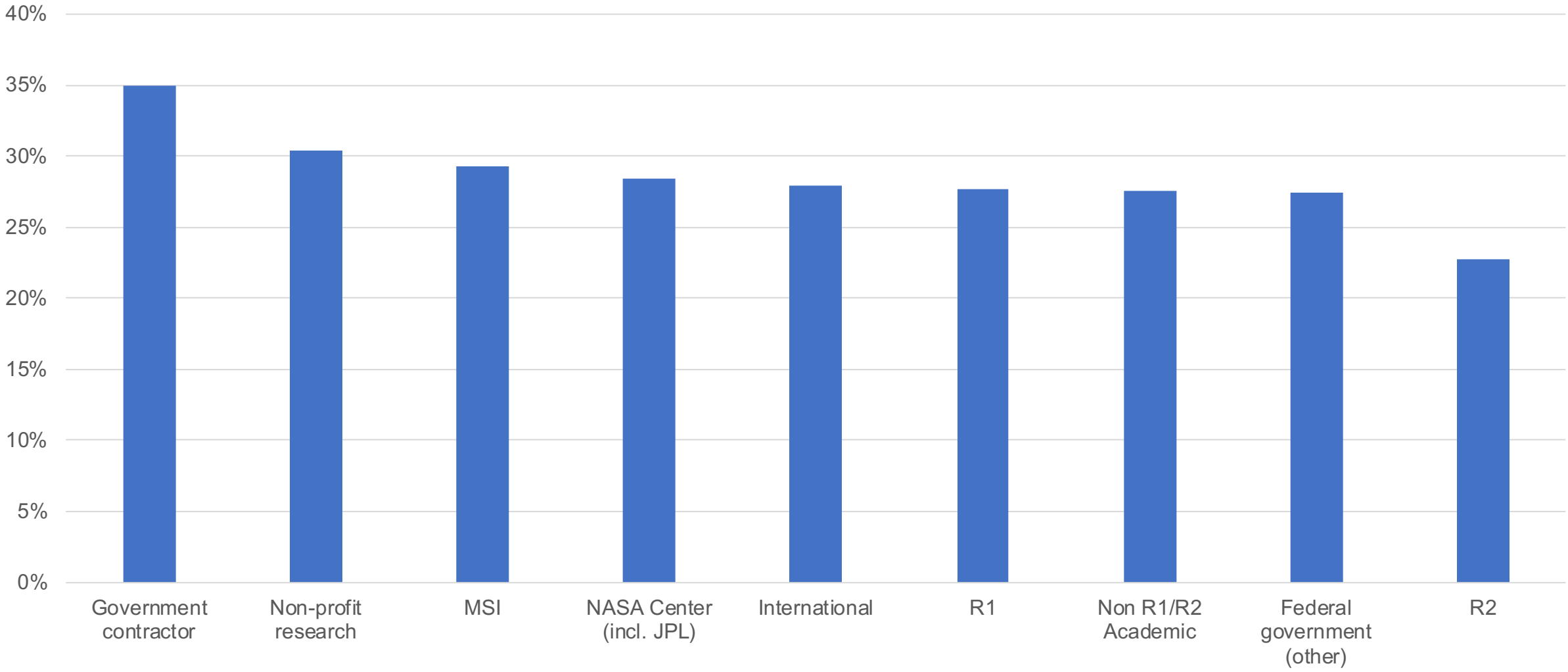


Success Rate by (Inferred) Gender for Astrophysics GO/GI Competitions



Gender

Success Rate by Institution Type for Astrophysics GO/GI Competitions



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

What is Dual-Anonymous Peer Review?

In dual-anonymous peer review, 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.

- The primary intent of dual-anonymous peer review is to eliminate “the team” as a topic during the scientific evaluation of a proposal, not to make it absolutely impossible to guess who might be on that team.
- This creates a shift in the tenor of discussions, away from the individuals, and towards a discussion of the scientific merit of a proposal.

Dual-anonymous peer review is not completely a ‘blind’ process.

Proposers submit (1) an anonymized proposal, and (2) a not-anonymized “Expertise and Resource” document.

The “merit” of the proposal (assessed anonymously) will be determined separately from the (not-anonymized) qualifications of the team.

Nevertheless, the qualifications, track record and access to unique facilities <u>will</u> form part of the evaluation.

Feedback from Hubble Panelists

- Proposal discussions were characterized as more collegial and efficient
- Focus was squarely on the science rather than the scientists
  - *"There was a noticeable shift in the depth of discussions as well. It was clear that reviewers had read the proposals very diligently, and that without the distraction of names and institutions, there was no recourse but to focus on the proposed science."* (P. Natarajan, chair of the Cycle 26 TAC)
- *"Discussions at both the panel level and TAC level focused predominantly on whether the science was novel, impactful, and feasible with HST, and not on whether the proposers had the expertise to carry out the proposals."*
- *"Several TAC members noted that they felt that the discussions at both the panel and TAC level seemed more collegial and less emotionally charged than previous TACs, perhaps because either positive or negative feelings about the people involved in the proposal were largely removed."* (R. Somerville, chair of the Cycle 27 TAC)

Which Programs Are Converting to Dual-Anonymous Peer Review?

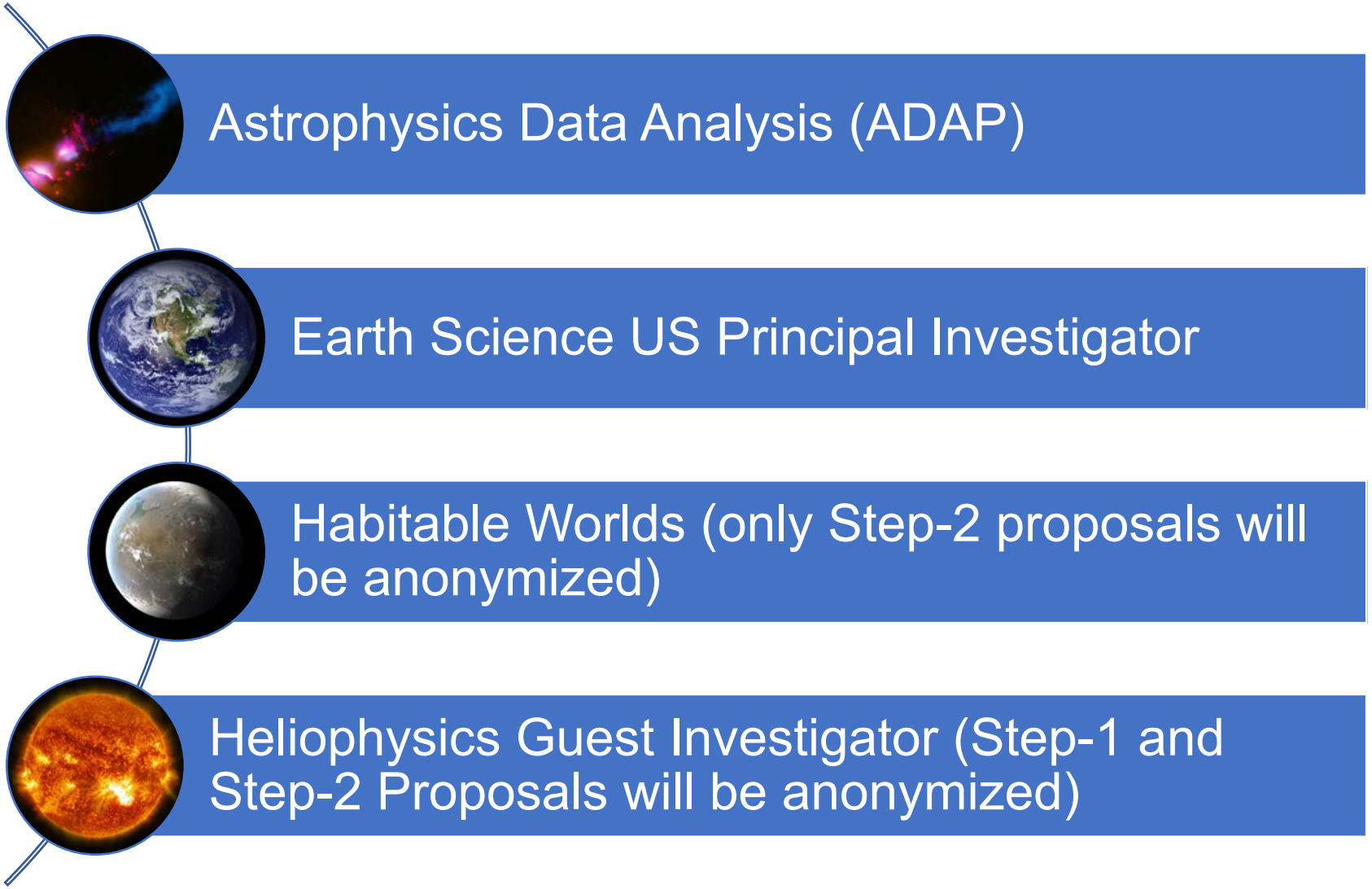
Chandra
Dual-anonymous in 2021
NuSTAR
Dual-anonymous
in ROSES-19
Webb
Dual-anonymous in 2020
(separately solicited)
Swift
Dual-anonymous
in ROSES-20
NICER
Dual-anonymous
in ROSES-20
Fermi
Dual-anonymous
in ROSES-20
TESS
Dual-anonymous
in ROSES-20
Hubble
Dual-anonymous
already underway
(separately solicited)

Rollout of Dual-Anonymous Reviews

Format	Program	Proposal due date
Traditional	NICER Cycle 2	11/13/2019
Traditional	TESS Cycle 3	1/16/2020
Dual-Anonymous	NuSTAR Cycle 6	1/24/2020
Traditional	Fermi Cycle 13	2/19/2020
Dual-Anonymous	Hubble Cycle 28	3/4/2020
Traditional	Chandra Cycle 22	~3/2020
Dual-Anonymous	Swift Cycle 17	~9/2020
Dual-Anonymous	NICER Cycle 3	~11/2020
Dual-Anonymous	TESS Cycle 4	~1/2021
Dual-Anonymous	NuSTAR Cycle 7	~1/2021
Dual-Anonymous	Fermi Cycle 14	~2/2021
Dual-Anonymous	Hubble Cycle 29	TBD
Dual-Anonymous	Chandra Cycle 23	~3/2021

Pilot study

ROSES-20 Pilot (Separate Town Hall on March 3)



How Do I Make My Proposal Compliant With Dual-Anonymous Peer Review?

Only Phase-1 Proposals Need to be Anonymized. Phase-2 (Cost) Proposals should not be anonymized.

Detailed Guidance

1 NSPIRES PROGRAM PAGE

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.

2 SMD RESOURCES

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

1. Exclude names and affiliations of the proposing team, including in figures and references to personal websites.
2. Do not claim ownership of past work, e.g., “my previously funded work...” or “our analysis shown in Baker et al. 2012...”
3. Cite references in the passive third person, e.g., “Prior analysis [1] indicates that …”.
4. <u>Do</u> describe the work proposed, e.g., “We propose to do the following...” or “We will measure the effects of...”
5. Include a separate not anonymized “Expertise and Resources” document (details later on).

How Do I Reference Unpublished Work?
How Do I Reference Proprietary Results?

It may be occasionally important to cite exclusive access datasets, non-public software, unpublished data, or findings that have been presented in public before but are not citeable

Each of these may reveal (or strongly imply) the investigators on the proposal

In these instances, proposers must use language such “obtained in private communication” or “from private consultation” when referring to such potentially identifying work

Recall that the goal of dual-anonymous is to shift the tenor of the discussion, not to make it absolutely impossible to guess the team members

Institutional Access to Unique Resources

Another common situation that occurs in proposals is when a team member has institutional access to unique facilities (e.g., an observatory or laboratory) that are required to accomplish the proposed work. An anonymized proposal does not prohibit stating this fact in the Scientific/Technical/Management section of the proposal; however, the proposal must be written in a way that does not identify the team member. Here is an example:

> *"The team has access to telescope time on the W. M. Keck Observatory, which will enable spectroscopic follow-up of the galaxies in the sample."*

Note: in this situation, NASA recommends that the team provide detailed supporting information to validate the claim in the "Expertise and Resources – Not Anonymized" document (see later).

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:

Prior work [12] 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 the model from [12] 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 a first epoch obtained in 2007 to measure the proper motion of the shock wave.

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

One Addition: Expertise and Resources Document

Proposers are also required to upload a separate “Expertise and Resources – Not Anonymized” document, which is not anonymized. It will be distributed to panelists for a subset of proposals (typically the top third, according to the distribution of assigned grades and the projected selection rates.)

The document must contain the following elements:

1. A list of all team members, together with their roles (e.g., PI, Co-I, collaborator).
2. Brief descriptions of the scientific and technical expertise each team member brings.
3. The contribution that each team member will make to the proposed investigation.
4. Specific resources (e.g., access to a laboratory or observatory) that are required to perform the proposed investigation.

The “Guidelines for Anonymous Proposals” document includes an example.

Other Requirements (see “Guidelines for Anonymous Proposals”)

Item	Requirement
Anonymization	Phase-1 proposals are anonymized. Phase-2 (cost) proposals are not anonymized.
Submission	Phase-1 proposals are submitted through ARK/RPS. Phase-2 (cost) proposals are submitted through NSPIRES.
References	References should be in the [1], [2] format.
Proposal length	No change.
Separate, no more than 3-page “Expertise and Resources - Not Anonymized” document	This document provides a list of all team members, their roles, expertise, and contributions to the work. The document should also discuss any specific resources that are key to completing the proposed work.

How Will My Proposal Be Reviewed?

Instructions to Panelists

1. Consider proposals solely on the scientific merit of what's proposed.
2. Do not spend any time attempting to identify the PI or the team. Even if you think you know, discuss the science and not the people.
   - NASA-appointed Levelers are present in each panel room to ensure this doesn't happen
3. Keep in mind that language can be very important in discussing proposals. Utilize the appropriately neutral pronouns (e.g.,"what they propose", or "the team has evaluated data").

Monitoring the Panel Discussion

- NASA-appointed Levelers are present in every panel in addition to panel support staff
- Their role is to ensure that the panel discussions focus on scientific merit. Unlike the chairs, they are not listening for issues pertaining to the science, rather they are focused on the discussion itself.
- If the discussion veers to comments on the proposing team, their past work, their validity, or their identities, the leveler's job is to refocus that discussion.
- Levelers have the authority to stop the discussion on a proposal.

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.)
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, and has singular access to resources upon which the success of the investigation critically depends. 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. Any facilities, equipment and other resources needed are available to execute the work. NASA sets the expectation that the vast majority of proposals will fall into this category.
	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.

Answers to Submitted Questions

Q. How is the success of an investigation to be judged if it depends on unique skills/code/historical data from the team?

- The anonymized proposal has no prohibition on discussing these aspects, merely that they be discussed without attribution to a particular investigator or group.
- In situations such as this, we recommend writing “previous work” instead of “our previous work”; or using “obtained in private communication”.
- Proposers should be able to make their case through their description of their proposed program of observations and analysis that they have the necessary skills to achieve success; if specific skills are required, the panel will flag that and will be able to verify this when they consult the “Expertise and Resources – Not Anonymized” document.
- Remember that the goal of dual-anonymous peer review is to not make it completely impossible to guess the identities of the investigators, but to shift the focus of the discussion away from the individuals and toward the proposed science.

Q. How can DAPR avoid adversaries on a panel which can easily notice 'tells' of a team? How could others on the panel know?

- Each reviewer will be asked to list the names of individuals or groups whose proposals they could not objectively assess, due to adversarial relationships, close collaborations, or other biases.
- Similarly, each proposing team has the opportunity to send to NASA the names of individuals who they would prefer not review their work.
- Levelers will ensure that the discussion focuses on the proposed science and not the identities of the team members.

Q. This arose from issues in HST reviews, but absent in others (e.g., Chandra). Did HST ever study what others did differently?

- The male/female success rate discrepancies have been identified in a number of other observatories beyond HST (eg NOAO, ALMA).
- NASA HQ's detailed analysis of the statistics of all GO/GI programs over the past decade suggests that there are differences in the success rates by inferred gender.
- Remember that gender is only one axis in a multidimensional parameter space.
- STScI brought in qualified experts in social sciences to provide advice on the optimal strategy for tackling all types of underlying bias, going beyond gender. They spent time observing the TAC process and their recommendation was to adopt dual-anonymous peer review.

Q. Eliminating biases is a laudable goal. Yet has DAPR benefited science? Are there more impactful discoveries/papers with HST?

- A key goal of dual-anonymous peer review is to level the playing field for <u>everyone</u>.
- One striking result of Hubble DAPR reviews is the substantial increase in the fraction of new investigators.
- All NASA Astrophysics missions track the impact of their awardees' work, but it will take several cycles to fully quantify the impact of dual-anonymous peer review.

Q. Are there training modules available to assist all parties, including reviewers and PIs?

- The NSPIRES page of each program element contains a document entitled “Guidelines for Anonymous Proposals.” This document 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

Date	Item
January 5, 2020	NASA Town Hall @ AAS
February 27, 2020	Astrophysics GO/GI virtual community Town Hall. Slides at https://science.nasa.gov/researchers/dual-anonymous-peer-review)
March 3, 2020	SMD-wide virtual community Town Hall with Dr. Thomas Zurbuchen (for ROSES-20 pilot: ADAP, Earth USPI, Habitable Worlds, Heliophysics GI-Open). Slides at https://science.nasa.gov/researchers/dual-anonymous-peer-review)
April 2, 2020	ADAP proposers’ webinar on dual-anonymous peer review
June 2, 2020 (tentative date)	Dual-anonymous peer review Special Session @ AAS
September, 2020	Dual-anonymous peer review Special Session @ AAS HEAD meeting

Final Remarks

Return without Review for Unanonymized Proposals

- 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.

Plan adequately, and please feel free to contact your Program Officer or email SARA@nasa.gov

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