NASA Headquarters Update

ExoPAG #24 | June 24, 2021

Hannah Jang-Condell (hannah.jang-condell@nasa.gov)
Exoplanet Exploration Deputy Program Scientist, ExoPAG Executive Secretary
Astrophysics Division, Science Mission Directorate

Glossary

NASA – National Aeronautics & Space Administration

NASA HQ – NASA Headquarters in Washington, DC

SMD – Science Mission Directorate

APD – Astrophysics Division – one of 5 Divisions in SMD

ExoPAG – Exoplanet Program Analysis Group

ExEP – Exoplanet Exoploration Program. At HQ & JPL in Pasadena, CA

(Gary Blackwood, Eric Mamajek)

NExScI – NASA Exoplanet Science Institute. At Caltech in Pasadena, CA

An Overview of the ExoPAG

Exoplanet Program Analysis Group (ExoPAG)

https://exoplanets.nasa.gov/exep/exopag/overview

- The ExoPAG is led by a Chairperson appointed from the exoplanet community to serve a 3-year term.
- The ExoPAG Chair is supported by a 10-12-member Executive Committee (EC)
  - EC members are selected to reflect a cross-section of the exoplanet exploration stakeholder community;
  - EC members are solicited annually and appointed to rotating 3-year terms.
- Together, the ExoPAG Chair and EC comprise a steering group that is responsible for keeping the community informed of ongoing activities and opportunities within the ExoPAG, capturing and organizing community input, and overseeing ExoPAG analyses.
- All members of the community are encouraged to consider nominating themselves of a colleague to serve on the ExoPAG EC. Service on the EC provides an excellent opportunity to:
  - Initiate a Science Analysis/Interest Group.
  - Review and contribute to the ExEP Science and Technology Development Gap Lists.
  - Contribute to APD's efforts to increase diversity, equity, and inclusion at NASA and in the community.
  - Interact with excellent colleagues.
  - Inspire the next generation.
  - Have an impact within our community.

The ExoPAG Executive Committee

Name	Home Institution
Michael Meyer (Chair)	Univ. of Michigan
Natasha Batalha	NASA ARC
Jacob Bean	Univ. of Chicago
Michael Bottom*	Univ. Hawaii
Knicole Colon*	NASA GSFC
John Debes	STScI
Rebecca Jensen-Clem	Univ. of California, Santa Cruz
Tiffany Kataria	JPL
Ilaria Pascucci*	Univ. Arizona
Josh Pepper	Lehigh Univ.
Dmitry Savransky	Cornell Univ.
Laura Schaefer	Stanford Univ.

*new member appointed Spring 2021

Programmatic Support:

- Hannah Jang-Condell, NASA HQ Executive Secretary, NASA POC
- Doris Daou, NASA HQ – Planetary Science Division Liaison
- Richard Eckman, NASA HQ – Earth Science Division Liaison
- Galen Fowler, NASA HQ – Heliophysics Division Liaison
- Exoplanet Exploration Program Office, JPL - Logistics

NASA HQ Update

Administrator Sen. Bill Nelson

Sen. Bill Nelson was sworn in as the 14th NASA administrator on May 3, 2021, tasked with carrying out the Biden-Harris administration's vision for the agency. Nelson served in the U.S. Senate for 18 years from Florida and as a payload specialist on space shuttle mission 61-C in 1986.

Pam Melroy was sworn in as the NASA deputy administrator on June 21, 2021. Melroy flew three space shuttle missions, piloting STS-92 in 2000 and STS-112 in 2002 and commanding STS-120 in 2007.

NASA Astrophysics Division

Division Director

Paul Hertz
Astrophysics Division Director

Jeff Volosin
Astrophysics Division Deputy Director

Program Executives

E. Lucien Cox
SOFIA, GUSTO, XRISM, ExEP

Ed Griego
Roman CGI, APD Operating Missions

Shahid Habib
COR, PCOS, ARIEL, Athena, Euclid, LISA, UltraSat

Not Pictured

Rachele Cocks
Fermi, XMM, NICER, TESS,CubeSats, Pioneers

Janet Letchworth
Roman

Mark Sistilli
Explorers Program IXPE, SPHEREx Balloons

Cross Cutting

Eric Smith
Chief Scientist Webb

Jeanne Davis
Assoc Dir for Flight ASM Program Manager

Mario Perez
Chief Technologist SAT, RTF

Not Pictured

Lisa Wainio
Information Manager, Public Affairs Liaison

Administrative Support

Kelly Johnson
Administrative Assistant

Maria Washington
Administrative Assistant

Not Pictured

Jackie Mackall
Program Support Specialist

Ingrid Farrell
Program Support Specialist

Program Scientists

Dominic Benford
Roman APRA Lead

Valerie Connaughton
APRA (High Energy) XRISM, UltraSat, PCOS Program

Not Pictured

Future

Michael Garcia
APRA (UV/Optical), SmallSats/Pioneers Hubble, Athena

Thomas Hams
APRA (CR, Fund. Phys.) Rockets/Balloons GUSTO, LISA

Hashima Hasan
Education/Comms, Citizen Science, Archives, Advisory Committees, NuSTAR, Keck

Douglas Hudgins
ExEP Program ADAP Lead TESS, ARIEL

Stefan Immler
Astrophysics Researc Program Mgr, Chandr XMM

Hannah Jang-Condell
XRP, FINESST, ExEP, TESS

Patricia Knezek
Astrophysics Explorers Program, SOFIA, Hubble Fellows

William Latter
APRA (Lab Astro) Spitzer, SPHEREx, Fermi

Not Pictured

Future

Roopesh Ojha
Data Lead NICER, FINESST

Not Pictured

Future

Evan Scannapieco
ATP / TCAN Lead, Swift

Kartik Sheth
COR Program, Senior Review, Inclusion/Diversity

Linda Sparke
On detail to the Office of the Administrator

Eric Tollestrup
APRA (IR/Submm) Euclid, IXPE

Heather Watson
Dep. Technologist, Explorers, SmallSats/Pioneers

Not Pictured

Future

Astrophysics Program Abbreviations: ASM – Astrophysics Strategic Missions; COR – Cosmic Origins; ExEP – Exoplanet Exploration Program; PCOS - Physics of the Cosmos

May 24, 2021

Join the Astrophysics Team at NASA Headquarters

NASA seeks visiting Ph.D.-level scientists to serve as Program Scientists in the Astrophysics Division at NASA Headquarters in Washington, DC. With a budget of $1.8 billion annually, the Division is responsible for the nation's space-based astrophysics program.

NASA Program Scientists

- manage scientific research grants programs and the proposal review process;
- serve as the Headquarters science lead for missions;
- implement NASA's response to the 2020 Decadal Survey;
- gain insight into federal astrophysics policy and programs;
- run scientific programs with multimillion-dollar budgets, and
- contribute to a culture of diversity, equity, and inclusion.

Visiting appointments last two years with renewals up to six years.

Positions are available from Fall 2021, though the start date is flexible. Applicants should email a curriculum vitae and cover letter as a single PDF file ASAP but no later than August 6, 2021 to hq-astrophysics-ipasearch@mail.nasa.gov. Decisions will be made on a rolling basis. For more information about the position, please contact Dr. Hannah Jang-Condell at hannah.jang-condell@nasa.gov.

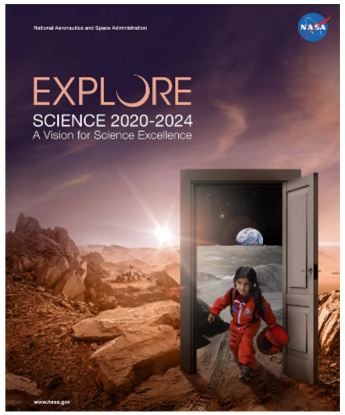
Please feel free to speak to any of us from HQ during this meeting about this opportunity.

https://jobregister.aas.org/ad/6838d5ef

Diversity, Equity, and Inclusion at NASA

Improving Inclusion at NASA

Inclusion – NASA is committed to a culture of diversity, inclusion, and equity, where all employees feel welcome, respected, and engaged. To achieve the greatest mission success, NASA embraces hiring, developing, and growing a diverse and inclusive workforce in a positive and safe work environment where individuals can be authentic. This value will enable NASA to attract the best talent, grow the capabilities of the entire workforce, and empower everyone to fully contribute.



Strategy 4.1: Increase the diversity of thought and backgrounds represented across the entire SMD portfolio through a more inclusive and accessible environment.

ROSES: SMD's goals are to develop a workforce and scientific community that reflects the diversity of the country and to instill a culture of inclusion across its entire portfolio.

ATP Inclusion Criterion Pilot Program

ROSES-21 will be amended to add the following change to the Astrophysics Theory Program (ATP)

All proposals should include an inclusion plan. This section will address:

- Plans for creating and sustaining a positive and inclusive working environment for those carrying out the proposed investigation, and
- Contributions the proposed investigation will make to the training and development of a diverse and inclusive scientific workforce.

The inclusion plan will be evaluated for adequacy and completeness.

Feedback will be provided to the proposers as part of the panel review summaries. The feedback will not be folded into the adjectival ratings or selection recommendations in the current ROSES cycle, but may in future cycles. NASA plans to invite comments from proposers regarding this pilot process after they receive their review comments.

Anti-Harassment Statement

At NASA we are fully committed to assuring the safety and effectiveness of our workforce and our missions. Consequently, NASA strictly prohibits harassment and is fully committed to providing a safe and harassment-free work environment.

NASA encourages all employees to report and help prevent workplace harassment, and NASA strictly prohibits retaliation for raising allegations of harassment or providing information related to such allegations. The Agency's Anti-Harassment Program provides for prompt, thorough, and impartial investigations of harassment complaints, and individuals reporting harassment are assured that NASA will protect the confidentiality of harassment complaints to the fullest extent possible. The Agency will take immediate and appropriate corrective action in situations involving harassment and proactively in other situations to reasonably prevent harassment from occurring.

Reporting from grant recipients: Recipient institutions are required to notify NASA of any findings/determinations of sexual harassment, other forms of harassment, or sexual assault regarding a NASA-funded Principal Investigator (PI) or co-I, or of the placement of the PI or co-I on administrative leave, or the imposition of any administrative action relating to harassment or sexual assault finding or investigation.

https://www.nasa.gov/offices/odeo/policy-and-publications

https://missionstem.nasa.gov/term-condition-institutional-harassment-discr.html

Research Program Update

COVID Impacts: Status of SMD Programs

NASA has been in a mandatory telework posture due to COVID-19 for over one year now; NASA work has continued though there have been impacts

COVID Impacts on Missions:

- Projects continue to respond and replan due to changes due to COVID-caused issues; replans (including changes in cost and schedule estimates) continue to be reviewed and approved through the SMD Program Management Council process
- NASA Centers are planning for ramping up onsite activities when 25% occupancy limit is lifted
- SMD COVID assumptions have been updated, which allows our missions to more effectively plan for operating over the next 12 months

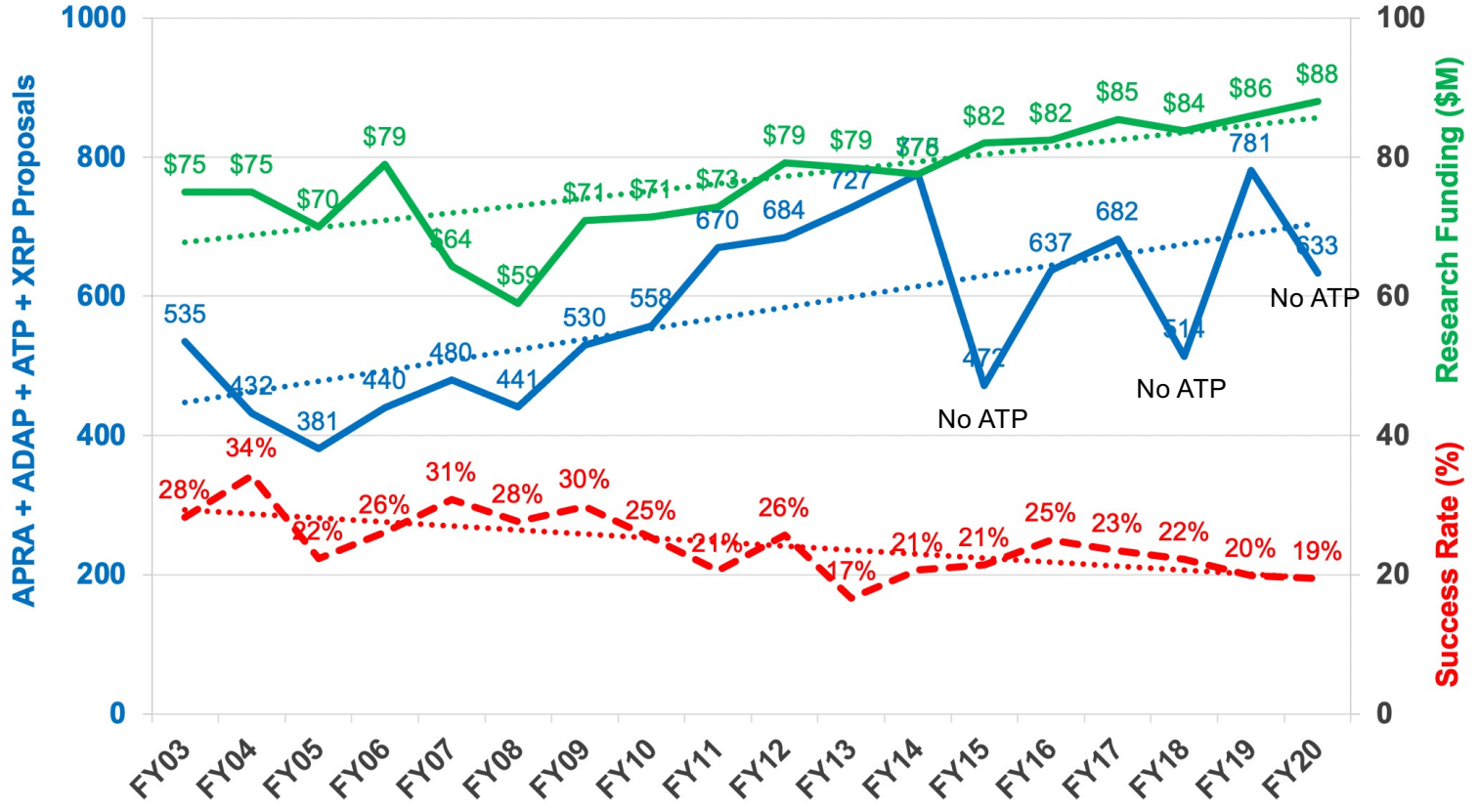
COVID Impacts on R&A:

- No R&A solicitations or selections have been cancelled due to COVID; notifications and funding have continued at the pre-pandemic pace
- Virtual peer review panels will continue through December 2021, and likely beyond

How this affects the community:

- As vaccinations increase within the community, we will be able to interact more with our project teams, partners, and vendors by increasing on-site work and travel
- SMD is working toward multiple launches scheduled for the fall and winter of this year, including Webb, Lucy, Landsat-9, DART, IXPE, and GOES-T

R&A Proposals, Research Funding, Success Rate

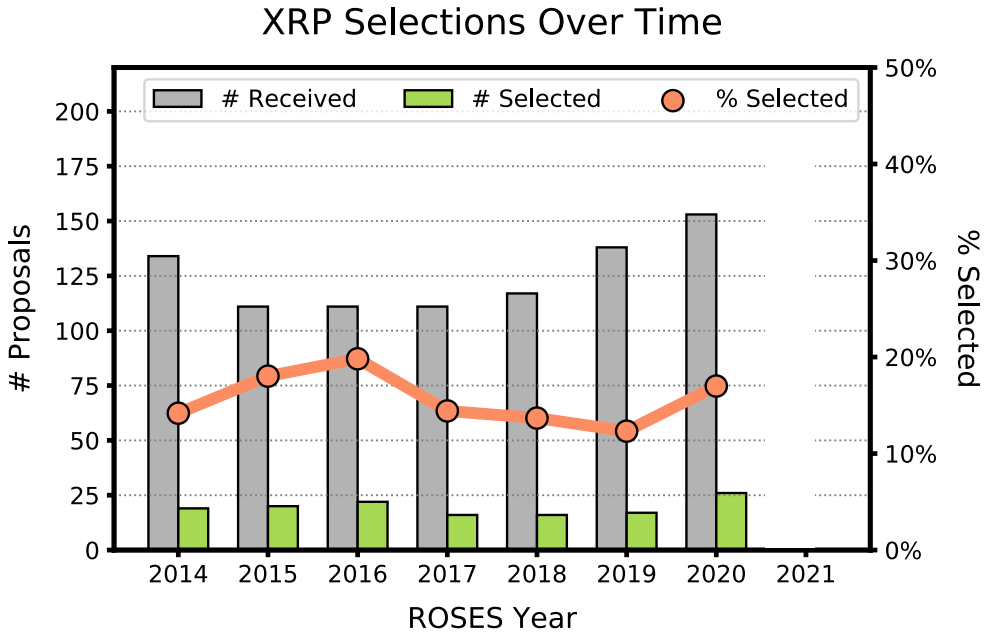


Exoplanet Research Program Updates

- Beginning with ROSES-2020, exoplanet research elements from ADAP, ATP, & APRA-Lab Astro have been moved into XRP.
- Exoplanet technology development remains in APRA
- Selection rates last year went up
- New this year: Dual-Anonymous Peer Review (DAPR)

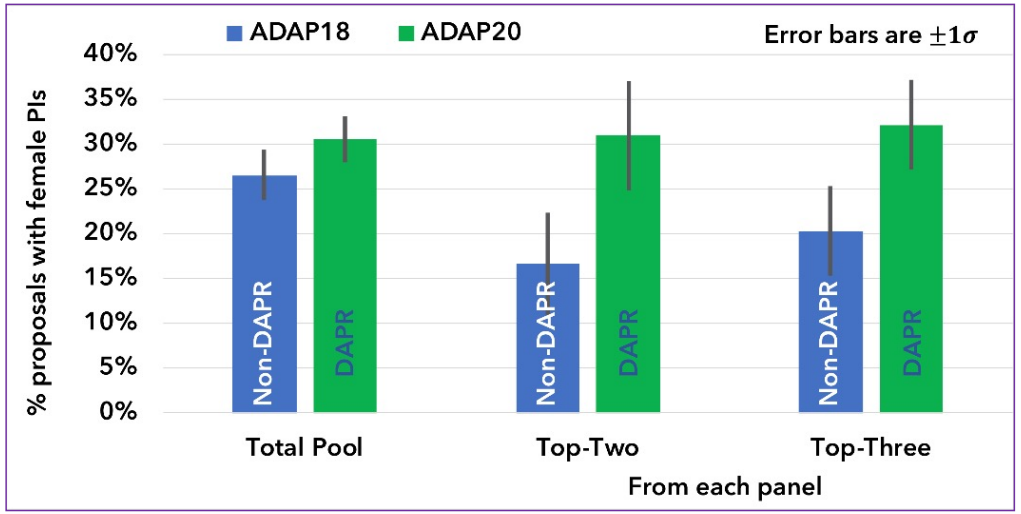
Possible causes for growth in number of proposals:

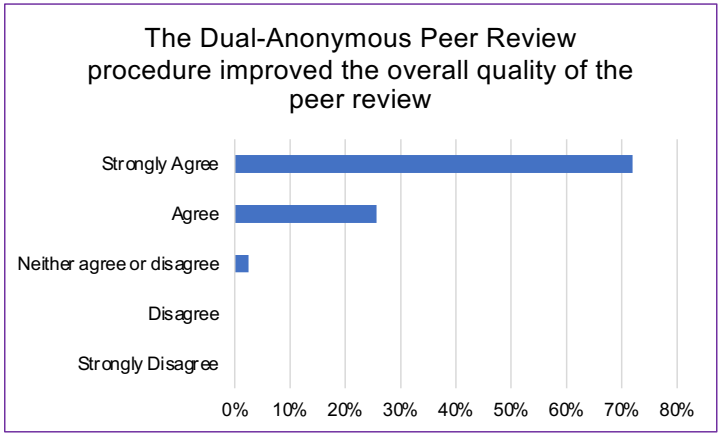
- Growth in exoplanets as a field in general
- Delayed growth due to COVID-19
- Delayed growth because ATP not solicited last year



Dual-Anonymous Peer Review

- Dual-Anonymous Peer Review (DAPR) has successfully been used in multiple Astrophysics programs
- All Astrophysics GO/GI programs have permanently converted
- Astrophysics Data Analysis and Habitable Worlds among ROSES programs converted in 2020
- Will be joined by Exoplanet Research and Astrophysics Theory programs in ROSES-2021





Extreme Precision Radial Velocity Foundation Science

The Extreme Precision Radial Velocity (EPRV) Foundation Science program is a new solicitation released as Appendix 17 to ROSES 2020 on October 9.

- Represents an initial response to the recommendations of the NASEM's 2018 Exoplanet Science Strategy and the implementation framework developed subsequently by the joint NASA-NSF EPRV Working Group.
- There are currently no plans for additional proposal calls under this program element, but that possibility will be considered in the formulation of NASA's response to the 2020 Astrophysics Decadal Survey.

Summary of Solicitation

- Central question: "Can stellar variability be understood well enough to mitigate its limitation on radial velocity measurement precision?"
- Full proposals were due January 28, 2021

25 Proposals were received, 6 selected for funding.

- 2-year investigations involve observations, theory/modeling, and/or data analysis, as well as the development of advanced statistical methodologies for analyzing complex RV datasets.

NExSS Update

What is NExSS?

An interdisciplinary research coordination network dedicated to the study of planetary habitability and the search for life on exoplanets

A NASA cross-division initiative bringing astrophysicists, planetary scientists, Earth scientists, and heliophysicists together to bring a “systems science” approach to this problem

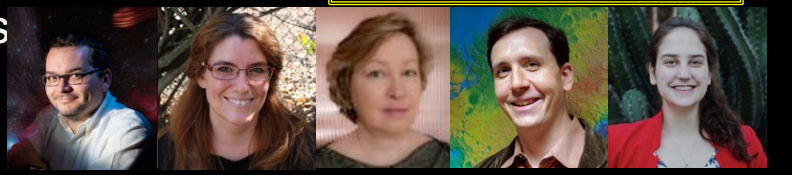
A way to leverage NASA investments in research and missions to create a community that will accelerate discovery and characterization of potential life-bearing worlds break down barriers between SMD divisions

Now one of the five ICAR programs

HQ Reps:
Mary Voytek (PSD)
Richard Eckman (ESD)
Doug Hudgins (APD)
Jared Leisner (HPD)

Co-Leads:
Daniel Apai (UA)
Dawn Gelino (Caltech/JPL)
Vikki Meadows (UW)
Shawn Domagal-Goldman (NASA GSFC)

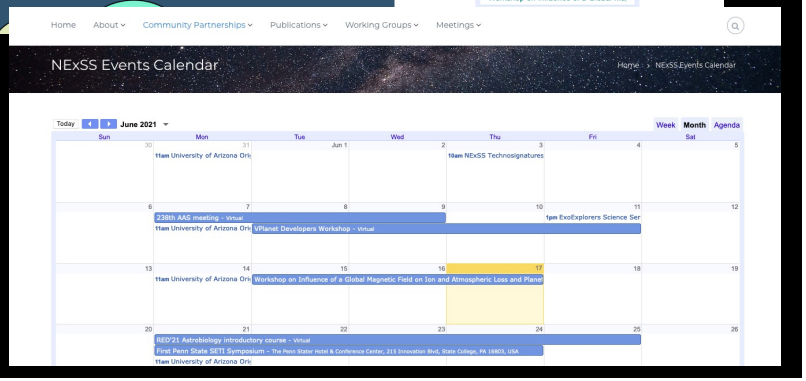
NExSS NPMP:
Jessica Noviello (GSFC)



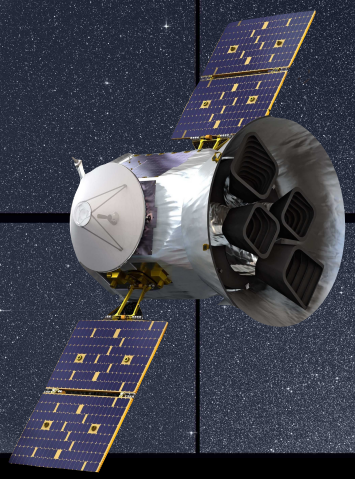
Activities Update

Revamped Website!! NExSS.info
- Science Working Groups
  - Planet Formation
  - Quantitative Habitability
  - Life Detection/Biosignatures
  - Technosignatures
  - Climate Model Intercomparisons
  - Planetary Atmospheres
  - Science Communications
- Event Calendar
- How to become a NExSS Affiliate

Workshops and Webinars
- NfoLD/NExSS Standards of Evidence for Life Detection Workshop (Jul 19-23)
- Magnetic Field Affects on Habitability (June 15-17)
- VPLanet Developers Workshop (June 8-11)
- Technosignatures Webinar Event (June 3)
- Habitable Worlds 2021 (Feb 22-26)



Mission Program Update



TESS

Transiting Exoplanet Survey Satellite

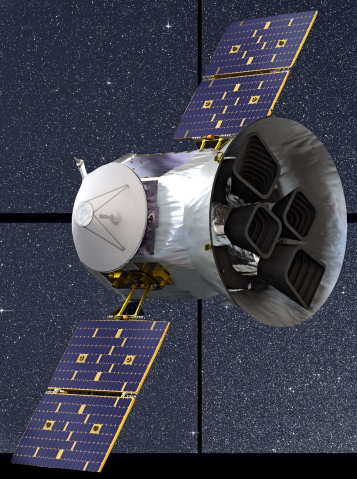
Where is TESS Pointing? **Observation Sectors 39-40**
Orbit 86: June 10 - June 24
Orbit 87: June 25 - July 8

Planet Count: **131 confirmed planets**
3506 planet candidates

Publication Count: 573 submitted, 475 peer-reviewed
(47% exoplanets, 53% astrophysics)

- TESS Objects of Interest (TOI) Catalog released
  -Catalog led by Natalia Guerrero (early career)
- Over 2200 exoplanet candidates from TESS' prime mission
- Highlights include bounty of planets with follow-up mass measurements, Earth-sized planets, multiplanet systems, a circumbinary planet, and other "firsts"
- TESS continues to deliver in extended mission!

Last update: June 20, 2021



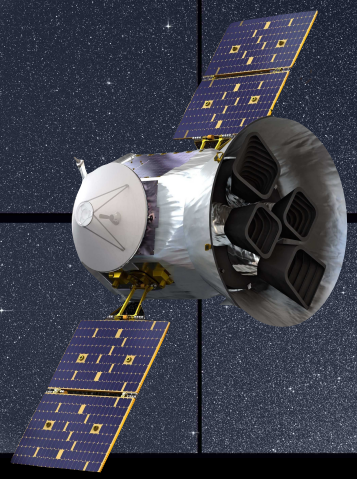
TESS

Transiting Exoplanet
Survey Satellite

Mission Updates

- TESS starts Year 4 of mission June 24/25
- FFI “quick-look” images are being released every orbit, typically within a week from downlink. Currently a “beta test period”, with ongoing release anticipated following independent review.
- Guest Investigator Cycle 4 proposals selected. Supporting large programs on topics of AGN, Exoplanets, Eclipsing Binaries, and ground-based supernova follow-up.

Last update: June 20, 2021



TESS

Transiting Exoplanet Survey Satellite

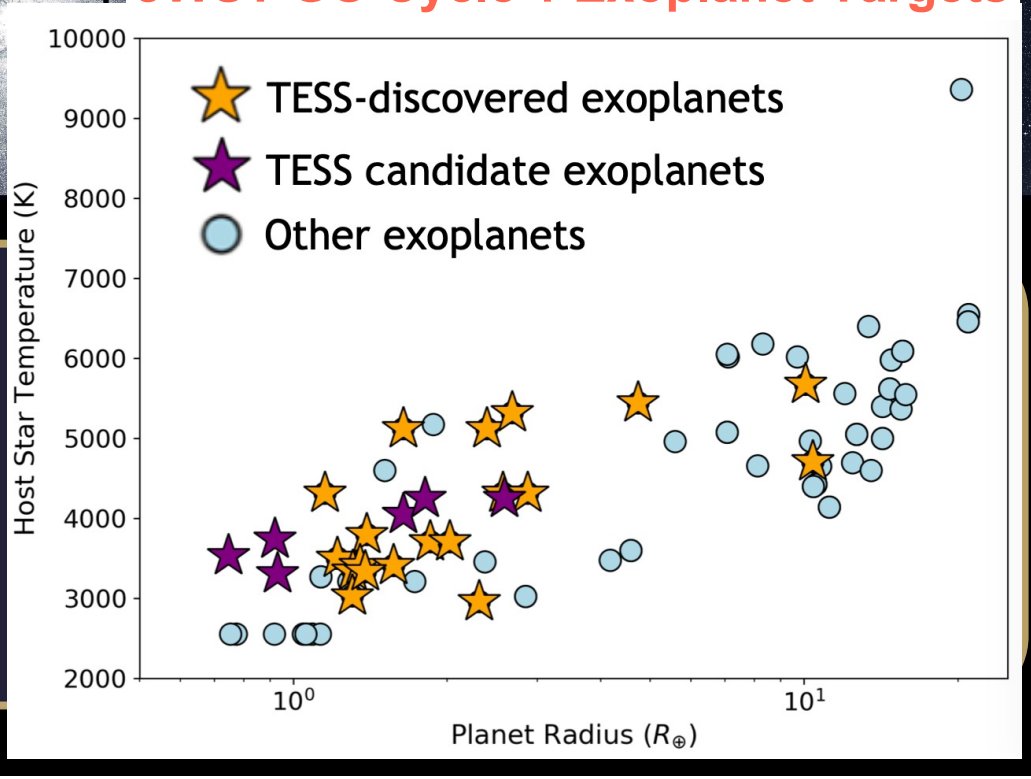
Mission Updates

TESS has provided many targets for JWST!

- Of 68 transiting exoplanets added for JWST Guest Observer (GO) Cycle 1, 25 were discovered by TESS!
- Majority of planets around low-mass stars are TESS discoveries

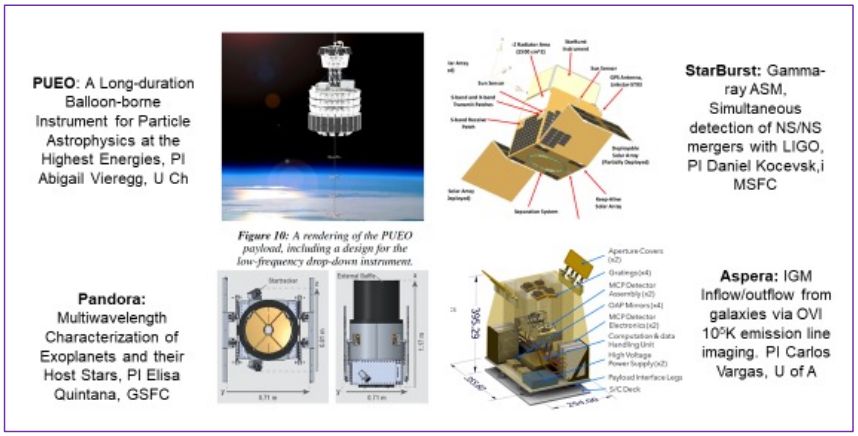
Last update: June 20, 2021

JWST GO Cycle 1 Exoplanet Targets



Astrophysics Pioneers

- A new class of small missions offered for first time in ROSES-2020. Include SmallSats, CubeSats >6U, major balloon payloads, modest ISS attached payloads, and lunar surface CLPS payloads. $20M maximum PI cost cap.
- Fills in the gap between existing ROSES investigations (<$10M for APRA) and existing Explorers MO investigations (~$35M for SmallSats).
- Solicited through ROSES; relieves burden of writing full Explorers MO proposal (ROSES 2021 Amendment D.15).



- First four selections in January 2020.
- Teams working on Concept Study Report; first gate decision to proceed will be in January 2022.

- ROSES-2021 due date NET March 2022

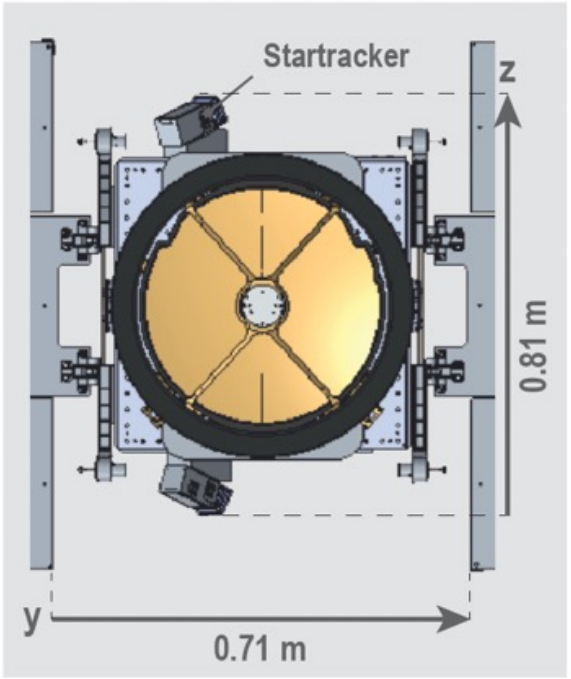
Astrophysics Pioneers: Pandora

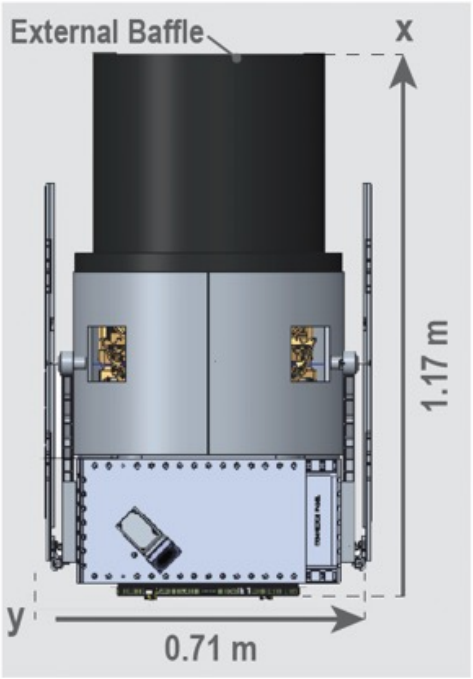
Pandora:

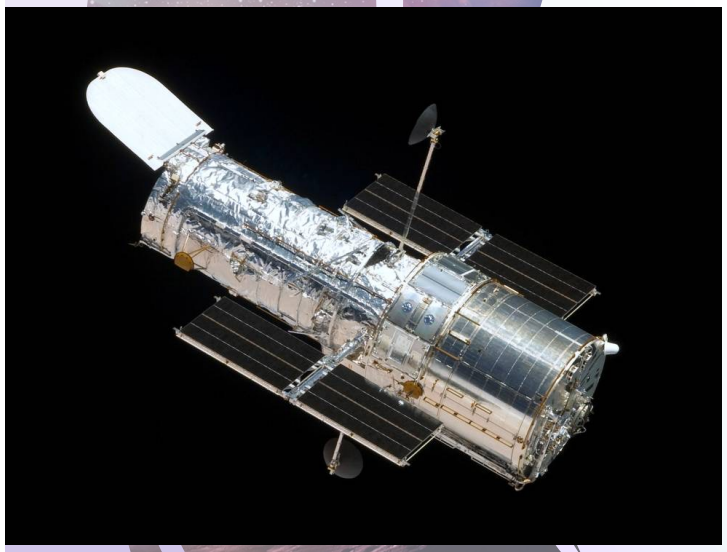
Multiwavelength Characterization of Exoplanets and their Host Stars

PI: Elisa Quintana, NASA GSFC

Stay tuned for Emily Gilbert & Jordon Karburn's talks later today!







Hubble Space Telescope

NASA continues to work to resolve a problem with the Hubble Space Telescope payload computer that halted on June 13. After performing tests on several of the computer's memory modules, the results indicate that a different piece of computer hardware may have caused the problem, with the memory errors being only a symptom. The operations team is investigating whether the Standard Interface (STINT) hardware, which bridges communications between the computer's Central Processing Module (CPM) and other components, or the CPM itself is responsible for the issue. The team is currently designing tests that will be run in the next few days to attempt to further isolate the problem and identify a potential solution.

James Webb Space Telescope

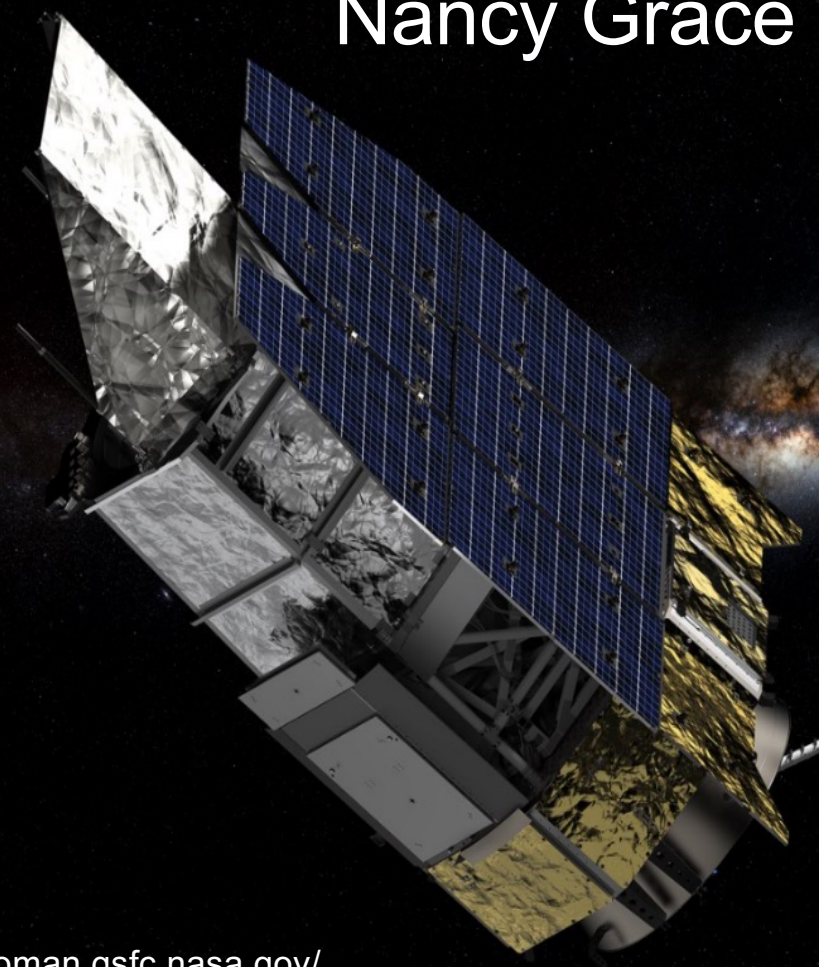
2021 Accomplishments

- All Observatory deployments – post launch environmental testing – successfully completed.
- Selected Webb Cycle 1 GO observing program
- Continued conducting mission rehearsals at the mission operation center (STScI) of greater length and fidelity

2021 Plans

- Reinstall repaired S-band transponders at the end of June and regression test them
- Complete final stow for launch steps
- Pack observatory for shipping to launch site
- Launch October 2021

Nancy Grace Roman Space Telescope

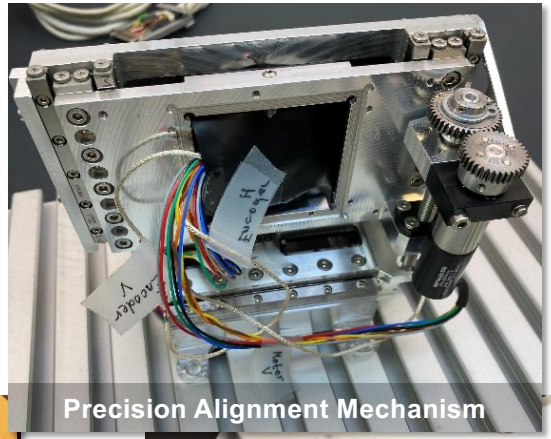


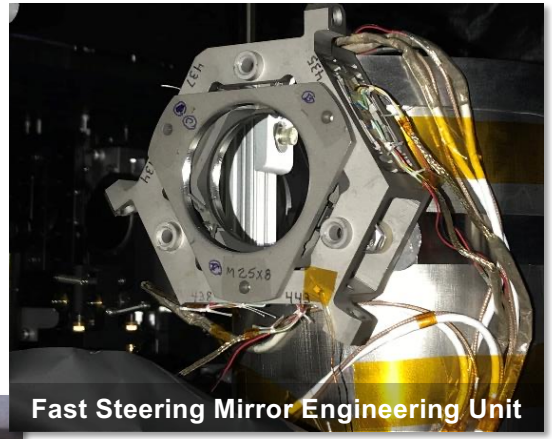
- Roman Science Interest Group (RSIG) formed to provide broad-based community input to the Roman project and NASA Headquarters
- Good technical progress has been made in spite of COVID inefficiencies and supply chain impacts
- Critical design reviews (CDR) for telescope, wide field instrument, coronagraph, and instrument carrier have been completed; ground system CDR to be completed by July 2021
- Mission CDR to be completed by September 2021
- Complete telescope by the end of 2021
- Replan to adjust cost and schedule commitments was completed in late May 2021
- Opportunities for participation in Roman Space Telescope research and support will be offered in ROSES-2021

https://roman.gsfc.nasa.gov/

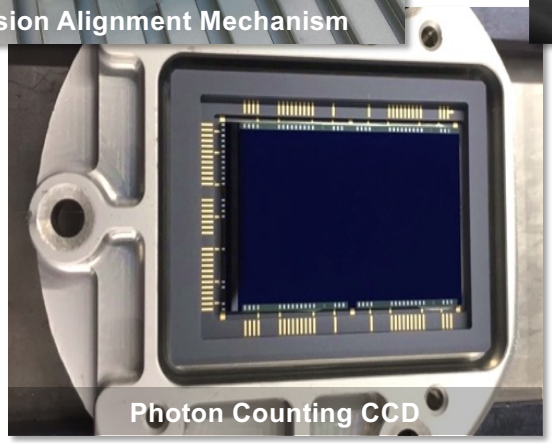
Coronagraph Instrument Technology Demonstration Hardware Progress


Deformable Mirror TRL-6 Model

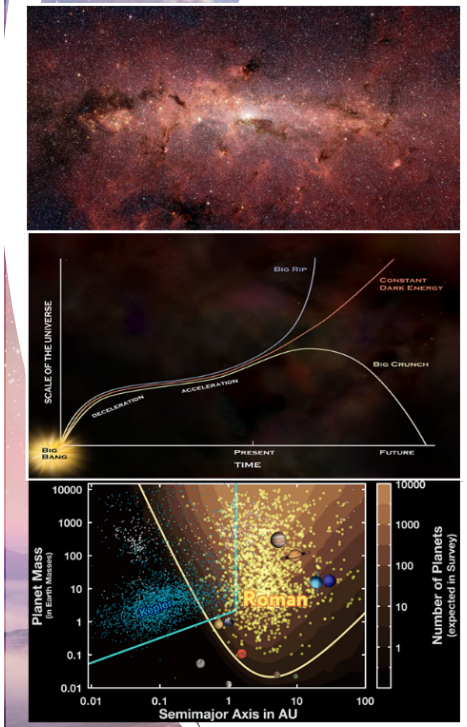

Precision Alignment Mechanism


Fast Steering Mirror Engineering Unit


Shaped Pupil Mask Set


Photon Counting CCD

Roman Space Telescope



Opportunities for participation in Roman offered in ROSES-2021

- Key Project Teams: Science teams to conduct scientific investigations using the data from the major surveys identified by the Astro2010 Decadal Survey
- Coronagraph Community Participation Program: Investigators to work with the coronagraph instrument team to plan and execute tech demo observations
- Wide Field Instrument Preparatory Science: Investigators to work on science preparation activities related to mission performance verification and science operations preparation

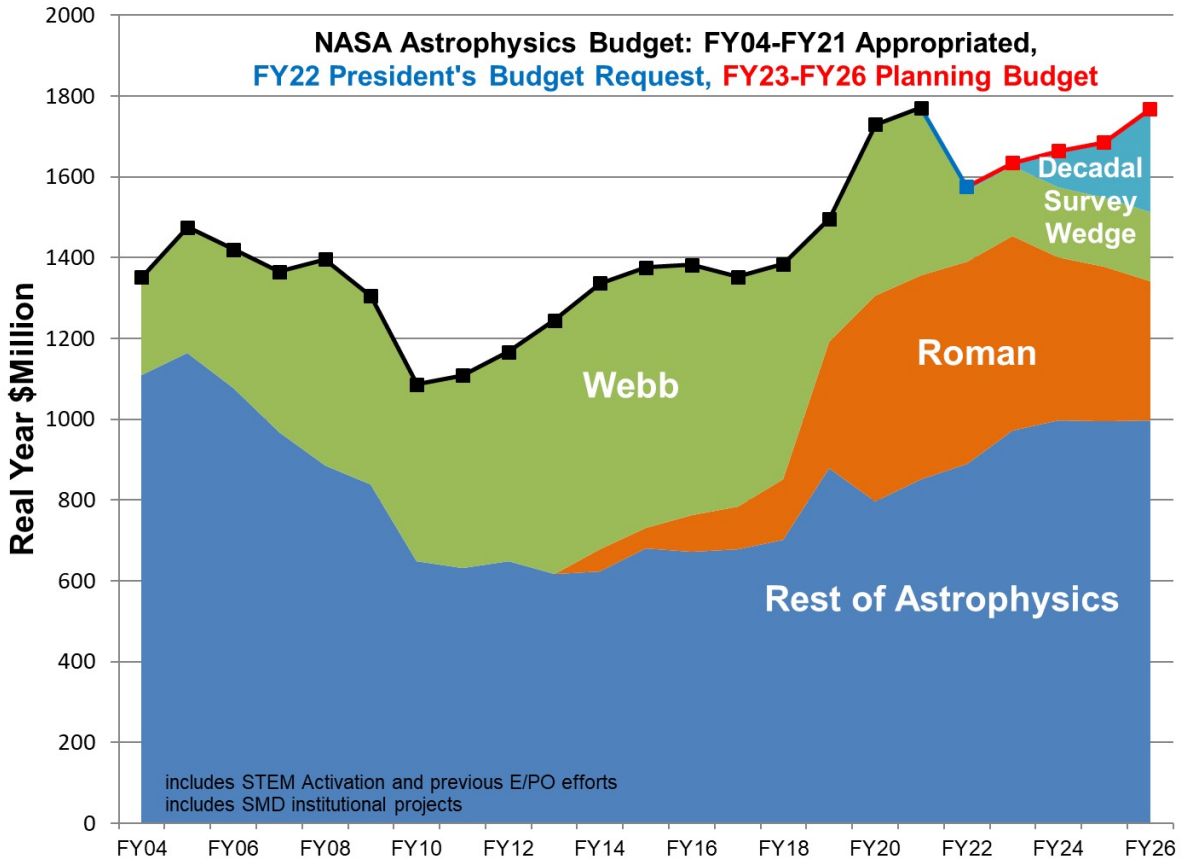
All Roman observing time is available through open processes

- Major Legacy Surveys will be defined using a community-driven open process
- Key Projects – funded science investigations using these surveys –openly competed
- Roman observing time will be available for General Observer (GO) projects
- All data will be available to the community with no period of limited access

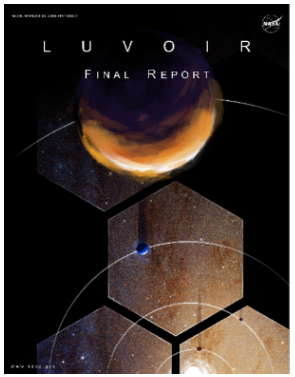
https://roman.gsfc.nasa.gov/

Planning for the Future

Astrophysics Budget – FY22 Request



NASA Planning for Astro2020




- NASA is planning for implementing the Decadal Survey
  - Reducing risks of large missions via technology development and through studying lessons learned from prior large missions
  - Developing options for recommendations in R&A, archives, suborbital, Explorers, Probes
  - Developing options for flagship risk reduction activities; stay focused on Webb and Roman
  - Holding a wedge in out year planning budget for new initiatives
- NASA plans to provide an initial response to the community within a few months of receiving the Astro2020 Decadal Survey Report
  - Announce implementation of recommendations that can be implemented immediately (within budget, within authority)
  - Announce plans for developing responses to long-term recommendations
  - Communicate and engage with the community throughout

Keep Informed about NASA

NSPIRES mailing list – information about NASA solicitations

https://nspires.nasaprs.com/

Cosmic Origins mailing list, Exoplanet Exploration mailing list, Physics of the Cosmos mailing list – information about NASA missions and science

https://cor.gsfc.nasa.gov/cornews-mailing-list.php

https://exoplanets.nasa.gov/exep/exopag/announcementList/

https://pcos.gsfc.nasa.gov/pcosnews-mailing-list.php

NASA Astrophysics Federal Advisory Committees

Astrophysics Advisory Committee (APAC)
https://science.nasa.gov/researchers/nac/science-advisory-committees/apac

NASEM Committee on Astronomy and Astrophysics (CAA)
http://sites.nationalacademies.org/bpa/bpa_048755

Astronomy and Astrophysics Advisory Committee (AAAC)
https://www.nsf.gov/mps/ast/aaac.jsp

Sign up to be a panel reviewer:

https://science.nasa.gov/researchers/volunteer-review-panels

Why Volunteer to Serve on a NASA Peer Review Panel?

Personal professional development:

- See how the whole review process works
- Learn what constitutes excellent proposals
- Network with your professional colleagues and NASA scientific staff

Institutional achievement:

- Improve at competing for NASA money
- Increase knowledge of NASA's research and technology programs

Investment in the future:

- Help select the most transformative science
- Ensure that all proposals receive a fair and competent review

All reviewers receive an honorarium from NASA

All reviews through (at least) the end of 2021 are virtual

Sign up to be a panel reviewer:

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or contact a NASA program officer (for contact info, see https://science.nasa.gov/researchers/sara/program-officers-list)

Questions?