STScI | SPACE TELESCOPE SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

HST Cycle 31 External Panelist Orientation

https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information

---

Claus Leitherer
on behalf of the STScI Science Policies Group

June 14, 2023

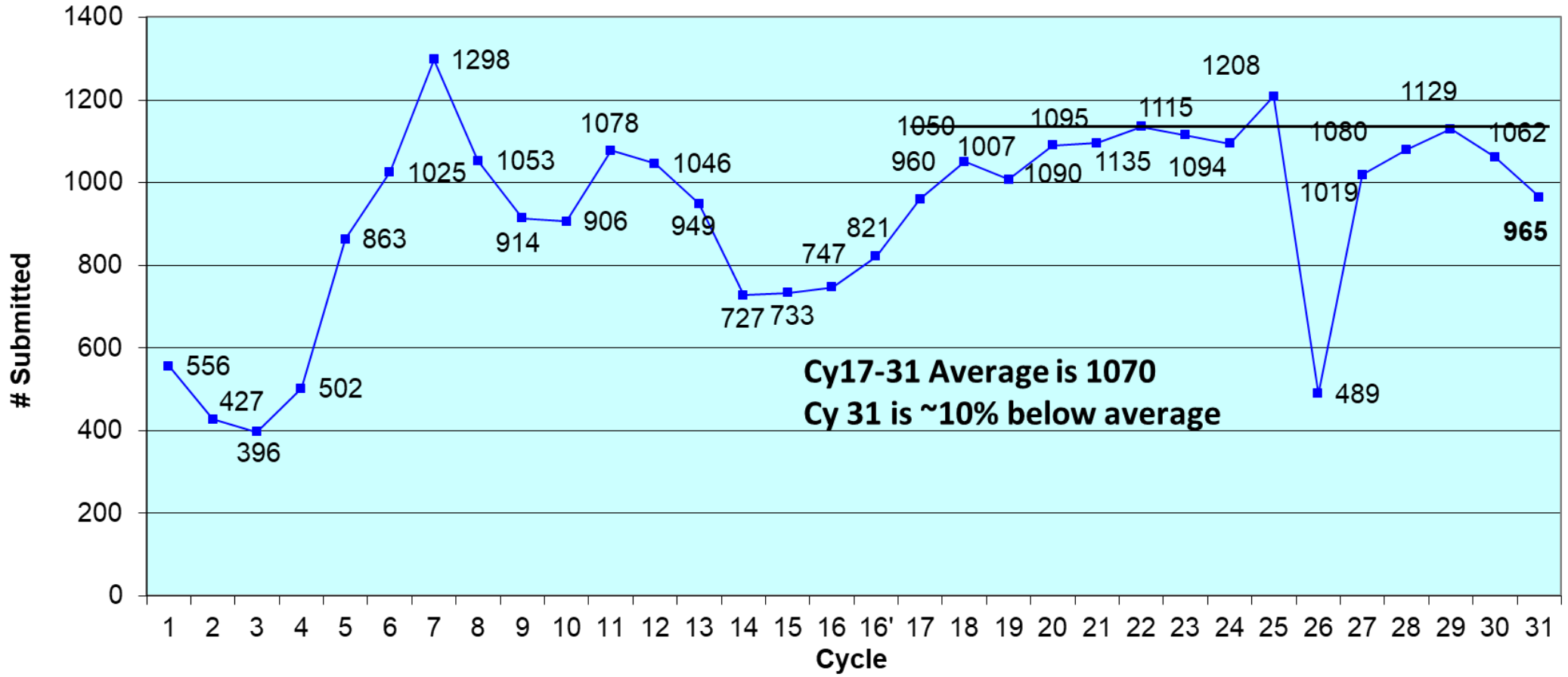
Today's Orientation

1. Welcome from the STScI Director, Nancy Levenson
2. Time Allocation Committee Orientation
   - Overview
   - The Review Process
     - Includes overview on the Dual Anonymous Peer Review by Laura Watkins (Hubble Science Policies Group)
   - Policy Issues
   - Personnel and Logistics
3. Hubble Observatory and Instrument performance update from John MacKenty

Your participation is crucial to maximizing the science from Hubble

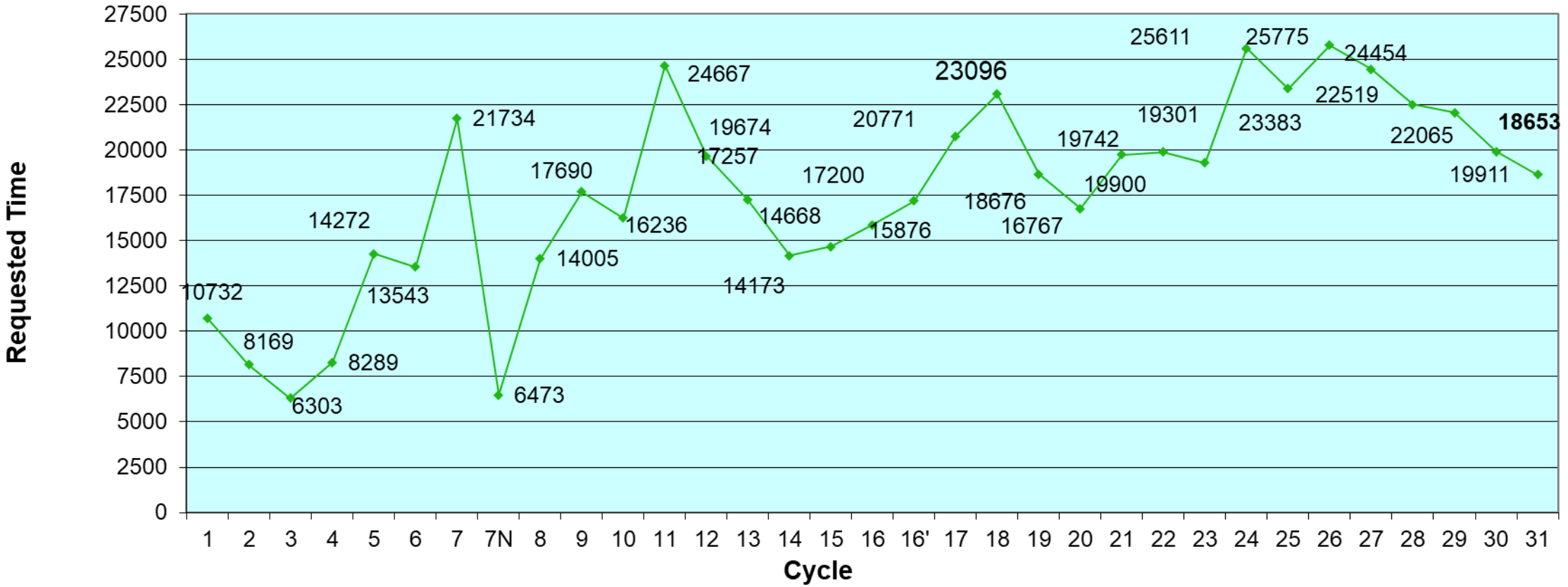
- The Hubble Cycle 31 TAC review is supported by 340 panel members, including 234 external panelists and 106 virtual panelists.
- This is a *community* process: you have 965 proposals to review, from 3676 total investigators.
- Getting your grades in on time and writing thoughtful reviews doesn't just help the STScI staff—it helps your fellow panelists and the proposers.

Cycle 31 Proposal Submissions



Thirty-three years after launch, Hubble remains in high demand!

Cycle 31 Orbit Requests



Backup slides include more detailed submission statistics

Cycle 31 Proposal Review Schedule

Date	Milestone
May 24, 2023	Cycle 31 Proposal Deadline
June 7, 2023	STScI releases proposals to panelists for review
June 14, 2023	Orientation meeting for External panelists
July 14, 2023	Deadline for External panelists to submit grades and comments for their assigned proposals
August 1 – 4, 2023	Virtual panels meet
August 7 – 9, 2023	Executive Committee meets
August 21, 2023	STScI releases the Cycle 31 Science Program

Overview

Useful Definitions

- **Virtual panels/panelists:** eight panels meeting virtually, and **discussing**, **grading**, **ranking**, and **providing written feedback on** proposals in their respective science categories. Pre-pandemic, these panels physically met at STScI.
- **External panels/panelists:** seven panels (none for Solar System) **grading** and **providing written feedback on** a subset of Small, archival, and snapshot proposals. Their grades are used by STScI to generate a rank-ordered list of proposals in each science category.
- **Expert reviewers:** experts who provide **written input** for the largest proposals but are not members of the TAC.
- **Executive Committee:** the panel **discussing**, **grading**, **ranking**, and **providing written feedback on** the largest proposals, composed of the TAC Chair, Panel Chairs and Vice-Chairs, and At-Large Members.
- **Telescope Allocation Committee (TAC):** the body of all members of the Executive Committee and the Virtual and External panels.

Telescope Allocation Committee (TAC) Organization

- Overall TAC Chair: Rupali Chandar (University of Toledo)
- Since Cycle 28, we have followed a hybrid approach, with each of eight scientific categories having a corresponding topical panel divided into external panels and virtual panels. In addition to reviewing proposals, the virtual panels advise the Panel Chair and Vice-Chair on Large, Treasury, and AR Legacy proposals for review by the Executive Committee.
- The Executive Committee, led by the TAC Chair, is comprised of the At-Large members (3), the Panel Chairs (8), and the Panel Vice-Chairs (7). The Executive Committee reviews the Large, Treasury, and AR Legacy programs and reviews the overall programmatic balance.

Virtual versus External Panels

Hybrid approach: dividing proposals between external review and virtual discussion.

External panels provide the assessment and grading of a subset of Small GO proposals (1 – 15 orbits) including Snapshot and Archival proposals.

- These proposals are ranked by STScI using the grades of the external panelists.

Virtual panels review the remaining Small (16 – 34 orbits) GO and Medium proposals. After the initial triage, panelists interact virtually by video-conference.

- These proposals are ranked after the discussion and re-grading in the group panels.

Exceptions – all Solar System and all Small/Medium Target of Opportunity proposals will be reviewed by the virtual panels. All Small and Medium observing LSS and CGM/IGM proposals will be reviewed by the virtual panels, with the external LSS and CGM/IGM panels handling only archival (including theory) and Snapshot proposals.

You are an external panelist.

Panels and Associated Science Categories

Topical panels have these science categories:

- Solar System: all bodies in our solar system (*virtual panel only*)
- Exoplanets and Planet Formation: exoplanets, planet formation, debris disks
- Stellar Physics: cool + hot stars, late stages, low-mass stars, star formation, supernovae
- Stellar Populations: Resolved stellar populations in galaxies, Milky Way structure, star clusters, ISM in Local Group galaxies
- Galaxies: stellar content of galaxies, ISM in other galaxies, dynamics, galaxy evolution
- Circum- and Intergalactic Medium: galaxy outflows, galaxy halos, IGM, quasar absorption lines
- Supermassive Black Holes: AGN, quasars, SMBH, jets, galaxy/BH co-evolution
- Large-scale Structure: cosmology, lensing, galaxy clusters, surveys, deep fields

Types of Proposals

- Regular General Observer (GO): Regular observing proposals.
- Snapshot (SNAP): Observing proposals of relatively short, easy to schedule observations. Usually surveys requesting a list of targets, of which only ~1/3 can be expected to be observed; proposal should explain how success will be achieved with a subset of proposed targets observed. Target list likely to be "generic". Used to increase the observing efficiency of the observatory.
- Archival (AR): Archival research proposals; US PI's and co-I's can request funding. Data-based AR proposals must be primarily based on Hubble data. *All* archival proposals are externally reviewed (except "Legacy" AR proposals, which generally require more resources).
  - Theory proposals: results should enhance the value of HST observational programs through their broad interpretation (in the context of new models or theories) or by refining the knowledge needed to interpret specific observational results.

More info: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-call-for-proposals-for-cycle-31/hst-proposal-categories

Special Categories of Proposals

- Joint Proposals: programs in which HST science is the prime science, but multi-wavelength observations from another ancillary observatory (JWST, Chandra, XMM-Newton, TESS, NOIRLab, NRAO) are critical for the science goals of the proposal.
- Calibration Proposals: not linked explicitly to a specific science program; provide a calibration or calibration software that can be used by the community for existing or future programs. Can be GO or Archival.
- Long-term: Proposals requesting time for both this cycle and in the future (up through Cycle 33). These future observations will still require resources to execute and analyze, and thus must be fully justified scientifically.
- Archival Cloud Computing: Proposals requesting funding to use Amazon Web Services (AWS) for data analysis, as all non-exclusive access data for current Hubble instruments (ACS, COS, STIS, WFC3, FGS) are now available via AWS
- Archival Data Science Software: Proposals requesting financial support for the development of software products that will be made available to the community for the purposes of analyzing HST data.

More at: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-call-for-proposals-for-cycle-31/hst-proposal-categories

Special Categories of Observations

- Parallel Observations: Since Hubble's instruments are located at different positions in the focal plane, it is possible to observe simultaneously with one or more instruments in addition to the primary instrument. While these observations do not "cost" orbits, they do require resources for both STScI support, and US investigators can request funding for their analysis. Thus any parallel observations must be well-justified and approved by the TAC.
  - "Coordinated Parallel": Parallel observations part of the same program as the primary observations; may have different science goals. Must be fully described and justified scientifically; can be rejected even if the primary observations are approved.
  - "Pure Parallel": Proposed independently of the primary observations. Reviewed by the Executive Committee regardless of size.

More at: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-call-for-proposals-for-cycle-31/hst-observation-types

Special Categories of Observations

In general, if it looks like a proposal is requesting something special (e.g., being in the “continuous viewing zone”), check that they list this requirement in the “Special Requirements”. Likewise, if something is specified in the Special Requirements, consider whether or not it is scientifically justified in the proposal.

All “Special Requirements” must be mentioned in the Phase I proposal in order to be implemented, so it is up to you to verify these requirements are required scientifically.

When it doubt, check out the Call for Proposals: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-call-for-proposals-for-cycle-31

The Review Process

General Guidelines

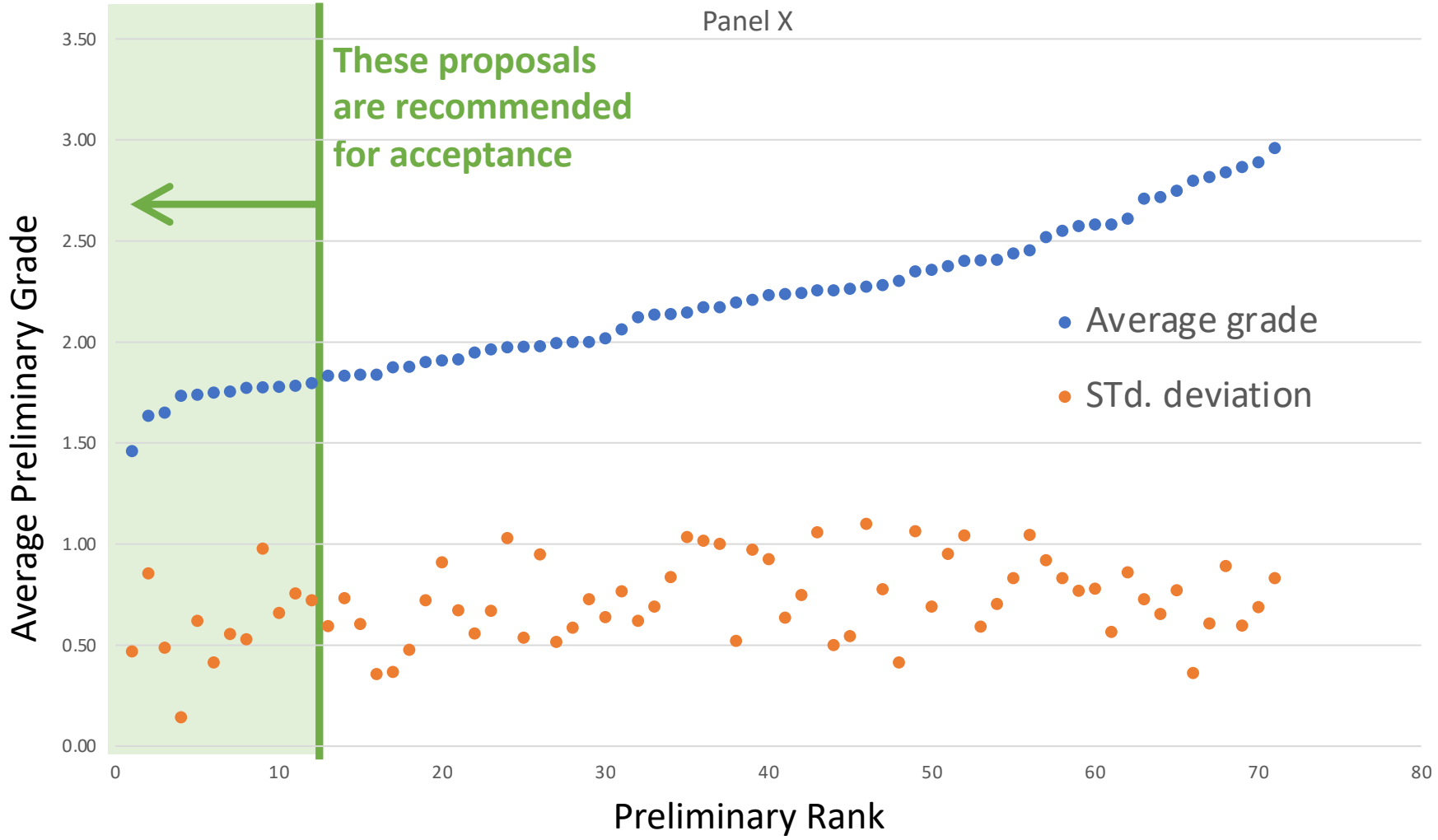
- Access proposals at https://spirit.stsci.edu/. All grades and comments will be entered through this portal. See See https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information/reviews-grades-comments/spirit-webreviewer-tool-guide (and your email) for full instructions.
- Anticipate how much time it will take to review proposals. Including writing comments, it may take 30–45 minutes per proposal. There are more than 4 weeks between now and the deadline (Friday, July 14, 2023). Plan accordingly and budget your time; doing a few proposals a day is a *lot* less stressful than saving them all for the last minute—and leads to better reviews and comments for the proposers.
- You may want to start by reading all of the abstracts for your assigned proposals, instead of digging straight into individual proposals. This will help you get an overview of the task, and it is good for finding conflicts of interest early (e.g., competing proposals or unidentified close collaborators), which helps everyone.
- You must grade and provide comments on all proposals to which you are assigned, even if they are not directly within your field of expertise.

Selection of Proposals Reviewed by External Panels

- External panels grade proposals between now and July 14.
- The proposals are categorized by science topic and sent to seven panels which host external panelists who are experts on this topic.
  - Reviewers grade on an absolute system (excellent → poor)
  - Grades are collected, averaged, and ranked list compiled for that topic
  - Orbit allocation is done by topic, based on orbit pressure
- Comments from each reviewer for externally reviewed proposals are returned to the proposers verbatim
- ALL proposals—GO, Snapshot, *and* Archival—should be graded using the same scale.
- The highest ranked proposals are marked as recommended for acceptance
  - "Recommended" proposals made available to the Chairs and Vice Chairs of the virtual panels prior to the virtual panel meetings
  - The panel chairs will use this information to monitor the programmatic balance of the recommended list of proposals reviewed by individual and group panelists.

Selection of Proposals Reviewed by External Panels

STScI averages grades & marks highest ranked proposals as recommended for acceptance.



Selection Criteria

- Impact within the sub-field: The scientific merit of the program and its contribution to advancement of knowledge.
  - The immediate sub-field of the proposal is the niche area of the program, not the whole broad science area of the topical panel to which it was assigned.
- Out-of-field impact: The program's impact for astronomy in general. Are there implications for other science areas and/or insights into larger-scale questions?
  - The proposal does not have to impact all of astronomy, but should ideally impact a number of other sub-fields or provide significant impacts in at least one other sub-field.
- Suitability: The necessity for HST observations or relevance to HST science.
  - Observing and regular archival programs: a demonstration that the unique capabilities of HST are required to achieve the science goals; how much of a scientific advantage does HST data offer over other facilities?
  - Theory programs: a demonstration of broad applicability to HST observational programs.

The evaluation should be based on what is written in the proposal, not on the reviewer's broader knowledge.

Reviewers must ensure that the comments address some or all of these primary criteria.

https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information/reviews-grades-comments/selection-criteria-and-scoring-system

We use a "Stellar Magnitude" Scoring System: 1 is BEST

Grade	Impact within the sub-field	Out-of-field impact	Suitability
1	Potential for transformative results	Transformative implications for one or more other sub-fields	Science goals can only be achieved with HST
2	Potential for major advancement	Major implications for one or more other sub-fields	Major advantages in using HST over other facilities
3	Potential for moderate advancement	Some implications for one or more other sub-fields	Some advantages in using HST over other facilities
4	Potential for minor advancement	Minor impacts on other sub-fields	Minor advantages in using HST over other facilities
5	Limited potential for advancing the field	Little or no impact for other sub-fields	HST offers little or no advantage over other facilities or the advantages of using HST are unclear.

More details and examples, including breakdowns for Archival and Theory programs at: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information/reviews-grades-comments/selection-criteria-and-scoring-system

Proposal Comments

- Comments are required for all proposals.
- The deadline for you to enter ALL of your comments is Friday, July 14, 2023.
- Don't make up reasons for rejection – if a proposal was good, but not great, then say so.
- Have your comments reflect your grades: you will not know whether or not a proposal is recommended for acceptance.
- All comments go back to the proposers verbatim, e.g.,

  Strengths:

  Reviewer #1: The proposed observations will revolutionize our understanding of space krakens.

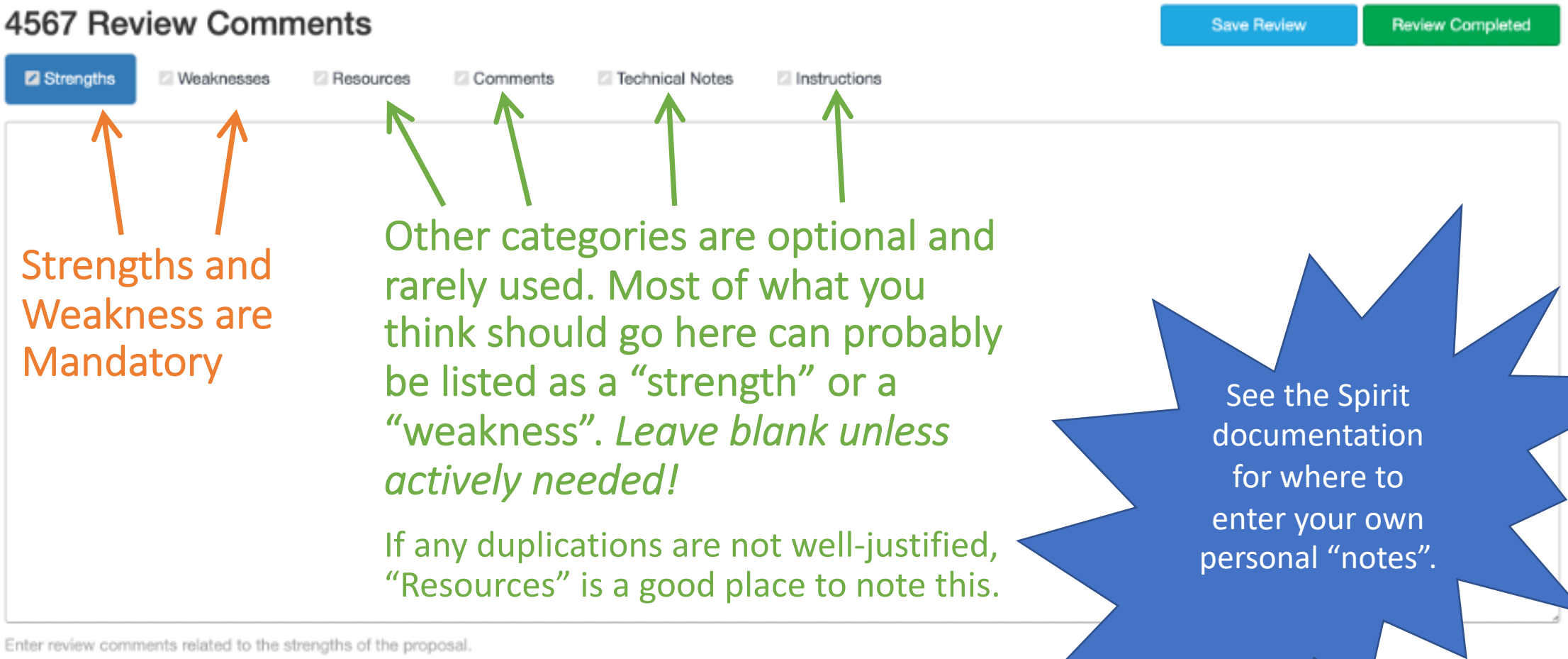
  Reviewer #2: Only Hubble can get UV observations of space krakens, and the proposal makes a strong case for why the UV is important for determining how long space krakens live.

  Weaknesses:

  Reviewer #1: It is not clear from this proposal what implications the proposed data and analyses will have for other classes of space creatures.

  Reviewer #2: The target signal-to-noise of ten zillion is not well justified in the proposal.

Proposal Comments: Practical Instructions



Proposal Comments: Detailed Instructions

- Proposal feedback comments should be concise.
- Please avoid asking questions in the comments.
    - For example, “the proposal did not sufficiently motivate the number of requested targets” is preferred over “why have 6 targets instead of 5?”
- The reports should focus on the scientific content and not the reviewer: do not reference yourself. If it was not clear *to you*, then it was simply not clear.
    - For example, "The proposal did not sufficiently explain why these targets were chosen" is preferred over "It is not clear to me why these targets were chosen"
- Avoid any comments that may be perceived as derogatory.
- You cannot be sure at the time of writing feedback comments whether the proposal will be accepted. The comments should be phrased in such a way that they are sensible and meaningful regardless of the final outcome.

For more information: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information/reviews-grades-comments/proposal-feedback-comments

Proposal Comments: Detailed Instructions

- Avoid statements that create the impression that the low ranking of a proposal is due to a minor mistake.
    - Many proposals do not have obvious weaknesses but are just less compelling than others: in such a case, acknowledge that the considered proposal is good but that it had limitations.
- Never include in the report an explicit reference to another proposal, such as the proposal ID.
- Whenever possible, make suggestions for possible improvements, but avoid giving the impression that following those suggestions guarantees that the proposal will be more successful in next cycle.
- Hubble is a shared resource and we receive proposals from all over the world, many from non-native English speakers. The proposal should be understandable, but please take care to judge the science in the proposal, not the quality of the language or the grammar.

For more information: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information/proposal-feedback-comments

Policy Issues

Code of Conduct

All participants in the proposal review process are expected to:

- Be mindful of bias in all contexts.
- Be respectful in any written or verbal communications you have as part of the review process.
- Step in to address abusive or bullying behavior.
- Be respectful of all regardless of differences (professional or otherwise).
- Actively help create an environment free of harassment.
- Be polite and professional in your written feedback comments, *especially* when providing critical comments.
- Hubble is a shared resource and we receive proposals from all over the world, many from non-native English speakers. The proposal should be understandable, but please take care to judge the science in the proposal, not the quality of the language or the grammar.

Please report any violations of the code of conduct to your SPG manager or your PSS.

Confidentiality

- Remember that you should not discuss the proposals you review or your evaluations – now, or in the future.
- Do not post comments to Facebook, Twitter, Instagram, TikTok, etc. regarding the content or your participation in the panel meeting.
- Individual reviews should be independent; do not consult with other panelists.
- Confidentiality carries from prior years: Do not discuss/compare prior years proposals in this review, even with panel members who also served in prior years.
- Please purge any review files from your computer after the review.
- Panelist names will be shared in the STScI Newsletter after the selections are public; only then should you feel free to update your c.v., etc.

Dual Anonymous Review

- In a Dual Anonymous Review, the identities of the proposal teams have been removed from the proposals prior to the preliminary review.
- During all stages of the panel review process, reviewers grade and rank proposals without knowing the identities of the proposal teams.
- Panelists should flag any proposals they identify as not compliant with the posted Dual Anonymous Review guidelines and bring them to the attention of the Science Policies Group (email your Science Policies Group Manager; these names are at the end of this presentation). SPG will review and then provide guidance for how to proceed.

Conflict of Interest

Our goal is informed, unbiased discussion of each proposal

- Grading panel members should have neither direct nor indirect interest vested in the outcome of the review
- Grading panel members should also have sufficient knowledge to assess the science

Anonymizing proposal simplifies conflicts

- We only consider personal conflicts
  - Direct involvement in the proposal
  - Involvement of close collaborators/competitors/family members based on names supplied by individual panelists
- Institutional conflicts are **not** considered
- Most identified by automated checks and info provided by you
- If you strongly suspect you have a conflict with a given proposal, you are conflicted.
- Panelists may flag additional conflicts found while reviewing a proposal
  - Please raise any such concerns with your PSS and SPG manager

Conflict of Interest

If you have not yet identified your conflicts of interest, please do so IMMEDIATELY.

General Guidelines

- Panel Members should assume that all instruments will be performing nominally in Cycle 31
- Panel Members should *not* reject or downgrade proposals based on technical considerations without concurrence by STScI
    - STScI will perform a technical review on all accepted proposals and will work with successful PIs to make programs flight ready. If technical questions arise during the panel review, please ask your PSS to summon a relevant expert.
- Panel Members should *not* take scheduling considerations into account in grading proposals, but any scheduling constraints *must* be clearly stated *and* scientifically justified.

Concentrate on recommending the best science… but recognize that it may not be possible to schedule all highly ranked programs

Personnel & Logistics

STScI Personnel

- Director's Office:
  - **Nancy Levenson** – Interim Director
  - **Marc Postman** – Interim Deputy Director
  - **Neill Reid** – Associate Director for Science
- Science Mission Office:
  - **Alessandra Aloisi** – Science Mission Office Head
  - **Elena Sabbi, Laura Watkins** – Science Mission Office Deputy Heads
  - **Claus Leitherer** – Hubble Science Policies Lead
  - **Andy Fruchter** – Science Policies Scientist
  - **Brett Blacker** – TAC Technical Manager
  - **Crystal Mannfolk** – Deputy TAC Technical Manager
- Hubble Mission Office
  - **Tom Brown** – HST Mission Office Head
  - **Helmut Jenkner, Julia Roman-Duval** – HST Mission Office Deputy Heads
  - **Carol Christian, John MacKenty** – HST Mission Office Scientists
- Planning and Scheduling:
  - **Bill Januszewski** – Operations Planning Branch
- Logisitics:
  - **Sherita Hanna, Shemiah Smith, Darlene Spencer** – Events Planning Group Staff
  - **Thomas Marufu** – IT Technologist

NASA and ESA Personnel

- NASA:
  - **Jennifer Wiseman** – Hubble Senior Project Scientist, NASA GSFC
  - **Ken Carpenter** – Hubble Operations Project Scientist, NASA GSFC
  - **Andrew Ptak** – Hubble Deputy Operations Project Scientist, NASA GSFC
  - **Mike Garcia** – Hubble Program Scientist, NASA HQ

- ESA:
  - **Chris Evans –** Head of the ESA Office at STScI and Hubble Project Scientist for ESA, STScI
  - **Paule Sonnentrucker –** ESA Hubble Mission Manager, STScI

Where (or Who) to Go To for Help

- Call for proposals: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-call-for-proposals-for-cycle-31
- Full online documentation for the review process: https://hst-docs.stsci.edu/hsp/hubble-space-telescope-science-policies-group-and-peer-review-information

- Questions? When in doubt, email your Panel Support Staff (PSS)!
- Potential conflict of interest? Email your PSS
- Problems accessing Spirit? Email wasabi@stsci.edu and/or Brett Blacker
- Questions about HST instruments and their capabilities, or technical feasibility of a proposed program? Email your PSS and SPG Manager.
- Want to give an update on your status or require an extension on deadlines? Email your SPG Manager.

Panel Personnel

Panel	SPG Manager
Exoplanets	Claus Leitherer
Stellar Physics	Claus Leitherer
Stellar Populations	Andrew Fruchter
Galaxies	Laura Watkins
Circum- and Intergalactic Medium	Andrew Fruchter
Supermassive Black Holes	Claus Leitherer
Large-scale Structure	Claus Leitherer

After the TAC …

- As always, we welcome feedback on the TAC process
  - How did the grading process work?
  - Can we improve it?
  - What were the main shortcomings?

- We will send email to all Panel members with a survey requesting your views of the process. Please fill it out! Many of the process improvements this year were in a direct response to last year's survey: we value your input!!

Thank you!

The Hubble TAC would not be possible without your critical support and contributions!

Back Up

Types of Proposals

Standard proposals	
GO	Small/Joint (1-34 orbits); Medium (35-74); Large (≥ 75)
AR	Legacy
Special categories	
Long-term	allocate time in C31 – C33 if justified **scientifically**
ToO	ultra-fast (<2 d) ToO: up to 1 activation allowed; 2-21 d ToOs: 8 activations; >21 d: no limit
CVZ	no penalty to observer if executed as non-CVZ
Calibrations	Calibrate specific modes of HST observation
HST-JWST	Up to 150 hours
Reg. HST-Chandra	< 75 HST, up to 400 ksec Chandra, < 15% time-constrained
Large HST-Chandra	≥ 75 HST, up to 600 ksec Chandra, < 15% time-constrained
HST-XMM	Up to 150 ksec
HST-NOAO	Up to 15-20 nights available on most telescopes
HST-NRAO	Up to 3% of the available time (North America)
HST-TESS	Up to 100 TESS targets

GO Proposals Information (795 proposals for 18,653 orbits)

Type	Proposals	HST Orbits
Small (1–34 orbits)	655	8,719
Mediums (35–74 orbits)	100	4,874
Large (75+ orbits)	40	5,060
Treasury	19	2,241
Pure Parallel	2	430
ESA	194	4,411

Archival Research Requests (127 total)

Archival Research	# of Proposals
Regular	73
Theory	41
AR Legacy	13

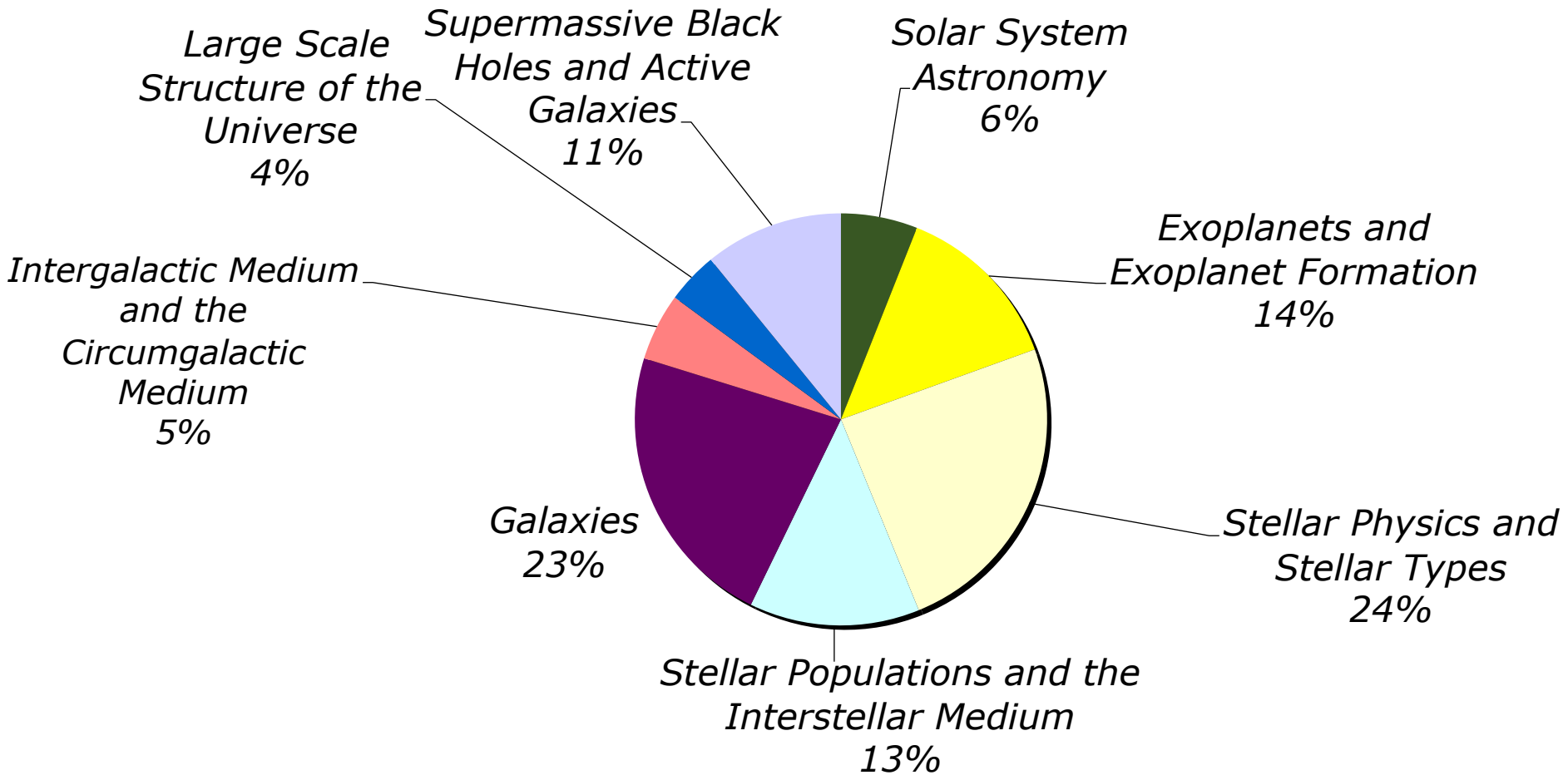
Joint Observatory Requests

Observatory	Proposals	Requested Time	HST Orbits
Chandra	9	648 Ksecs	111
JWST	29	219 Hours	721
NOIRLab	16	37 Nights	332+400 (PPar)
NRAO	8	158 Hours	166
TESS	1	2 Targets	88
XMM	10	701 Ksecs	172

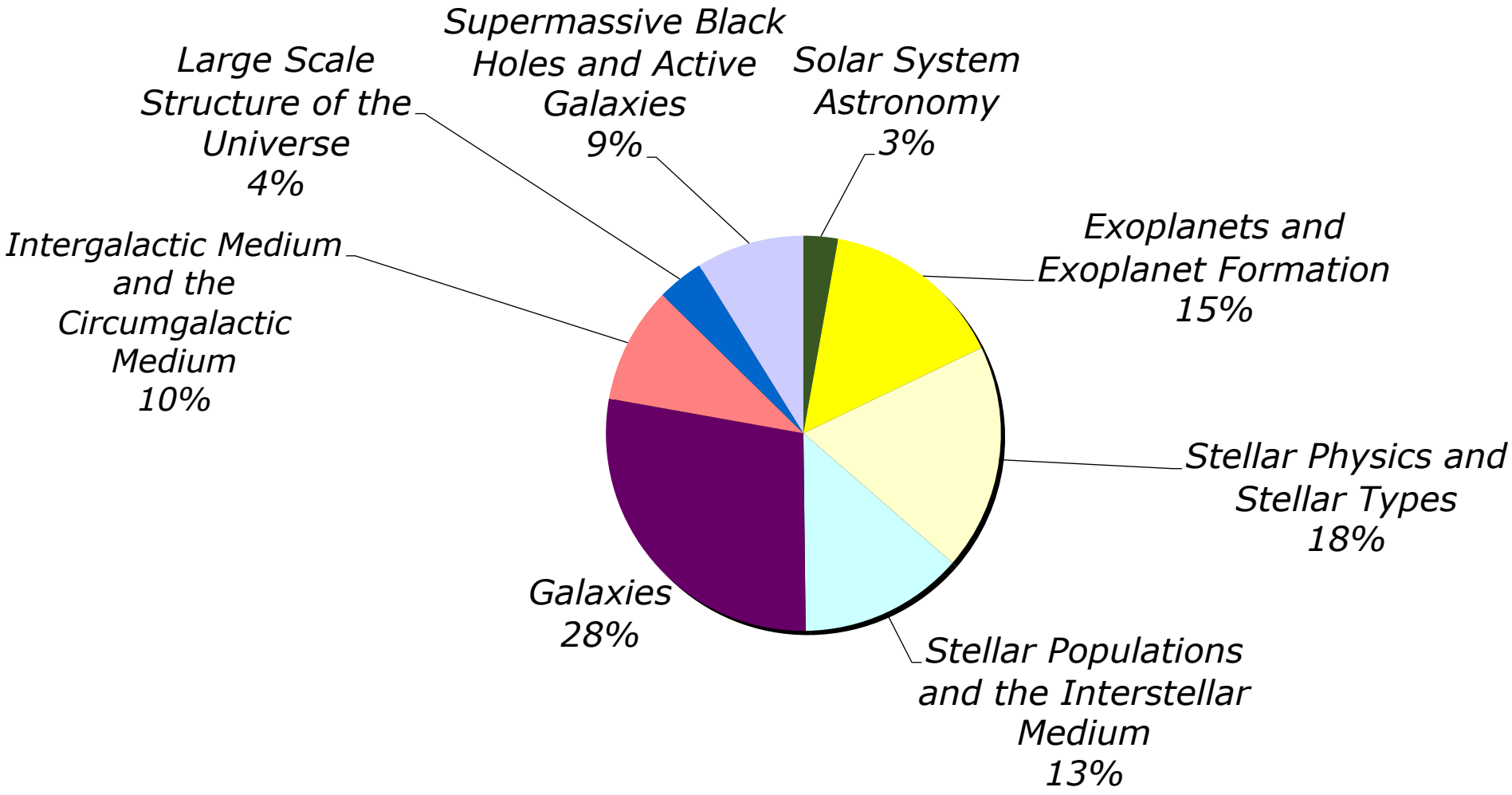
Special Initiatives

Initiative	Proposals	HST Orbits
UV	296 + 40 ARs	8220
Fundamental Physics	16 + 3 ARs	495
Cloud Computing	3	-
Data Science Software	4	-
Calibration	1	8

Science Categories for Proposals



Science Categories for Orbits



Close Collaborators

Who qualifies as a close collaborator?

- **Active** collaborator on a current research program (including Cycle 31 HST proposals)
- **Active** co-author on 3 or more papers in last 3 years
  - i.e. more than a participant in a large project (e.g. SDSS)
- **Active** collaborator on several recent programs
  - Pre-pandemic, this was ~3 projects in last ~3 years; adjust accordingly.

Key question: would I or my personal research benefit (or would there be an *appearance* of benefit) if this proposal is accepted?

If the answer is yes, then there is a conflict

Duplication Policy

- To maximize observing efficiency, later-cycle GO programs may not duplicate observations in current or past GO programs; duplicate targets will be disallowed or embargoed unless justified scientifically.
- Duplications are defined as *same target or field, same instrument and mode, similar spectral range, similar exposure time.*
- ***Consult SPG staff if in doubt***.
- The PI is responsible for noting duplications. Panels should approve duplications explicitly (in comments) or observations can be disallowed.
- Same-cycle duplications: avoid duplicate targets within and between panels. No “forced collaborations’’ allowed.
- STScI will check accepted proposals for duplications.

HST TAC Summary and Agenda

- **External panels** grade proposals between now and July 14
- External panels grade
  - Small GO proposals requesting 1 – 15 orbits (except IGM/CGM and LSS)
  - .AR and SNAP
- **Virtual panels** meet August 1 – August 4
- Virtual panels rank
  - Small GO proposals requesting 16 – 34 orbits (IGM/CGM and LSS rank **all** Small proposals)
  - All Target of Opportunity proposals requesting 1 – 74 orbits
  - Medium GO proposals requesting 35 – 74 orbits
- The **Executive Committee** meets in person August 7 – August 9
- Executive Committee ranks
  - Large GO proposals (> 74 orbits)
  - Pure Parallel Proposals
  - Treasury Proposals
  - Archival Legacy Proposals
  - SNAP proposals requesting > 250 targets