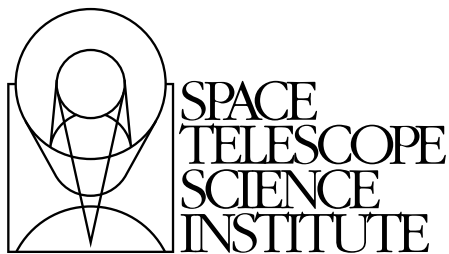

October 2002

Hubble Space Telescope Call for Proposals for Cycle 12

Policies, Procedures & Phase I Proposal Instructions



Space Telescope Science Institute
3700 San Martin Drive
Baltimore, Maryland 21218
help@stsci.edu

Call for Proposals

We invite scientists to participate in Cycle 12 of the Hubble Space Telescope (HST). The telescope and its instruments were built under the auspices of the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA). Management of HST's scientific program is carried out by the Space Telescope Science Institute (STScI). We anticipate allocating about 3000 orbits in Cycle 12 including up to 1000 orbits for Large and Treasury proposals with the remainder (at least 2000) for regular GO programs. An additional 500-1000 SNAPSHOT targets may also be allocated. Abstracts of previously accepted programs can be found on the [HST proposal catalogs web page](#), listed in Appendix D.

- Phase I: **Friday January 24, 2003, 8:00 pm EST.**
- E/PO: **Friday August 22, 2003, 5:00 pm EDT.**

Where to Get Help

- Read this Call for Proposals and the HST Primer (see Section 1.4.2)
- Visit STScI's Web Site at <http://www.stsci.edu/>
- Contact the STScI Help Desk. Either send e-mail to help@stsci.edu or call 1-800-544-8125; from outside the United States, call [1] 410-338-1082.

Who's Responsible

The STScI Science Policies Division (SPD) is responsible for the HST science program selection process. SPD staff includes astronomers Duccio Macchetto (Division Head), Mike Fall, Georges Meylan, Chris O'Dea, Letizia Stanghellini, Bob Williams, Technical Manager Brett Blacker, and Administrative Assistants Darlene Spencer, Lisa Spurrier and Loretta Willers.

The Cycle 12 Call for Proposals was edited by

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based in part on versions from previous cycles, and with text and assistance from many different individuals at STScI.

Send comments or corrections to:
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General Information

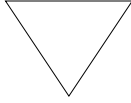
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1.1 About this Document

Two documents are of primary relevance for HST proposers: this *Call for Proposals* and the *HST Primer* (see Section 1.4.2). The Call for Proposals discusses policies and procedures, and explains how to submit a Phase I proposal. The HST Primer provides a basic introduction to the technical aspects of HST and its instruments, and explains how to calculate the appropriate number of orbits for your Phase I observing time requests.

The Call for Proposals is only available electronically in HTML and PDF formats. The HTML version is optimized for on-line browsing, and contains many links to related or more detailed information, both within the document itself and within other STScI documents. You are therefore encouraged to use the HTML version electronically. Nonetheless, some people may prefer to read a hardcopy, and with this in mind, the PDF version was optimized for printing.



In a hardcopy printout of the PDF version any links to information on the internet will appear as underlined text. You can look up the internet address of the corresponding link in Appendix D.

1.2 New and Important Features of Cycle 12

Cycle 12 will start nominally in July 2003 and have a duration of one year. The following features are new in Cycle 12:

- The Phase I proposal deadline, which traditionally fell in early September, has now been moved to January 24. Since the start of the cycle will continue to be in July, this change will shorten the time interval between the submission of observing proposals and the scheduling of the observations. This has important advantages. The pace of discoveries in astronomy has quickened and the possibility of writing proposals closer to the beginning of the observing cycle will allow the latest developments to be fully folded into the current round of proposals. Also, in some cases, it will now be possible to write proposals that are based on data obtained during the current observing cycle, thus making cogent follow-up proposals more likely.
- Starting in Cycle 12, a java-based software tool, APT (the Astronomer's Proposal Tool; see Section 1.4.4) is the new interface for all Phase I and Phase II proposal submissions for HST. Please refer to Chapter 7, Chapter 8 and Chapter 9 for a description of how to prepare and submit your Cycle 12 Phase I proposal using APT. ***The Phase I LaTeX templates that have been in use for many years will not be accepted in Cycle 12.***
- The proposal category of 'Innovative Programs' that existed in previous cycles has been cancelled. STScI continues to encourage the submission of proposals that explore new and innovative ways of using HST. However, these will now be dealt with in a similar manner as other observing proposals.

The following features also deserve special mention, but have not changed since the last cycle:

- The instruments offered for observations in Cycle 12 are: the Advanced Camera for Surveys (**ACS**); the Fine Guidance Sensor (**FGS**); the Near Infrared Camera and Multi-Object Spectrometer (**NICMOS**); the Space Telescope Imaging Spectrograph (**STIS**); and the Wide Field and Planetary Camera 2 (**WFPC2**). ACS was installed on HST in March 2002 during servicing mission SM3B. NICMOS resumed operations after the installation of a cryo-cooling system. All instruments are working nominally at the time this document was written (Aug. 2002).
- In addition to the proposal categories that have existed for many cycles, STScI continues to solicit proposals in the categories of ‘*Treasury Proposals*’ (see Section 3.2.4), ‘*Theory Proposals*’ (see Section 3.5) and ‘*Legacy AR Proposals*’ (see Section 3.4.2), all of which were started successfully in Cycle 11. Also, it remains possible to request observing time on Chandra (see Section 3.7) or NOAO telescopes (see Section 3.8) in combination with requests for HST observations.

1.3 General Guidelines for Proposal Preparation

Here are some suggestions to keep in mind when writing your proposal.

- *Stress why your science is critically important and why it requires HST.*
- *Write for the appropriate audience.*
Review panels span a broad range of scientific expertise. It is therefore crucial that your proposal provides sufficient introductory material for the non-specialist, and explains the importance of the program to astronomy in general.
- *Explain clearly and coherently what you want to do and why.*
Make sure to get your point across to reviewers who have to judge on order of 100 proposals in a few days.
- *If you have a project that requires a significant investment of HST observing time, do not hesitate to propose it.*
In recent cycles, the proposal acceptance rate has been approximately independent of proposal size. So the odds of getting a large proposal accepted are no worse than for a small proposal.

- *Make sure that what you propose is feasible.*

It is the responsibility of the proposer to insure that the proposed observations are technically feasible; proposals that are not technically feasible will be rejected. So familiarize yourself with the technical documentation provided by STScI. In particular, make sure that your observations do not exceed Bright Object Safety limits (see [Section 5.1 of the HST Primer](#)). Contact the STScI Help Desk (see [Section 1.5](#)) if anything is not clear, or if you are unsure about the feasibility of a particular approach or observation.

1.4 Resources, Documentation and Tools

1.4.1 Cycle 12 Announcement Web Page

The [Cycle 12 Announcement Web Page](#) contains links to information and documentation (including this Call for Proposals) that will be useful to you while preparing your proposals. This page will also provide any late-breaking updates on the Phase I process, and answers to frequently asked questions.

1.4.2 HST Primer

The HST Primer provides a basic introduction to the technical aspects of HST and its instruments, and explains how to request the appropriate number of orbits in a Phase I proposal. The HST Primer is accessible from the [Cycle 12 Announcement Web Page](#).

1.4.3 Instrument Handbooks

The Instrument Handbooks are the primary source of information for the HST instruments. You should use current versions of the Instrument Handbooks when preparing a proposal. They are available for all instruments, including former instruments that may be of interest for Archival Research. The Handbooks are distributed electronically, and can be accessed from the [Scientific Instruments Web Page](#). This page also provides links to more detailed technical information, such as that provided in Instrument Science Reports.

1.4.4 The Astronomer's Proposal Tool (APT)

In a continuing effort to streamline our systems and improve service to the science community, STScI has developed and released APT: the Astronomer's Proposal Tool. This java-based software tool is the new interface for all Phase I and Phase II proposal submissions for HST. It brings state of the art technology and more visual tools into the hands of proposers to optimize the scientific return of their programs. The [APT Web Page](#) contains information on the installation and use of APT.

1.4.5 Exposure Time Calculators (ETCs)

STScI provides Exposure Time Calculators (ETCs) for each of the HST instruments. Please use these electronic tools to estimate how long you need to integrate to achieve the signal-to-noise ratio required for your project. The ETCs will also issue warnings about target count rates that exceed linearity and safety limits. The ETCs can be accessed from the individual instrument web pages, which in turn are accessible from the [Scientific Instruments Web Page](#). The ETCs for ACS, NICMOS, and STIS are also included in the Astronomer's Proposal Tool (APT) software package (see Section 1.4.4).

1.4.6 The Visual Target Tuner (VTT)

The Visual Target Tuner (VTT) displays HST apertures and fields of view that are superimposed on sky images. The VTT is available as a stand alone tool within the Astronomer's Proposal Tool (APT) software package (see Section 1.4.4). Detailed information about the VTT is accessible from the [APT Web Page](#).

The VTT can be useful in Phase I proposal preparation to help answer questions such as: How many exposures will I need to mosaic my extended target? Which of my potential targets "fits best" in the aperture? Is there anything interesting I can observe with a coordinated parallel in another aperture? Do any of my potential targets have nearby bright objects that could spoil the observation? Is there an orientation that would avoid the bright object? Where are the guide stars in the field?

The VTT also includes an interface to StarView (the HST archive software; see [Section 7.2.1 of the HST Primer](#)). This means you can invoke the VTT from StarView to graphically represent StarView results on areas of the sky that have previously been observed. Conversely you can also call up StarView from the VTT to show what observations have been made near a particular pointing.

1.4.7 HST Data Archive

The HST Data Archive is a part of the Multimission Archive at STScI (MAST). The HST Data Archive contains all the data taken by HST. Completed HST observations from both GO and GTO programs are available to the community upon the expiration of their proprietary periods.

The Mast web page provides an overview of the HST Data Archive, as well as the procedures for accessing archival data (see also the introductory description in Section 7.2 of the HST Primer). A copy of the HST Data Archive is maintained at the Space Telescope - European Coordinating Facility (ST-ECF); see Appendix A.2) in Garching, to which European requests should normally be addressed. The Canadian Astronomy Data Centre (CADC); see Appendix A.3) also maintains a copy of HST science data (only), and is the preferred source for Canadian astronomers. The National Astronomical Observatory of Japan (NAOJ; see Appendix A.4) maintains a nearly complete copy of public HST science data, and should provide faster access for astronomers in Pacific rim nations. However, the NAOJ site may not have all public data available.

1.4.8 Duplication checking

The HST Data Archive provides access to several tools that allow you to check whether planned observations duplicate any previously executed or accepted HST observations. See Section 5.2.2 for details.

1.5 STScI Help Desk

If this Call for Proposals and the materials referenced above do not answer your questions, or if you have trouble accessing or printing Web Documents, then contact the Help Desk. You can do this in either of two ways:

- Send e-mail to help@stsci.edu.
- Call 1-800-544-8125, or from outside the United States, [1] 410-338-1082.

1.6 Organization of this Document

1.6.1 Policies, Procedures and General Information

Chapter 2 summarizes the policies regarding proposal submission. Chapter 3 describes the types of proposals that can be submitted. Chapter 4 describes the types of observations that can be done with HST; it includes discussions of various types of special requirements. Chapter 5 addresses policies regarding data rights and duplications. Chapter 6 describes procedures and criteria for proposal evaluation and selection.

1.6.2 Preparing and Submitting Your Proposal

Chapter 7 outlines the steps to follow when preparing and submitting a Phase I proposal. **A proposal consists of a completed APT proposal form and an attached PDF file.** Chapter 8 describes the items that must be filled out in the APT proposal form; this information is also available from the context-sensitive 'Help' in APT. Chapter 9 describes the items that must be addressed in the attached PDF file.

1.6.3 Information Pertaining to Accepted Proposals

Chapter 10 provides information on the implementation and scheduling process for accepted proposals. Chapter 11 describes Education/Public Outreach (E/PO) proposals. Chapter 12 provides information on budgets, grants and funding policies.

1.6.4 Appendices

The appendices provide a variety of additional information, including contact information (Appendix A), lists of scientific keywords (Appendix B) that can be used in proposals, a glossary of acronyms and abbreviations (Appendix C) and a list of internet links used in the document (Appendix D).

Proposal Submission Policies

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2.1 The Proposal Process: Phase I and Phase II

STScI manages the review of HST proposals and carries it out in two phases.

In Phase I, proposers submit a scientific justification and observation summary for peer review. The Review Panels and Telescope Allocation Committee (TAC) recommend a list of programs to the STScI Director for preliminary approval and implementation (see Chapter 6). This Call for Proposals focuses on Phase I policies and procedures. Separate documentation is available for Phase II.

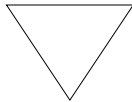
In Phase II investigators *with approved Phase I proposals* must provide complete details of the observations in their proposed observing program. This allows STScI to conduct a technical feasibility review, and to schedule and obtain the actual observations. Programs are not fully approved until after submission of an acceptable Phase II program. In addition to this, Phase II investigators must do the following:

- Eligible investigators who request funding must submit detailed budgets (see Chapter 12).
- Interested, eligible investigators can submit an Education/Public Outreach (E/PO) proposal (see Chapter 11).

2.2 Deadlines

Cycle 12 has the following deadlines:

- *Phase I proposals: Friday January 24, 2003, 8:00 pm EST.*
- *Education/Public Outreach proposals: Friday August 22, 2003, 5:00 pm EDT.*



Late proposals will not be considered.

The deadline remains to be determined for:

- *Phase II Observing Programs*
- *Budgets for Funding*

The deadline for these submissions, which will be announced in the notification letter to proposers with approved programs, is likely to be in mid-May 2003.

2.3 Who May Submit

Scientists of any nationality or affiliation may submit an HST proposal. Endorsement signatures are not required for Phase I observing proposals (unless required by the regulations of the proposing institution).

2.3.1 Principal Investigator and Co-Investigators

Each proposal must have only one Principal Investigator (PI). Any other individuals who are actively involved in the program should be listed as Co-Investigators (CoIs). The PI is responsible for the scientific and administrative conduct of the project, and is the formal contact for all communications with STScI.

Proposals by non-U.S. PIs that have one or more U.S. CoIs *must* designate one of the U.S. CoIs as the ‘Administrative PI’ (see Section 8.13). This person will have overall oversight and responsibility for the budget submissions of the U.S. CoIs in Phase II.

All proposals are reviewed without regard to the nationalities or affiliations of the investigators.

2.3.2 ESA Scientists

An agreement between NASA and ESA states that a minimum of 15% of HST observing time (on average over the lifetime of the HST project) will be allocated to scientists from ESA member states. It is anticipated that this requirement will continue to be satisfied via the normal selection process, as it has been in previous cycles. In order to monitor the allocation to scientists from ESA member states, *affiliations of investigators with ESA member-state institutions should be identified as such in the proposal* (see Section 8.12 and Section 8.13).

2.3.3 Student PIs

Observing proposals from student PIs will be considered. The proposal should indicate if the proposed research is part of a doctoral thesis. These proposals should be accompanied by a letter from the student's faculty advisor certifying that

- the student is qualified to conduct the observing program and data analysis;
- he or she is in good academic standing.

This letter from the advisor should be e-mailed before the deadline to student-pi@stsci.edu.

The faculty advisor’s statement is not required in cases where a student is listed in the proposal as a CoI.

2.4 Funding

Subject to availability of funds from NASA, STScI will provide financial support for U.S. PIs and CoIs of approved Cycle 12 programs. Budgets are not due in Phase I, but are required in Phase II from successful proposers. Details of the STScI Funding Policies (including the definition of the term ‘U.S. Investigators’) are outlined in Chapter 12.

Median awards for Regular AR and Theory proposals have been about \$50,000. For reference, 24 Regular AR and 15 Theory proposals were approved in Cycle 11.

ESA does not fund HST research programs. Therefore, successful ESA member-state proposers should seek any necessary resources from their respective home institutions or national funding agencies. ESA observers do, however, have access to the data-analysis facilities and technical support of the staff of the ST-ECF (see Appendix A.2), in addition to those of STScI.

2.5 Proposal Confidentiality

Proposals submitted to STScI will be kept confidential to the extent allowed by the review process described in Chapter 6. For accepted proposals, the scientific justification section of the proposal remains confidential, but other sections become publicly accessible, including PI and CoI names, project titles, abstracts, description of observations, special scheduling requirements, and details of all targets and exposures. Phase II programs submitted for approved proposals become publicly accessible in their entirety.

Proposal Categories

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3.1 Overview of Proposal Categories

HST observations can be requested with a General Observer (GO; see Section 3.2) or a Snapshot (SNAP; see Section 3.3) proposal. A GO program can be either a Regular GO (see Section 3.2.1), a Large GO (see Section 3.2.2) or a Treasury program (see Section 3.2.4). Funding for projects that do not require new HST observations can be requested with an Archival Research (AR; see Section 3.4) or a Theory (see Section 3.5) proposal. An AR program can be either a Regular AR (see Section 3.4.1) or a Legacy AR (see Section 3.4.2) program. A special proposal type exists for Calibration Programs (see Section 3.6). Proposals for HST observations can also request observing time on Chandra (see Section 3.7) or NOAO facilities (see Section 3.8). At any time scientists can request Director's Discretionary (DD) time for unanticipated and scientifically compelling astronomical observations (see Section 3.9). U.S. Investigators with approved proposals are strongly encouraged to submit an associated Education/Public Outreach (E/PO) Proposal (see Chapter 11).

3.2 General Observer (GO) Proposals

A GO proposal may be submitted for any amount of HST observing time, counted in terms of HST orbits. [Chapter 6 of the HST Primer](#) describes how the required number of orbits can be calculated for a particular set of observations. Programs that require fewer than 100 orbits are called Regular Programs (see Section 3.2.1), and those that require 100 or more orbits are called Large Programs (see Section 3.2.2). Programs in these categories can request observing time in future cycles when this is scientifically justified (see Section 3.2.3). The additional category of Treasury Programs (see Section 3.2.4) was started in Cycle 11 to stimulate certain types of ambitious and innovative proposals that may not naturally fit in the Regular or the Large Program categories.



Proposers are strongly encouraged to develop competitive Large and Treasury proposals.

Large and Treasury proposals will be evaluated by the TAC (see Section 6.1.2), which can award up to a total of approximately 1000 orbits to proposals in these categories (approximately 1/3 of the total time anticipated to be available in Cycle 12).

In recent cycles the acceptance rate of submitted GO programs has been approximately independent of size. In general, proposals are either accepted or rejected in their entirety. Accordingly, you are urged to request the actual number of orbits required to achieve your science goals.

3.2.1 Regular GO Programs

Regular GO Programs are programs that request 99 orbits or less.

3.2.2 Large GO Programs

Large GO Programs are programs that request 100 orbits or more.

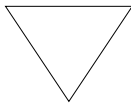
Large programs should lead to a clear advance in our understanding in an important area of astronomy. They must use the unique capabilities of HST to address scientific questions in a comprehensive approach that is not possible in smaller time allocations. Selection of a Large Program for implementation does not rule out acceptance of smaller projects to do

similar science, but target duplication and overall program balance will be considered.

A goal in Cycle 12 is to select several programs in the 100-300 orbit range. For comparison, in Cycle 11 seven large programs were accepted for a total of 864 primary orbits. Descriptions of these programs are available on the [HST Treasury/Large/Legacy Programs Web Page](#).

3.2.3 Long-Term GO Programs

Regular and Large GO Programs may request HST observing time for more than one cycle.



Long-Term Proposals must be limited to cases where it is clearly required to optimize the scientific return of the project.

Long-term programs require a long time baseline, but not necessarily a large number of HST orbits, in order to achieve their science goals. Examples include astrometric observations or long-term monitoring of variable stars or active galactic nuclei.

You may request time in as many as three observing cycles (i.e., Cycles 12, 13 and 14), but you cannot request instruments other than those presently offered in Cycle 12. Long-term proposals should describe the entire requested program and provide a cycle-by-cycle breakdown of the number of orbits requested. The scientific justification for allocating time beyond Cycle 12 should be presented in detail. For long-term programs, it is the sum of all orbits requested for Cycles 12, 13 and 14 that determines whether the program is Large or Regular.

The Cycle 12 Review Panels and TAC will be able to award limited amounts of time to Long-Term Programs for Cycles 13 and 14. GOs with approved Long-Term Programs need not submit continuation proposals in the subsequent Cycles (and hence, GOs who had Cycle 12 time approved in Cycles 10 or 11 do not have to submit a Phase I continuation proposal, although a new Phase II submission will be required).

3.2.4 Treasury GO Programs

Starting in Cycle 11, the opportunities for large-scale research with HST were expanded with the introduction of the Hubble Treasury Program. It

allows proposals for datasets of lasting value to the HST program that should be obtained before HST ceases operations. A Treasury Program is defined by the following characteristics:

- The project should focus on the potential to solve multiple scientific problems with a single, coherent dataset. It should enable a variety of compelling scientific investigations.
- Enhanced data products are desirable to add value to the data. Examples are reduced images, object catalogs, or collaborative observations on other facilities (for which funding can be provided). Funding for the proposed data products will depend on their timely availability, as negotiated with the STScI Director. They should be delivered to STScI in suitable digital formats for further dissemination via the HST Data Archive or related channels.
- Data taken under the Treasury program will have no proprietary period (see Section 5.1), although brief proprietary periods may be requested, if they will enhance the public data value.

The following additional characteristics are particularly encouraged:

- Development of new techniques for observing or data reduction.
- Creation and dissemination of tools (software, web interfaces, models, etc.) for the scientific community to work with the data products.
- Inclusion of an Education/Public Outreach component. (Note that a Phase I Treasury Proposal need only summarize the planned E/PO component briefly; typically, one paragraph at the end of the Scientific Justification section. A detailed E/PO proposal should be submitted later as discussed in Chapter 11).

The emphasis in Cycle 12 remains on observations whose value is maximal if taken soon. For example, the on-orbit degradation of CCD detectors means that deep observations with ACS are of most value when obtained early in its lifetime.

Treasury programs may request observing time to be distributed in future cycles with appropriate justification (similar to the situation for Regular and Large GO programs; see Section 3.2.3). In addition, Treasury programs may request observing time in future cycles if the requested number of orbits is large enough to make implementation in a single cycle impractical or impossible.

Approximately 1/3 of the available HST observing time in upcoming cycles (approximately 1000 orbits per cycle) will be available to the combination of Large programs and Treasury Programs. For comparison, in Cycle 11 three Treasury Programs were accepted for a total of 466

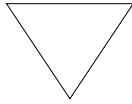
primary orbits. The largest of these received 398 orbits. Descriptions of these programs are also available on the [HST Treasury/Large/Legacy Programs Web Page](#).

If scientifically justified, it is possible to propose a multi-cycle Treasury Program of order 1,000 orbits, with commensurate funding, to produce an enhanced dataset of high impact.

Selection of Treasury Programs will be handled by the TAC as part of the normal peer review process (see Section 6.1.2). Successful proposals will be reviewed by STScI to ensure observing efficiency. STScI resources may be made available to approved Treasury Programs by decision of the STScI Director. STScI reserves the right to conduct midterm progress reviews of Treasury Programs, to ensure that adequate progress is being made to achieve the goals of the project. Ongoing funding is contingent on the results of such reviews. For Treasury Programs above a certain cost threshold, STScI may require successful proposers to use professional project management personnel to aid the scientific team in such areas as planning, scheduling, budgeting, cost-control, and reporting.

Those interested in submitting a Treasury Proposal are encouraged to read the [Hubble Second Decade Committee Treasury Program Report](#). The report sets out the main motivations for the Treasury Program. Following the recommendation of the HST Second Decade Committee and the recent external [HST TAC review](#) (J. Toomre, chair), the Institute Director is constituting a standing committee (Treasury Program Advisory Committee, [TPAC](#)) whose mission is to advise the Institute Director on the identification of topics for workshops to foster collaborations among interested parties and to promote discussion of science objectives and observing strategies for possible Treasury programs. As part of this process the Institute will organize workshops in the months before each annual TAC meeting to stimulate ideas, strategies, and collaborations for Treasury programs. We are planning the first such workshop, to be held at the Institute on 12-14 November 2002. Updates on the status of Cycle 12 and the Treasury workshop will be posted on the [STScI](#) home web page, and should be visited periodically by all scientists interested in participating in Cycle 12 in any way.

Note also that the Treasury program is similar in spirit to, e.g., the SIRTF Legacy Program.



Treasury Proposals should be identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10).

The ‘Scientific Justification’ section of the proposal (see Section 9.1) should include a description of the scientific investigations that will be enabled by the final data products, and their importance. The ‘Description of the Observations’ section of the proposal (see Section 9.2) should not only describe the proposed observations and plans for data analysis, but should also describe the data products that will be made available to STScI and the community, the method of dissemination, and a realistic time line.

3.3 Snapshot (SNAP) Proposals

Snapshot (SNAP) programs consist of separate, relatively short observations whose durations are usually limited to 45 minutes or less (including all overheads). During the process of optimizing the HST observing schedule, the scheduling algorithm occasionally finds short time intervals where it is impossible to schedule any exposures from the pool of accepted GO programs. In order to make the HST schedule more efficient, STScI has developed the capability to insert Snapshot exposures into these gaps on objects selected from a large list of available candidates.

3.3.1 Characteristics of SNAPs

Proposers request a specific number of Snapshot *targets*. If the proposal is approved, a specific number of targets is allocated. However, *there is no guarantee that any individual target will actually be observed*. SNAPs are placed on the schedule only after the observing sequence has been determined for the higher-priority GO targets. The number of observations actually executed depends on the availability of appropriate schedule gaps. In general, only a fraction of the sample targets will actually be observed. Typical completion rates are in the range from 30-70%. For STIS/MAMA SNAPs, the inability to schedule these observations during SAA-impacted orbits reduces the completion rate to about 20%. However, there is no commitment on the part of STScI to obtain any completion factor for Snapshot programs.

Nominally, SNAP programs terminate at the end of each cycle. However, they may be kept active, for scheduling efficiency reasons, for up to one additional cycle at decreased priority. *In contrast to GO programs (see Section 3.2.3), SNAP programs cannot request observing time in future cycles.*

In recent years there have been approximately 500-1000 Snapshot observations scheduled per year, but this could be different in Cycle 12 and depends on factors that are unknown at this time.

Investigators interested in proposing for SNAPs are encouraged to consult the [SNAP User Information Report](#), which contains details on how SNAPs are scheduled, the rules pertaining to them, completion rates for recent cycles, and other useful information.

3.3.2 Guidelines for SNAP Proposals

Please consider the following when developing your SNAP Proposal:

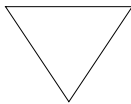
- Your willingness to waive part, or all, of the proprietary data-rights period is included in the selection criteria (see Section 6.1).
- You need not give a complete list of all targets and their coordinates in your Phase I proposal. However, you *must* specify the number of targets, and unambiguously identify the targets (e.g., reference to target lists in papers, or give a detailed description of the target characteristics). SNAP exposures may not be used for targets of opportunity (see also Section 4.1.2).
- In the ‘Observation Summary’ section of the proposal (see Section 8.14) you should provide a typical example of a snapshot exposure.
- Shorter duration snapshot observations have more scheduling opportunities than longer ones. While SNAP observations longer than 45 minutes (including all overhead times; e.g., guide-star acquisition, target acquisition and readout times) are not impossible, their probability of execution is small. The majority of executed SNAP observations are 30 minutes or less.
- SNAP observations should not be proposed with any special scheduling constraints (e.g., CVZ, timing requirements, or telescope orientation requirements). However, the special requirement **BETWEEN** may be used in the Phase II Program (see Section 10.2) in some circumstances; for details see the [SNAP User Information Report](#).
- A snapshot must not have any links to other snapshots (e.g., relative timing or orientation constraints), even if the snapshots are of the same source.

- A SNAP program may not contain identical observations of the same source in different visits, unless there is a scientific motivation for obtaining observations of the same source at different times (e.g., science programs that require monitoring or follow-up). In the latter case, multiple identical visits of the same source may be requested; they should be counted as multiple targets (e.g., 10 different snapshot visits of the same galaxy count as 10 targets). Due to the nature of snapshot programs, repeated observations are not guaranteed.
- Moving target snapshot programs that are not time critical are acceptable. Moving target snapshots are *not* permitted with the STIS/MAMA detectors.
- Both imaging and spectroscopic STIS/MAMA snapshots are allowed, but the combined total targets accepted will not exceed 300, with imaging targets limited to a total of 100, due to the target and field bright-object checking requirements. Variable STIS/MAMA snapshot targets must have well defined MAXIMUM UV fluxes, which will be used for the bright-object checking. There are no restrictions on the numbers or variability of proposed STIS/CCD snapshot targets, which do not require bright-object checking and have a higher expected completion rate since they are not restricted to SAA-free orbits. Thus, use of the CCD NUV configurations should be considered instead of the MAMA NUV.
- In addition, STIS/MAMA snapshot proposals should be limited to one or a few straightforward configurations. Specifically, use of the NDQ filters is not allowed. Use of the 0.2X0.2 echelle aperture is recommended for first-order programs without a scientific long-slit requirement, in order to expedite the field screening process; these configurations will be supported as of Cycle 12. Excessively complex STIS/MAMA snapshot targets, fields, or instrumental configurations may not be implemented in Phase II because of the limited resources available for bright-object checking, combined with the relatively low expected completion rate; if you are in doubt on this issue, contact the STScI Help Desk (see Section 1.5).
- SNAP programs with the ACS/SBC are not allowed.
- Programs that require both GO orbits and SNAP targets should be submitted as two separate proposals. The proposals should refer to each other so that the reviewers will be aware that the proposals are part of the same project. This allows you to ensure that some essential targets are observed (the GO program) with the rest of the targets being sampled statistically (the SNAP program).

- It is possible to assign relative priorities (high/medium/low) to approved snapshot targets within a program. Priorities can be assigned in the Phase II program (see Section 10.2), and need not be addressed in the Phase I proposal. See the [SNAP User Information Report](#) for details.

3.4 Archival Research (AR) Proposals

Observations in the HST Data Archive that are no longer proprietary (see Section 1.4.7) are available for analysis by interested scientists through direct retrieval (which is free and does not involve financial support). The HST Archival Research (AR) program can provide financial support for the analysis of the data. An AR proposal must request a specific amount of funding (see Section 8.6.3) and must provide a narrative that describes the proposed use of the funds (see Section 9.7). Detailed budgets are *not* requested in Phase I, but are due in Phase II only (as is the case for GO and SNAP proposals; see Chapter 12 for details). Proposals for AR funding are considered at the same time, and by the same reviewers, as proposals for observing time. Observing and AR proposals are compared competitively on the basis of scientific merit.



Only U.S. Investigators (as defined in Section 12.2) are eligible for funding of Archival Research.

An Archival Research proposal may be submitted by a non-U.S. PI if there are one or more U.S. CoIs who request funding.

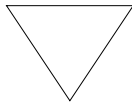
HST has produced an extraordinary quantity of high-quality observations over its twelve years in orbit. The category of Regular AR proposals (see Section 3.4.1) has existed for many cycles. To encourage fuller use of available data and to achieve the full potential of the Data Archive, the opportunities for large-scale archival research were expanded in Cycle 11 with the introduction of the category of Legacy AR proposals (Section 3.4.2).

3.4.1 Regular AR Proposals

The general goal of a Regular AR proposal is to analyze a subset of data from the HST Archive to address a specific scientific issue. The analysis must improve on the previous use(s) of the data, or the scientific questions

that are being addressed must differ from those tackled by the original programs that obtained the data.

There is no limit to the amount of funding that may be requested for a Regular AR program. The majority of the awards in recent cycles have been under \$100,000, with a median around \$50,000. However, STScI actively encourages the submission of more ambitious AR programs for which larger amounts of funding may be justified. For reference, 24 Regular AR proposals were approved in Cycle 11.



An AR proposal will be considered to be a Regular AR proposal, unless it is identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10) as a Legacy AR or Theory proposal.

3.4.2 Legacy AR Proposals

A Legacy AR project is defined by the following characteristics:

- The project should perform a homogeneous analysis of a well-defined subset of data in the HST Archive.
- The main goal should be to provide a homogeneous set of calibrated data and/or ancillary data products (catalogs, software tools, web interfaces etc.) to the scientific community.
- The results of the project should enable a variety of new and important types of scientific investigations.

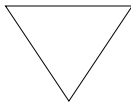
The main difference between a Regular and a Legacy AR project is that the former aims at performing a specific scientific investigation, while the latter will in addition create data products and/or tools for the benefit of the community. While Legacy proposals will be judged primarily on the basis of scientific merit, the importance and broad applicability of the products produced by the Legacy program will be key features in judging the overall scientific merit of the proposal.

It is a strict requirement for Legacy AR proposals that the proposed data products be created and distributed to the community in a timely manner. Data products should also be delivered to STScI in suitable digital formats, to allow dissemination via the HST Data Archive or related channels.

It is anticipated that Legacy AR proposals will be larger in scope and requested funds than most typical Regular AR proposals. While there is no lower limit on the requested amount of funding, it is expected that most

proposals will require at least \$100,000, and possibly up to a few times more than this, to accomplish their goals. Commensurate with the expected scope, Legacy AR proposals are allowed to be multi-year projects, although this is not a requirement. Multi-year projects will be funded on a yearly basis, with continued funding beyond the first year subject to a performance review. Legacy AR proposals will be evaluated by the TAC (see Section 6.1.2) in conjunction with Large and Treasury GO programs (see Section 3.2.2 and Section 3.2.4).

For reference, four AR Legacy proposals were approved in Cycle 11. Descriptions of these programs are available on the [HST Treasury/Large/Legacy Programs Web Page](#).



Legacy AR Proposals must be identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10).

The ‘Scientific Justification’ section of the proposal (see Section 9.1) should include a description of the scientific investigations that will be enabled by the final data products, and their importance. The ‘Analysis Plan’ section of the proposal (see Section 9.6) should not only describe the plans for data analysis, but should also discuss the data products that will be made available to STScI and the community, the method of dissemination, and a realistic time line.

3.4.3 Guidelines for AR Proposals

Please consider the following when developing your AR Proposal:

- Any data that you wish to analyze must reside (or be expected to reside) in the Archive, and be released from proprietary rights, by the start of Cycle 12 (July 2003, nominally).
- Programs that require funding for Archival Research and also new observations should be submitted as two separate proposals: one requesting funding for the Archival Research, and the other proposing the new observations. The proposals should refer to each other so that the reviewers will be aware that the proposals are part of the same project.

- Investigators are allowed to submit an AR proposal to analyze data that was obtained in a previous GO program on which they were themselves PI or CoI, but only if the goals of the AR proposal differ significantly from those for which GO-funding was awarded previously.
- STScI encourages the submission of AR proposals that combine HST data with data from other space-missions or ground-based observatories, especially those data contained in the [Multimission Archive at STScI\(MAST\)](#). Also, STScI is actively participating in plans for a National Virtual Observatory (NVO), and any (pilot) programs that tie in with the NVO effort are particularly encouraged; see the [Virtual Observatory Forum Web Page](#) for information. Note however that HST data must form the primary focus of any AR proposal; requests for support of AR programs using data primarily from other missions should follow the guidelines in the appropriate NASA Research Announcements.

3.4.4 Suggestions for AR Proposals

STScI would like to point out in particular the following rich sources of information for Archival Research:

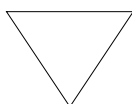
- The data obtained in the context of the HST [Archival Pure Parallel Program](#) (see Section 4.2.2).
- The data obtained for the [Hubble Deep Field \(HDF\)](#) and [Hubble Deep Field-South \(HDF-S\)](#).
- The data obtained in the context of the HST Treasury Programs. Descriptions of these programs are available on the [HST Treasury/Large/Legacy Programs Web Page](#).

3.5 Theory Proposals

There is the opportunity under the HST Archival Research program to get support for theoretical research. Research that is primarily theoretical can have a lasting benefit for current or future observational programs with HST, and it is appropriate to propose theory programs with relevance to the HST mission. Recent trends in HST funding suggest that of order 5% of the total HST GO Funding might be used to support Theory Proposals.

A Theory proposal should address a topic that is *of direct relevance* to HST observational programs, and this relevance should be explained in the proposal. Funding of mission-specific research under the HST Theory Program will be favored over research that is appropriate for a general theory program (e.g., the [NASA Office of Space Science Astrophysics Theory Program](#); ATP). The primary criterion for a Theory Proposal is that the 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 (a calculation of cross sections may fall under the latter category). The results of the theoretical investigation should be made available to the community in a timely fashion.

A Theory proposal must request a specific amount of funding (see Section 8.6.3) and must provide a narrative that describes the proposed use of the funds (see Section 9.7). Detailed budgets are *not* requested in Phase I, however, but are due in Phase II only (see Chapter 12 for details). Theoretical research should be the primary or sole emphasis of a Theory Proposal. Analysis of Archival data may be included, but should not be the main aim of the project. Funding for GO or AR proposals in which theoretical research is included but not predominant will remain appropriate under the normal GO or AR programs.

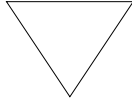


Only U.S. Investigators (as defined in Section 12.2) are eligible for funding of Theory Proposals.

A Theory Proposal may be submitted by a non-U.S. PI if there are one or more U.S. CoIs who request funding.

Award amounts for Theory Proposals are anticipated to be similar to those made for ‘Regular AR’ proposals (see Section 3.4.1), for which the majority of the awards in recent cycles have been under \$100,000, with a median around \$50,000. For reference, 15 Theory proposals were approved

in Cycle 11. However, STScI does allow the submission of more ambitious proposals for which larger amounts of funding may be justified.

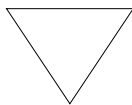


Theory Proposals should be identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10).

The ‘Scientific Justification’ section of the proposal (see Section 9.1) should describe the proposed theoretical investigation and also its impact on observational investigations with HST. Review panels will consist of observational and theoretical astronomers with a broad range of scientific expertise (see Section 6.1.1). They will not necessarily have specialists in all areas of astrophysics, particularly theory, so the proposals must be written for general audiences of scientists. The ‘Analysis Plan’ section of the proposal (see Section 9.6) should discuss the types of HST data that will benefit from the proposed investigation, and references to specific data sets in the HST Data Archive should be given where possible. This section should also describe how the results of the theoretical investigation will be made available to the astronomical community, and on what time scale the results are expected.

3.6 Calibration Proposals

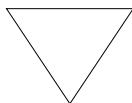
HST is a complex observatory, with many possible combinations of observing modes and spectral elements on each instrument. Calibrations and calibration software are maintained by STScI for all of the most important and most used configurations. However, STScI does not have the resources to calibrate fully all potential capabilities of all instruments. On the other hand, the astronomical community has expressed interest in receiving support to perform calibrations for certain uncalibrated or poorly calibrated modes, or to develop specialized software for certain HST calibration and data reduction tasks. In recognition of this, STScI is encouraging outside users to submit proposals in the category of *Calibration Proposals*, which aims at filling in some of the gaps in our coverage of the calibration of HST and its instruments.



Calibration proposals should not be explicitly linked to any specific science program, but should provide a calibration or calibration software that can be used by the community for existing or future programs.

Successful proposers will be required to deliver documentation, and data products and/or software to STScI to support future observing programs.

Funding is available to support calibration proposals in the same manner as for normal science programs. However:



Scientists affiliated with STScI are not eligible for any funding to support their role (as PI or CoI) in a Calibration Proposal.

Calibration programs will be reviewed internally by the Instrument Division. The internal review will provide the TAC with an assessment of the feasibility of the proposal, how the proposal complements/extends the existing calibration program, and the type of science impacted by the proposed calibrations.

Note that a specific science program that has special calibration requirements is not a Calibration proposal; such a proposal should be submitted as a normal GO or SNAP proposal and the necessary calibration observations should be added to the science program as described in Section 4.3.

Investigators interested in the submission of a Calibration proposal are encouraged to study the Instrument Handbooks to determine the level at which STScI provides calibration and characterization, and to discuss ideas for extending these calibrations with STScI staff. Examples of the kinds of topics that have been addressed by calibration outsourcing programs of the type discussed here are:

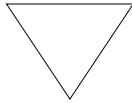
- Calibration of faint photometric standards for WFPC2
- Creation of a coronagraphic PSF library for STIS/CCD
- Characterization of the spectroscopic PSF for STIS/CCD
- NICMOS polarimetric calibrations

For a complete description of the instrument calibration plans/accuracies, and for other potential topics, please see the [Scientific Instruments Web Page](#).

A Calibration Program can be a GO, SNAP or AR Program, and should fall in one of these categories. For GO and SNAP programs, the data obtained will be non-proprietary, as is the case for regular calibration observations. Proposers may request a proprietary period (which should be explained in the ‘Special Requirements’ section of the proposal; see Section 9.3), but

such a request will be subject to panel and TAC review and will be granted only in exceptional circumstances if exceedingly well justified. Archival Research proposals may be appropriate in cases where the necessary data have already been taken, or for programs that do not require specific data but aim to develop specialized software for certain HST calibration and data reduction tasks.

All proposers are strongly encouraged to contact the appropriate instrument group to discuss their program prior to submission.



Calibration Proposals must be identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10).

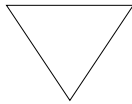
3.7 Joint HST-Chandra Observing Proposals

If your science project requires observations from both HST and the Chandra X-ray Observatory, then you can submit a single proposal to request time on both Observatories to either the HST Cycle 12 or the Chandra Cycle 5 review. This avoids the “double jeopardy” of having to submit proposals to two separate reviews.

By agreement with the Chandra X-ray Center (CXC), STScI will be able to award up to 400 kiloseconds of Chandra observing time. Similarly the CXC will be able to award up to 100 orbits of HST time to highly rated proposals. The only criterion above and beyond the usual review criteria is that the project is fundamentally of a multi-wavelength nature, and that both sets of data are required to meet the science goals. It is not essential that the project requires simultaneous Chandra and HST observations. Chandra time will only be awarded in conjunction with HST observations (and should not be proposed for in conjunction with an Archival Research or Theory proposal).

Of the 400 kiloseconds of Chandra observing time that can be awarded in the HST review, only approximately 20% of the targets may be time-constrained. In addition, only one rapid TOO can be awarded (less than 3 weeks turn-around time). A Chandra TOO is defined as an interruption of a command load, which may include several predictable observations within that one-week load. HST Cycle 12 proposers should keep their Chandra requests within these limits.

Proposals for combined HST and Chandra observations should be submitted to the observatory that represents the prime science (not to both observatories). The Chandra Cycle 5 deadline is March 15, 2003. While there is multi-wavelength expertise in the review panels for both observatories, typically the HST panels will be stronger in IR/optical/UV science and the Chandra panels in X-ray science. Evaluation of the technical feasibility is the responsibility of the observer, who should review the Chandra documentation or consult with the CXC (see Section 9.4.1 for details). For proposals that are approved, the CXC will perform detailed feasibility checks in Chandra Cycle 5. The CXC reserves the right to reject any previously approved observation that proves to be non-feasible, impossible to schedule, and/or dangerous to the Chandra instruments. Any Chandra observations that prove infeasible or impossible could jeopardize the overall science program and may cause revocation of the corresponding HST observations.



Joint HST-Chandra proposals must be identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10). Also, you must include technical information about the Chandra observations in the ‘Coordinated Observations’ section of the proposal (see Section 9.4.1).

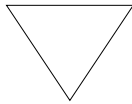
3.8 Joint HST-NOAO Observing Proposals

By agreement with the National Optical Astronomy Observatory (NOAO), STScI will be able to award time on NOAO facilities for highly ranked proposals that request time on both HST and NOAO telescopes. The award of time on NOAO facilities will be subject to approval by the NOAO Director, after nominal review by the NOAO TAC to avoid duplication of programs. The important additional criterion for the award of NOAO time is that both the HST and the ground-based data are required to meet the science goals of the project. It is not essential that the project requires simultaneous NOAO and HST observations. Under this agreement, NOAO time will only be awarded in conjunction with HST observations (and should not be proposed for in conjunction with an Archival Research or Theory proposal). Major results from these programs would be credited to NOAO and HST.

NOAO has offered up to 5% of its available time to proposals meeting the stated criteria. NOAO observing time will be implemented during the two semesters from August 2003 through July 2004. Time cannot be requested

for the preceding semester, 2003A. Time may be requested only for those facilities listed on the [NOAO/NASA Collaboration Web Page](#). Under this agreement approximately 15-20 nights per telescope per year will be available on most telescopes, with the following exceptions: only 1-2 nights will be available on the MMT and HET, and no time will be available on Gemini. In addition, time on the heavily-subscribed Mosaic cameras may be limited by the NOAO Director.

Evaluation of the technical feasibility of the proposed ground-based observations is the responsibility of the observer, who should review the NOAO documentation or consult NOAO directly (see Section 9.4.2 for details). The proposal should include an explanation of how the requested exposure time was calculated. If approved for NOAO time, the PI must submit, by April 30, 2003, an NOAO Phase II form giving detailed observing information appropriate to the particular NOAO telescope and instrument. NOAO will perform feasibility checks, and NOAO reserves the right to reject any approved observation determined to be infeasible, impossible to schedule, and/or dangerous to the telescopes or instruments. Any NOAO observations that prove infeasible or impossible could jeopardize the overall science program and may cause revocation of the corresponding HST observations.



Joint HST-NOAO proposals must be identified in the ‘Special Proposal Types’ section of the proposal (see Section 8.10). Also, you must include technical information about the NOAO observations in the ‘Coordinated Observations’ section of the proposal (see Section 9.4.2).

3.9 Director’s Discretionary (DD) Time Proposals

Up to 10% of the available HST observing time may be reserved for Director’s Discretionary (DD) allocation. Scientists wishing to request DD time can do so at any time during the year, by using the APT. Instructions and updated information can be found on the [DD web page](#).

Observations obtained as part of a DD program generally do not have a proprietary period, and are made available immediately to the astronomical community. However, DD proposers may request and justify proprietary periods in their proposals.

Upon receipt of a DD proposal, the STScI Director will usually seek advice on the scientific merit and technical feasibility of the proposal from STScI staff and outside specialists. A proposal for DD time might be appropriate in cases where an unexpected transient phenomenon occurs or when developments since the last proposal cycle make a time-critical observation necessary. Recognizing the limited lifetimes for major space facilities such as HST, Chandra and SIRTf, DD proposals for rapid follow-up of new discoveries will also be considered even if the astrophysics of the phenomena do not require such rapid follow-up. In such cases, the proposers must demonstrate that the observations will provide a critical link in the understanding of the phenomena and that carrying them out quickly is particularly important for planning future observations with major facilities. They should then also indicate their plans for quickly making the scientific community aware of their discoveries, to enable subsequent wider community follow-up.

DD observations should *not* generally be requested if any of the following is true:

- The observations could plausibly have been proposed for in the most recent regular proposal Cycle, possibly as a Target-of-Opportunity proposal (see Section 4.1.2).
- The observations were proposed for in a previous regular proposal Cycle, and were rejected.
- The proposed observations could wait until the next proposal Cycle with no significant reduction in the expected scientific return.

The primary criteria for acceptance of DD proposals are extremely high scientific merit and a strong demonstration of the urgency of the observations.

The HST observing schedule is determined eleven days in advance of the actual observations. Although it is technically feasible to interrupt the schedule and initiate observations of a new target, short-notice interruptions place severe demands on the planning and scheduling process, decreasing overall observing efficiency and delaying other programs. Hence, requests for DD time must be submitted at least two months before the date of the requested observations, if possible. Requests for shorter turn-around times must be exceedingly well justified. In the case that a DD time proposal with a turn-around time of less than one month is accepted, the PI or his/her designee is required to be reachable by STScI personnel on a 24 hour basis between the submission and the implementation of the program, for Phase II preparation.

Subject to availability of funds from NASA, STScI will provide financial support for U.S. PIs and CoIs of approved DD programs. Details of the STScI Funding Policies (including the definition of the term ‘U.S. Investigators’) are outlined in Section 12.2. Please contact the STScI Grants Administration Office (see Appendix A.1) for more information about budget submissions for DD proposals using the Grant Management System.

3.10 Guaranteed Time Observer Programs

NASA has generally awarded a portion of the observing time in the years following the installation of a new instrument to those scientists involved in the development of this instrument. The interests of these Guaranteed Time Observers (GTOs) are protected through duplication policies, as described in Section 5.2.1.

Observation Types and Special Requirements

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4.1 Primary Observations / 33

4.2 Parallel Observations / 39

4.3 Special Calibration Observations / 43

4.1 Primary Observations

Primary observations are those observations that determine the telescope pointing and orientation. GO or SNAP proposals with external targets are normally scheduled as primary. Primary observations can use a variety of special requirements and observation types, as described in the following subsections. There is also the opportunity for *parallel* observations, described in Section 4.2, which are simultaneous observations with instruments other than the primary instrument.

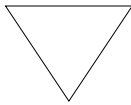
4.1.1 Continuous Viewing Zone (CVZ) Observations

Most targets are geometrically occulted in part of every HST orbit. However, this is not true for targets that lie close to the orbital poles. This gives rise to so-called Continuous Viewing Zones (CVZ) in two declination bands near ± 61.5 degrees. Targets in these bands may be viewed without occultations at some time during the 56-day precessional cycle of the HST orbit. Depending upon the telescope orbit and the target position, there may be up to 7 CVZ intervals with durations ranging from 1 to 105 orbits (7 days). Check the [CVZ Tables on the Web](#) to determine the number of CVZ opportunities in Cycle 12 and their duration for a given target location.

Passages of HST through the South Atlantic Anomaly restrict the longest *uninterrupted* observations to about 5-6 orbits. See [Section 2.3.1 of the HST Primer](#) for technical details about the CVZ.

Observations of targets in the CVZ are nearly twice as efficient as non-CVZ observations. Therefore, *proposers should use CVZ visibility in their orbit estimates where possible*. In the observations description section (see Section 9.2), you must include the number of CVZ opportunities available (using the [CVZ Tables on the Web](#)) for each target in your proposal for which you are requesting CVZ time.

STScI will make every effort to schedule the observations in this optimal way. However, because the number of CVZ opportunities are limited and unpredictable conflicts may occur between the proposed CVZ observations and other observations, a particular target's CVZ times may be oversubscribed. Therefore, it may be necessary to schedule the requested CVZ observations using standard orbit visibilities (i.e., using a larger number of total orbits). This will be done at no penalty to the observer.



Continuous Viewing Zone observations must be marked in the ‘Observation Summary’ section of the proposal (see Section 8.14).

Note that it is to the proposer's advantage to request CVZ observations (where possible). It allows a given set of observations to be done in a smaller number of orbits, which gives the proposal a competitive advantage over non-CVZ proposals during peer review.

Restrictions on Using the CVZ

The following special requirements are generally incompatible with use of the CVZ:

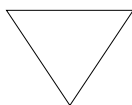
- The Shadow time (SHD) and Low-sky (LOW) special requirements (see [Section 5.5 of the HST Primer](#), and also Section 8.14)
- Special timing requirements (including telescope orientation constraints; see Section 4.1.4)

Hence, observations that require low background or special timing requirements should *not* be proposed for execution in the CVZ, and orbit estimates in the Phase I proposal should be based on standard orbit visibility (see [Table 6.1 of the HST Primer](#)). Please note that because of the extra scattered earthshine that enters the telescope on the day side of the orbit, sky-background limited observations through broadband optical or

infrared filters do not gain significant observing efficiency from CVZ observations. If it is determined during the Phase II proposal implementation that an observation is unschedulable because of conflicts between the CVZ requirement and any other Special Requirements (e.g., SHD, LOW, timing, etc.), then the observing time may be revoked. Proposers who are in doubt about whether or not to request CVZ observations should contact the STScI Help Desk (see Section 1.5).

4.1.2 Target-of-Opportunity (TOO) Observations

A target for HST observations is called a ‘Target-of-Opportunity’ (TOO) if the observations are linked to the occurrence of an event that may occur at an unknown time. TOO targets include objects that can be identified in advance but which undergo unpredictable changes (e.g., specific dwarf novae), as well as objects that can only be identified in advance as a class (e.g., novae, supernovae, gamma ray bursts, newly discovered comets, etc.). TOO proposals must present a detailed plan for the observations that are to be performed if the triggering event occurs.



Target-of-Opportunity observations must be marked in the ‘Observation Summary’ section of the proposal (see Section 8.14). In the ‘Special Requirements’ section of the proposal (see Section 9.3) you must provide an estimate of the probability of occurrence of the TOO during the observing cycle, and describe the required turn-around time.

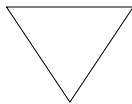
Turn-Around Time

The turn-around time for a TOO observation is defined as the time between an observer’s request for TOO activation and the execution of the observations. The HST observing schedule is constructed eleven days in advance of the actual observations. Therefore, any short-notice interruptions to the schedule place extra demands on the scheduling system, and may lead to a decrease in overall efficiency of the observatory. For this reason, the *minimum* turn-around time for TOO activation, while depending on the particular circumstances, is normally 2-5 days; this can be achieved only if *all* details of the proposal (except possibly the precise target position) are available in advance. Because of the significant effect TOO observations have on the short and medium-term HST schedule, the number of rapid TOO activations (i.e., 2 weeks turn-around or shorter) will be limited to approximately 6 in Cycle 12. Requests for rapid turn-around should be strongly justified in the Phase I proposal.

Ultra-Rapid Turn-Around Time

STScI has been endeavoring to reduce the turnaround time for activated TOO proposals that require fast response and are of the highest scientific importance. This has made it possible to reduce the nominal minimum 2-5 day interval to as short as 1 day for those detectors that do not require bright object checking (i.e., ACS/WFC, ACS/HRC, NICMOS, STIS/CCD and WFPC2). We therefore encourage the community to identify exciting HST science that would be enabled by a 2 day (or less) TOO turnaround time, and to submit proposals accordingly.

In order to reflect the true cost of such ultra-rapid TOOs, and to enable the TAC to weigh science and resources appropriately, note that:



Proposers requesting a less than 2-day turnaround should add a fixed overhead of 15 orbits per activation to the total orbit request in their proposal.

This is the average expected telescope down-time due to this very fast TOO response.

The number of ultra-rapid TOO activations (less than 2 days turn-around) will be limited to 3 in Cycle 12.

Activation of a TOO

A Phase II program must be submitted *before* the TOO event occurs. If the observing strategy depends on the nature of the event, then the Phase II program should include several contingencies from which the observer will make a selection. The PI is responsible for informing STScI of the occurrence of the event and must provide an accurate target position. Implementation of a TOO observation after notification of the event requires approval by the STScI Director and is not guaranteed (e.g., high-priority GO observations, critical calibrations, and engineering tests may take precedence over TOO programs). If approval is granted, then the HST observing schedule is replanned to include the new observations. A turn-around time of less than 1 month requires the PI or his/her designee to be reachable by STScI personnel on a 24 hour basis between the TOO activation and the scheduling of the program.

If the triggering event for an approved TOO program does not occur during the observing cycle, the program will be deactivated at the end of the cycle. Unused TOO time does not carry over into the following cycle.

TOO Programs with STIS/MAMA or ACS/SBC

TOO proposals that use the STIS/MAMA detectors or ACS/SBC must pass bright object checking before they can be scheduled. For rapid turn-around proposals, where the target may be varying in intensity, a strategy must be outlined to ensure that the TOO will be safe to observe. A description of how you plan to deal with this issue should be provided in the ‘Special Requirements’ section of the proposal (see Section 9.3).

Note also that STIS/MAMA and ACS/SBC observations cannot be scheduled in orbits affected by passages of HST through the South Atlantic Anomaly (SAA), which limits the duration of a MAMA visit to 5 orbits (see [Section 2.3.2 of the HST Primer](#)).

4.1.3 Observations of Targets that have not yet been discovered or identified

There are a variety of plausible scenarios in which investigators may wish to propose for HST observations of targets that have not yet been discovered or identified (i.e., for which the coordinates are unknown; e.g., the next supernova in our own Galaxy, the next gamma-ray burst on the southern hemisphere, etc.). In general, such proposals are allowed only if there is a certain time-criticality to the observations; i.e., proposing for the same observations in the next regular review cycle (*after* the target has been discovered) would be impossible or would make the observations more difficult (e.g., the object fades rapidly, or its temporal behavior is important), or would lead to diminished scientific returns. These criteria are generally satisfied for GO observations of TOO targets, and there may also be other circumstances in which proposals for such targets are justified. However, in the absence of demonstrated time-criticality, observations will not generally be approved for targets that have not yet been discovered or identified.

4.1.4 Time-Critical Observations

Proposals may request that HST observations be made at a specific date and time, or within a range of specific dates, when scientifically justified. Some examples of such cases are:

- astrometric observations,
- observing specific phases of variable stars,
- monitoring programs,
- imaging surface features on solar-system bodies,

- observations requiring a particular telescope orientation (since the orientation is fixed by the date of the observations; see [Section 2.5 of the HST Primer](#)),
- observations coordinated with observations by another observatory.

Any requests for time critical observations must be listed in the ‘Special Requirements’ section of the proposal (see Section 9.3).

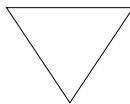
Time-critical observations impose constraints on the HST scheduling system, and should therefore be accompanied by an adequate scientific justification in the proposal.

Limitations Related to Time-Critical Observations

Time-critical events that occur over short time intervals compared to the orbital period of HST (such as eclipses of very short-period binary stars) introduce a complication because it will not be known to sufficient accuracy, until a few weeks in advance, where HST will be in its orbit at the time of the event, and hence whether the event will occur above or below the spacecraft’s horizon (see [Section 2.3.3 of the HST Primer](#)). Proposals to observe such events can therefore be accepted only conditionally.

4.1.5 Real-Time Interactions

Communications with HST in “real-time” are a limited resource, which require additional operational overheads, reduce observing efficiency, and greatly increase the scheduling complexities. However, in exceptional circumstances, some science programs may require such interactions. These observations will generally require the presence of the PI (or his/her designee) at STScI during such exposures, and STScI personnel will be present to assist the PI and send the command requests.



Any requests for real-time interactions must be listed in the ‘Special Requirements’ section of the proposal (see Section 9.3).

In such cases the scientific and operational justification for this should be presented clearly in the observing proposal. Typically, two-way real-time interactions for position updates should only be used when early-acquisition or reuse target offset techniques to refine the telescope pointing cannot be used (see [Section 5.2 of the HST Primer](#)).

4.2 Parallel Observations

Since all of the scientific instruments are located at fixed positions in the telescope focal plane, it is possible to increase the productivity of HST by observing simultaneously with one or more instruments *in addition* to the primary instrument. Those additional observations are called *parallel* observations.

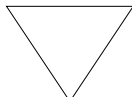
Since each instrument samples a different portion of the HST focal plane (see [Section 2.2 of the HST Primer](#)), an instrument used in parallel mode will normally be pointing at a “random” area of sky several minutes of arc away from the primary target. Thus parallel observations are usually of a survey nature. However, many HST targets lie within extended objects such as star clusters or galaxies, making it possible to conduct parallel observations of nearby portions of, or even specific targets within, these objects.

Parallel observations are never permitted to interfere significantly with primary observations; this restriction applies both to concurrent and subsequent observations. Some examples of this policy are the following:

- A parallel observation will not be made if its inclusion would shorten the primary observation.
- Parallel observations will not be made if the stored command capacity or data volume limits would be exceeded.

Depending on whether a parallel observation is related to any specific primary observation, it is defined either as a *coordinated parallel* or *pure parallel*. Coordinated parallel observations are observations related to a particular primary observation in the same proposal. Pure Parallel observations are unrelated to any particular primary observation (i.e., the primary observation is in another program). Investigators interested in proposing for parallels are encouraged to consult the [Parallel Observations User Information Report](#), which contains details on how parallels are scheduled, completion rates for recent cycles, and other useful information.

4.2.1 Coordinated Parallel Observations

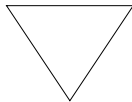


Coordinated Parallel observations must be marked in the ‘Observation Summary’ section of the proposal (see Section 8.14).

Coordinated Parallels use one or more instruments, in addition to and simultaneously with the primary instrument in the same proposal, e.g., to observe several adjacent targets or regions within an extended object. Proposals that include coordinated parallel observations should provide a scientific justification for and description of the parallel observations. It should be clearly indicated whether the parallel observations are essential to the interpretation of the primary observations or the science program as a whole, or whether they address partly or completely unrelated issues. The parallel observations are subject to scientific review, and can be rejected even if the primary observations are approved.

Proposers are not allowed to add coordinated parallel observations in Phase II that were not explicitly included and approved in Phase I.

4.2.2 Pure Parallel Observations



Pure Parallel observations must be marked in the ‘Observation Summary’ section of the proposal (see Section 8.14).

Proposals for pure parallel observations may specify either specific or generic targets, although the latter are more common. Appropriate scheduling opportunities will be identified by STScI.

Experience with pure parallel observations over the last several years indicates that parallel observing programs should be kept simple, in order for them to schedule on top of the typical prime observing programs. Parallel programs requiring multiple successive orbits are less likely to schedule than those which can be executed in a single orbit (over the past year, of the parallel visits scheduled, 87% were a single orbit in duration, 9% were two orbits, 2% were three orbits, while four and five orbits were each about 1%). Due to resource constraints at STScI, only a limited number of pure parallel programs can be accepted in each cycle.

In Cycle 11 there was a large demand for both for primary and parallel observations using the Advanced Camera for Surveys (ACS). Four pure parallel proposals were approved, and while the total number of approved orbits (~900) does not exceed the available number of orbits, the calibration programs and long anneals for ACS also need to be accommodated in the schedule. The fraction of these approved orbits that can be executed remains to be seen.

A “Default” HST Archival Pure Parallel Program has been in place since Cycle 7. This program consists of observation types using each of the possible pure parallel instruments and is used to obtain uniform, non-proprietary data sets for the HST Data Archive during parallel observing opportunities not used as coordinated or pure parallel GO observations. A plan for the Cycle 12 default programs was developed by the Parallel Observing with Space Telescope (POST) team (see the [Parallel Observations User Information Report](#) for details). The scientific rationale for the observations, a description of the observations, and additional information can be found on the HST [Archival Pure Parallel Program Web Page](#).

STScI encourages submission of:

- Archival Research proposals to analyze data obtained as part of the HST Archival Pure Parallel Program in previous cycles.
- GO pure parallel proposals for observations that differ from the Cycle 12 Default HST Archival Pure Parallel Program.
- GO pure parallel proposals to carry out, for each of the instruments, either selected pieces or the entire Cycle 12 Default HST Archival Pure Parallel Program. The advantage of such proposals for GO investigators, if approved, is that they become eligible for funding (U.S. Investigators only) and will have responsibility for the Phase II implementation of the proposed part of the program. In addition, investigators in this category will be asked to participate in a reconstituted Parallel Working Group to refine the observing strategy of the Default Parallel Program for each scientific instrument, and to monitor the observations to assure that high quality data are taken. This coordination will be important for the final definition of the program but will not have to be extended to the data analysis phase.

The review panels and TAC will select the best science and prioritize the parallel programs, including the Default Program. GO Programs may well replace the Default Program in order to keep the total number of parallel programs at a supportable level.

As in previous Cycles, all data taken in the context of the Default HST Archival Pure Parallel Program will be non-proprietary. In addition, all GO pure parallel programs will have zero proprietary period.

4.2.3 Restrictions and Limitations on Parallel Observations

Parallel Observations with ACS

When ACS is the primary instrument, it permits WFC parallel observations with HRC in prime and vice versa (so called auto-parallels). The filter choice for auto-parallels is predetermined by the filter used in the prime observation (see the [ACS Instrument Handbook](#) for details). For this reason, auto-parallels are created by software and execute automatically as pure parallels. Even though the observer does not specify auto-parallels in his/her proposal, the parallel data are proprietary, exactly in the same way as the prime data. It depends on the primary exposures whether or not auto-parallels can be created.

The ACS/WFC and ACS/HRC may be used for either pure or coordinated parallel observations with any other instrument as primary.

The ACS/SBC may be used for coordinated parallel observations with any other instrument as primary, but only if the telescope orientation is exactly specified and the field passes bright-object checking. The ACS/SBC may not be used for pure parallel observations.

Parallel Observations with FGS

The FGS cannot be used as a parallel instrument.

Parallel Observations with NICMOS

NICMOS may be used for either pure or coordinated parallel observations with any other instrument as primary. Note that observations with different NICMOS cameras at the same time are not considered parallel observations.

Parallel Observations with STIS

The STIS/CCD detector may be used for either pure or coordinated parallel observations with any other instrument as primary.

The STIS/MAMA detectors may be used for coordinated parallel observations with any other instrument as primary, but only if the telescope orientation is exactly specified and the field passes bright-object checking. The STIS/MAMA detectors may not be used for pure parallel observations.

Parallel Observations with WFPC2

The WFPC2 may generally be used for either pure or coordinated parallel observations with any other instrument as primary.

Pointing Accuracy for Parallel Observations

The spacecraft computers automatically correct the telescope pointing of the primary observing aperture for the effect of differential velocity aberration. This means that image shifts at the parallel aperture of 10 to 20 mas can occur during parallel exposures.

4.3 Special Calibration Observations

Data from HST observations are normally provided to the GO after application of full calibrations. Details of the standard calibrations are provided in the Instrument Handbooks (see Section 1.4.3).

In order to obtain quality calibrations for a broad range of observing modes, yet not exceed the time available on HST for calibration observations, only a restricted set, the so-called ‘Supported’ modes, may be calibrated. Other modes may be available but are not supported. Use of these ‘Available-but-Unsupported’ modes is allowed to enable potentially unique and important science observations, but is discouraged except when driven by scientific need. *Observations taken using Available-but-Unsupported modes that fail due to the use of the unsupported mode will not be repeated.* Use of these modes must be justified prior to the Phase II submission. For details consult the Instrument Handbooks (see Section 1.4.3).

Projects may need to include special calibration observations if either:

- a Supported mode is used, but the calibration requirements of the project are not addressed by the standard STScI calibration program, or
- an Available-but-Unsupported mode is used.

Any special calibration observations required in these cases must be included in the total request for observing time and in the Observation Summary of the proposal, and must be explicitly justified. Proposers can estimate the time required for any special calibration observations from the information provided in the Instrument Handbooks (see Section 1.4.3). Also, the STScI Help Desk (see Section 1.5) can assist you on this estimate, but such requests must be made at least 14 days before the submission deadline.

The data reduction of special calibration observations is the responsibility of the observer.

All data flagged as having been obtained for calibration purposes will normally be made non-proprietary.

Data Rights and Duplications

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5.1 Data Rights

Observers have exclusive access to their science data during a proprietary period. Normally this period is the 12 months following the date on which the data, for each target, are archived and made available to the investigator after routine data processing. At the end of the proprietary period, data are available for analysis by any interested scientist through the HST Archive.

Proposers who wish to request a proprietary period shorter than one year (3 or 6 months), or who are willing to waive their proprietary rights altogether, should specify this in the proposal (see Section 8.7). Because of the potential benefit to the community at large, particularly (but not exclusively) in the case of snapshot programs, proposers should give this possibility serious consideration (it is one of the selection criteria; see Section 6.2).

Data taken under a GO pure parallel program (see Section 4.4.2) will have zero proprietary period. Data taken under the GO Treasury Program (see Section 3.2.4) will have no proprietary period, although brief proprietary periods may be requested, if they will enhance the public data value.

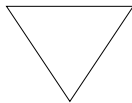
If you request a shortened proprietary period, then you should explain the benefits of this in the ‘Special Requirements’ section of the proposal (see Section 9.3). Proprietary periods longer than 12 months may on rare occasions be appropriate for long-term programs (see Section 3.2.3). Requests for data-rights extensions beyond 12 months must also be made in the ‘Special Requirements’ section of the proposal (see Section 9.3); such requests are subject to panel and TAC review and approval by the STScI Director.

5.2 Policies and Procedures Regarding Duplications

Special policies apply to cases in which a proposed observation would duplicate another observation already obtained with HST, or currently in the pool of accepted HST programs.

5.2.1 Duplication Policies

An observation is a duplication of another observation if it is on the same astronomical target or field, with the same or a similar instrument, with a similar instrument mode, similar sensitivity, similar spectral resolution and similar spectral range. It is the responsibility of proposers to check their proposed observations against the catalog of previously executed or accepted programs.



If any duplications exist, they must be identified in the ‘Observation Summary’ section of the proposal (see Section 8.14), and justified strongly in the ‘Justify Duplications’ section of the proposal (see Section 9.5) as meeting significantly different and compelling scientific objectives.

Any *unjustified* duplications of previously executed or accepted observations that come to the attention of the peer reviewers and/or STScI could lead to rejection during or after the Phase I deliberations. Without an explicit review panel or TAC recommendation to retain duplicating exposures, they can be disallowed in Phase II. In these cases, no compensatory observing time will be allowed and the associated observing time will be removed from the allocation.

ACS Duplications of WFPC2 or STIS imaging

ACS has imaging capabilities superior to WFPC2 and STIS for many purposes. Nonetheless, ACS proposers should note any duplications of previously approved or executed WFPC2 or STIS imaging exposures that lie in their fields, and justify why the new ACS observations are required to achieve the scientific goals of the project.

Snapshot Targets

The following policies apply to snapshot targets, in addition to the duplication policies already mentioned:

- Snapshot targets may not duplicate approved GO or GTO programs in the same cycle.
- Snapshot observations may *not* be proposed that duplicate snapshot observations that were approved in Cycle 11, independent of whether or not they have executed.
- Snapshot targets may be proposed that duplicate snapshot observations that were approved in Cycles 10 or earlier, if they have not yet executed. If the previously approved observation executes after the Phase I deadline, then the new observation will be disallowed (unless there is an explicit panel/TAC recommendation to retain the exposure even if it is a duplication).

GTO Observations

Under NASA policy, GTO programs (see Section 3.10) are protected against acquisition by GOs of duplicate observations. Proposed GO observations that are judged to infringe upon this protection will be disallowed. However, the duplication protection is as specifically defined above; entire classes of objects or broad science programs are not protected. The GTOs are entitled to revise their programs after each cycle of GO selection, but they in turn may not duplicate previously approved GO programs. GTOs may not modify their programs in the time interval between the publication of the GTO/GO catalog in each cycle and the final submission of the Phase II GO programs selected for that cycle. The protection of each observation is in force throughout its proprietary data-rights period (see Section 5.1) and then expires.

Early-Acquisition Images

Occasionally it may happen that a proposer requests an early-acquisition image (see [Section 5.2.1 of the HST Primer](#)) that is already in a GTO program, and would be protected according to the NASA policies outlined above. If an early-acquisition image is determined to be in conflict with a protected GTO image, then the GO-requested image may still be permitted, but may be used only for acquisition purposes.

5.2.2 How to Check for Duplications

To check for duplications among the observations that you wish to propose, please use the tools and links on the [MAST Web Page](#). Use one of the following three options:

- Use the HST [Duplication Checking Web Form](#).
- Use the Duplication Check Screen in Starview, which is available for download from the [Starview Web Page](#) (see also the introductory text in [Section 7.2.1 of the HST Primer](#)).
- Use the [Planned and Archived Exposures Catalog \(PAEC\)](#). It contains summary information about exposures in ASCII format and can be browsed with any text editor. It is normally updated monthly, but will be kept fixed between the release of this Call for Proposals and the Phase I deadline.

Please make sure that you are either searching in the HST duplication table (automatic if you use the [Duplication Checking Web Form](#) or the Starview Duplication Check Screen) or the PAEC. Other archive tables, such as the science table or the ASCII format Archived Exposures Catalog (AEC) do not include exposures that have been approved but have not yet executed, and are therefore not suitable for a complete duplication check.

Proposal Selection Procedures

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6.1 How STScI Evaluates Submitted Proposals

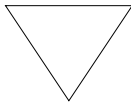
HST Programs are selected through competitive peer review. A broad range of scientists from the international astronomical community evaluates all submitted proposals, using a well-defined set of criteria (see Section 6.2). They rank the proposals and offer their recommendations to the STScI Director. Based on these recommendations, the STScI Director makes the final allocation of observing time.

6.1.1 The Review Panels

Review panels will consider Regular GO (fewer than 100 orbits; see Section 3.2.1), SNAP, AR and Theory proposals. Each review panel can recommend Regular GO proposals up to a certain limited number of orbits that it has been allocated. In order to encourage the acceptance of larger proposals, a progressive orbit “subsidy” is allocated to the panels, with orbits in the subsidy coming from outside the direct panel allotment. The algorithm for this “subsidy” has the goal of creating an acceptance rate of submitted programs that is approximately independent of size.

The panel recommendations generally do not require further approval of the TAC (see Section 6.1.2) and scientific balance will be determined within each panel rather than by the TAC. The panels do not decide on Large GO proposals (100 orbits or more; see Section 3.2.4), Treasury GO proposals (see Section 3.2.4), AR Legacy proposals (see Section 3.4.2), but they will send their comments on these proposals to the TAC for their consideration. Calibration proposals (see Section 3.6) will only be reviewed by the TAC.

Panelists are chosen based on their expertise in one or more of the areas under review by the panel. Each panel spans several scientific categories (as defined in Section 8.8). For example, in Cycle 11 there were three panels dealing with Hot Stars, ISM and Circumstellar Medium; two panels dealing with Star Formation, Cool Stars and Stellar Populations; three panels dealing with Galaxies, AGN and Quasars; two panels dealing with Quasar Absorption Lines and Cosmology; and one panel dealing with the Solar System. The division of scientific categories over panels may be different in Cycle 12, but the breadth of the panels will remain the same. Within a panel, proposals are assigned to individual expert reviewers based on the keywords given in the proposal (see Section 8.9). These keywords should therefore be chosen with care.



Given the breadth of the panels, proposers should frame their scientific justification in terms appropriate for a panel with a broad range of astronomical expertise.

6.1.2 The Telescope Allocation Committee (TAC)

The TAC will be composed of a TAC chair and the panel chairs. The primary responsibility of the TAC is to review the Large GO proposals (100 orbits or more; see Section 3.2.2), Treasury GO proposals (see Section 3.2.4), AR Legacy proposals (see Section 3.4.2), any other particularly large requests of resources (SNAP, AR, Theory or pure parallel), and Calibration proposals (see Section 3.6). It will also be the arbiter of any extraordinary or cross-panel issues.

6.2 Selection Criteria

Evaluations of HST proposals are based on the following criteria.

Criteria for all Proposals

- The scientific merit of the project and its potential contribution to the advancement of scientific knowledge.
- The proposed program's importance to astronomy in general. This should be stated explicitly in the 'Scientific Justification' section of the proposal (see Section 9.1).
- The extent to which the expertise of the proposers is sufficient to assure a thorough analysis of the data.
- The evidence for a coordinated effort to maximize the scientific return from the program.
- A demonstration of how the results will be made available to the astronomical community in the form of scientific or technical publications in a timely manner.
- A demonstration of timely publication of the results of any previous HST programs.

Additional Criteria for all GO and SNAP Proposals

- What is rationale for selecting the type and number of targets? Reviewers will be instructed to recommend or reject proposals as they are and to refrain from orbit or object trimming. Therefore, it is very important for you to strongly justify both the selection and the number of targets in your proposal, as well as the number of orbits requested.
- Why are the unique capabilities of HST required to achieve the science goals of the program? Evidence should be provided that the project *cannot* be accomplished with a reasonable use of ground-based telescopes (irrespective of their accessibility to the proposer).
- Is there evidence that the project has already been pursued to the limits of ground-based and/or other space-based techniques?
- What are the demands made on HST and STScI resources, including the requested number of orbits or targets, and the efficiency with which telescope time will be used?
- Is the project technically feasible and what is the likelihood of success? Quantitative estimates of the expected results and the needed accuracy of the data must be provided.

Additional Criteria for Large GO Proposals, Treasury GO proposals and Legacy AR proposals

- Is there a plan to assemble a coherent database that will be adequate for addressing all of the purposes of the program?
- Will the work of the proposers be coordinated effectively, even though a large team may be required for the proper analysis of the data?
- Is there evidence that the observational database will be obtained in such a way that it will be useful also for purposes other than the immediate goals of the project?

Additional Criterion for SNAP Proposals

- Willingness to waive part or all of the proprietary period. While this is not the primary criterion for acceptance or rejection, it can provide additional benefit to any proposal and will be weighed by the reviewers as such.

Additional Criterion for Calibration Proposals

- What is the long-term potential for enabling new types of scientific investigation with HST, and what is the importance of these investigations?

Additional Criteria for all Archival Research Proposals

- What will be the improvement or addition of scientific knowledge with respect to the previous original use of the data? In particular, a strong justification must be given to reanalyze data if it has the same science goals as the original proposal.
- What are the demands on STScI resources (including funding, technical assistance, and archival/dissemination of products)?

Additional Criteria for GO Treasury and AR Legacy Proposals

- What scientific investigations will be enabled by the data products, and what is their importance?
- What plans are there for timely dissemination of the data products to the community?

Additional Criteria for Theory Proposals

- What new types of investigations with HST or with data in the HST Data Archive will be enabled by the theoretical investigation, and what is their importance?
- What plans are there for timely dissemination of theoretical results, and possibly software or tools, to the community?

Guidelines and Checklist for Phase I Proposal Preparation

In this chapter . . .

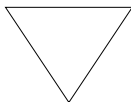
7.1 General Guidelines / 53

7.2 Proposal Preparation Checklist / 56

The present chapter provides general guidelines and a checklist for Phase I proposal preparation. Specific instructions for construction of a Phase I proposal are presented in Chapter 8 and Chapter 9.

7.1 General Guidelines

7.1.1 Deadline



The deadline for proposal submission is Friday January 24, 2003, 8:00 pm EST.

Please submit well before the deadline if possible, to avoid possible last-minute hardware or overloading problems, or network delays/outages. Late proposals will not be considered.

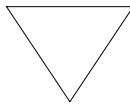


As the APT is a new interface, we strongly recommend that proposers start preparing their proposals early in order to give themselves enough time to learn the APT.

Questions about policies and technical issues should be addressed to the STScI Help Desk (see Section 1.5) well before the deadline. While we attempt to answer all questions as rapidly as possible, we cannot guarantee a speedy response in the last week before the deadline.

7.1.2 Phase I Proposal Format

Cycle 12 proposals must be submitted electronically. Starting in Cycle 12, a java-based software tool, APT (the Astronomer's Proposal Tool; see Section 1.4.4) is the new interface for all Phase I and Phase II proposal submissions for HST.



The Phase I LaTeX templates that have been in use for many years will not be accepted in Cycle 12.

A Phase I proposal consists of two parts:

- a completed APT proposal form (see Chapter 8); and
- an attached PDF file (see Chapter 9).

Both get submitted to STScI directly from within APT. Note that Student Principal Investigators should also send a certification letter from their faculty advisor (see Section 2.3.3).

Please study Chapter 7, Chapter 8 and Chapter 9 carefully. Please do so well before the submission deadline, to give the STScI Help Desk (see Section 1.5) ample time to answer any questions that you may have about the new procedures.

7.1.3 Page Limits for PDF Attachment

There are page limits on the size of your PDF attachment.

For Large GO proposals (see Section 3.2.2), Treasury GO proposals (see Section 3.2.4) and AR Legacy proposals (see Section 3.4.2) the page limits are:

- No more than 11 pages total.
- Any text in the ‘Scientific Justification’ section (see Section 9.1) may not extend beyond page 6.

For all other proposals the limits are:

- No more than 8 pages total.
- Any text in the ‘Scientific Justification’ section (see Section 9.1) may not extend beyond page 3.

In relation to these page limits, note the following:

- Any pages beyond the page limits will be discarded by STScI and will not be available to reviewers.
- There are no limits on the numbers of figures, tables and references in the PDF attachment, and on where they appear in the attachment. However, the total page limit must be obeyed.
- Your PDF attachment must be prepared with a font size of 12pt. Do not change the font size or layout in any of the templates that are provided by STScI.

7.2 Proposal Preparation Checklist

Table 7.1: Proposal Preparation Checklist

Step	Procedure
1) Install APT	Go to the APT Web Page . Follow the instructions there to download and install APT onto your machine. You can also ask your system administrator to do an institution-wide installation.
2) Fill out the APT Phase I form	Use APT to fill out the APT Phase I form. Information on the use of APT is available on the APT Web Page . A description of which items are requested as well as guidelines for answering are presented in Chapter 8.
3) Download a template file for the creation of your PDF attachment	Go to the Cycle 12 Announcement Web Page . Download one of the templates for the creation of your PDF attachment. There are separate template files for GO/SNAP and for AR/Theory proposals. Template files are available in several popular word-processing environments, including LaTeX and Microsoft Word.
4) Edit the template	Edit the template using your favorite word-processing environment. A description of which issues need to be discussed, and guidelines for how to discuss them, are presented in Chapter 9.
5) Create the PDF attachment.	Transform your edited template into a PDF file. Any figures in your proposal must be included into this PDF file. Go to the Cycle 12 Announcement Web Page for instructions on how to create a PDF file from your edited template, and for instructions on how to include figures. Please realize that any color figures in your file will be printed using grey scales, and will <i>not</i> be available to the reviewers in color.
6) Add the PDF filename path to the APT form	In your APT form, list in the appropriate box the path that points to the PDF attachment file on your local disk (see Section 8.11).
7) Review your proposal	In APT, click on ‘Text Preview’ or ‘PDF Preview’ to get a preview of all the final information in your proposal. What you see under ‘PDF Preview’ is exactly what the reviewers who will judge your proposal will see. If you are not satisfied, make any necessary changes.
8) Submit your proposal	In APT, click ‘Submit’ to submit your proposal to STScI. All parts are sent together (i.e., both the APT Form information and the PDF attachment).
9) Receive an STScI acknowledgment of your submission	Verification of a successful submission will appear in the Submission Log on the Submission Screen in the APT within about a minute. Within a few days the PI will receive an email acknowledgment that the Merged PDF submission was successfully printed. That email will mark the completion of the submission. If you do not receive an acknowledgement within a week, please contact the STScI Help Desk and provide the submission ID information from the APT Submission Log window. If there are any problems in the printing of your PDF attachment, you will be contacted by email separately.



CHAPTER 8:

Filling Out the APT Proposal Form

In this chapter . . .

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8.14 Observation Summary (OS) / 64

As described in Chapter 7, a Phase I proposal consists of a completed APT proposal form and an attached PDF file. The present chapter describes the items that must be filled out in the APT proposal form; this information is also available from the ‘Help’ in APT. Note that not every item described here needs to be filled out for every proposal. For example, some items are only relevant for observing proposals, while others are only relevant for archival proposals. APT will automatically let you know which items need to be filled out, depending on which proposal type you choose. Chapter 9 describes the items that must be addressed in the attached PDF file.

8.1 Title

The title of your proposal should be informative, and must not exceed 2 printed lines. Please use mixed case instead of all caps.

8.2 Abstract

Please write a concise abstract describing the proposed investigation, including the main science goals and the justification for requesting observations or funding from HST. The abstract must be written in standard ASCII and should be no longer than 20 lines of 72 characters of text.

8.3 Proposal Phase

No action is required by the proposer at this time. For Cycle 12, Phase I, the Phase will automatically be set to '**PHASE I**'. See Section 2.1 for a description of the different phases in the HST proposal process.

8.4 Category

Select one of the following categories:

- **GO**—General Observer proposal
- **SNAP**—Snapshot proposal
- **AR**—Archival Research proposal (this category includes the Theory Proposals described in Section 3.5)

Proposals for Director's Discretionary Time (see Section 3.9) submitted outside of the normal review cycles should select:

- **GO/DD**—Director's Discretionary Time proposal

8.5 Cycle

For a Cycle 12 proposal, enter '12' (this will be the default).

8.6 Requested Resources

8.6.1 Primary and Parallel Orbits

(This item appears in the APT form only for GO proposals)

Enter the total number of orbits requested for primary observations and parallel observations. Consult [Chapter 6 of the HST Primer](#) for instructions on how to calculate the appropriate number of orbits. Note that only whole orbits can be requested, and only whole orbits will be allocated. In general, only the boxes for 'This Cycle' need to be filled out. However, long-term proposals (see Section 3.2.3) should provide a year-by-year breakdown of the orbits requested by also filling out the boxes for 'Next Cycle' (i.e., Cycle 13) and 'After Next' (i.e., Cycle 14).

8.6.2 Total Targets

(This item appears in the APT form only for SNAP proposals)

Specify the total number of targets requested. Note that multiple visits on the same source should be counted as multiple targets; see Section 3.3.

8.6.3 Budget

(This item appears in the APT form only for AR and Theory proposals)

Please enter a U.S. dollar figure for your total budget request. See Chapter 12 for details on Grant Policies and allowable costs. Make sure that all applicable indirect costs and overheads are included in the listed amount.

8.7 Proprietary Period

(This item appears in the APT form only for GO and SNAP proposals)

Enter the requested proprietary period, either 0, 3, 6 or 12 (months), that will apply to all observations in the program. Pure parallel programs have 0 proprietary period. The default proprietary period is 0 for GO Treasury Programs, and 12 for all other programs. See Section 5.1 on Data Rights for more information. The benefits of or need for a non-default proprietary period must be discussed in the ‘Special Requirements’ section of the proposal (see Section 9.3).

8.8 Scientific Category

Specify *one* Scientific Category from the list below. Please adhere strictly to our definitions of these categories. If you find that your proposal fits into several categories, then please select the one that you consider most appropriate. If you are submitting a Calibration Proposal, then choose the Scientific Category for which your proposed calibration will be most important. The following are the available categories:

- **SOLAR SYSTEM:** This includes all objects belonging to the solar system (except the Sun and Mercury), such as planets, comets, minor planets, asteroids, planetary satellites, Kuiper-belt objects, etc.
- **STAR FORMATION:** This includes forming and newly-formed stars, the material surrounding them, studies of proto-planetary disks, extra-solar planets, early evolution, pre-main sequence stars, T-Tauri stars, HH objects and FU Orionis stars.
- **COOL STARS:** This applies to stars with effective temperatures less than 10,000 K. It includes subdwarfs, subgiants, giants, supergiants, AGB stars, pulsating/variable stars, brown dwarfs, stellar activity (coronae/flares), atmospheres, chromospheres, mass loss and abundance studies.
- **HOT STARS:** This applies to stars which spend a significant fraction of their observable lives at an effective temperature higher than 10,000 K. It includes OB stars, neutron stars, white dwarfs, Wolf-Rayet stars, blue stragglers, central stars of PN, variable hot stars, luminous blue variables, hot subdwarfs, supernovae, pulsars, X-ray binaries and CVs.

- **ISM AND CIRCUMSTELLAR MATTER:** This applies to the general properties of the diffuse medium within the Milky Way and nearby galaxies, including planetary nebulae, nova shells, supernova remnants, stellar jets (except star formation), winds and outflows, HII regions, giant molecular clouds, diffuse and translucent clouds, ionized gas in the halo, diffuse gas observed in emission or absorption, dust, dust extinction properties, dark clouds and deuterium abundance studies.
- **STELLAR POPULATIONS:** This includes resolved stellar populations in globular clusters, open clusters or (OB) associations, in the Milky Way and in other nearby galaxies. Studies of color-magnitude diagrams, luminosity functions, initial-mass functions, internal dynamics and proper motions are in this category.
- **GALAXIES:** This includes studies of galaxies in the Hubble sequence, galaxy mergers and interactions, starburst galaxies, IR-bright galaxies, dwarf galaxies and low-surface brightness galaxies. Also included are studies of galaxy structure, morphology and dynamics, and observations of unresolved stellar populations and the globular clusters of galaxies.
- **AGN/QUASARS:** This encompasses active galaxies and quasars, including both studies of the active phenomena themselves, and of the properties of the host galaxies that harbor AGNs and quasars. The definition of AGN is to be interpreted broadly; it includes Seyfert galaxies, BL Lac objects, radio galaxies, blazars and LINERS.
- **QUASAR ABSORPTION LINES AND IGM:** This includes the physical properties and evolution of absorption line systems detected along the line of sight to quasars and of other diffuse IGM. It includes spectroscopy and imaging of damped Ly-alpha systems.
- **COSMOLOGY:** This includes studies of the structure and properties of clusters and groups of galaxies, strong and weak gravitational lensing, galaxy evolution through observations of galaxies at intermediate and high redshifts (including for example, the Hubble Deep Fields), cosmology in general, the structure of the universe as a whole, cosmological parameters and the extra-galactic distance scale.

8.9 Keywords

From the list of Scientific Keywords in the pull-down menu (see also Appendix B), please select appropriate keywords that best describe the science goals of the proposal. Your choice here is important! Based on the keywords that you specify, your proposal will be assigned by software to specific reviewers during the proposal Review (see Section 6.1). Please give as many keywords as possible, but not more than five. You *must* give at least one keyword.

8.10 Special Proposal Types

8.10.1 Chandra ksec

(This item appears in the APT form only for GO proposals)

If you are asking for both HST and Chandra observing time (see Section 3.7) then list the requested number of Chandra kiloseconds. You should then also provide detailed information on the Chandra observations in the ‘Coordinated Observations’ section of the proposal (see Section 9.4.1). If you are not requesting any new Chandra observations (or if you have Chandra time that has already been awarded), then enter ‘0’.

8.10.2 NOAO Nights

(This item appears in the APT form only for GO proposals)

If you are asking for both HST and NOAO observing time (see Section 3.8) then list the requested number of nights on NOAO telescopes. You should then also provide detailed information on the NOAO observations in the ‘Coordinated Observations’ section of the proposal (see Section 9.4.2). If you are not requesting any new NOAO observations (or if you have NOAO time that has already been awarded), then enter ‘0’.

8.10.3 Theory

(This item appears in the APT form only for AR proposals)

Mark this keyword if you are submitting a Theory proposal (see Section 3.5).

8.10.4 Legacy

(This item appears in the APT form only for AR proposals)

Mark this keyword if you are submitting an AR proposal in the AR Legacy category (see Section 3.4.2).

8.10.5 Calibration

Mark this keyword if you are submitting a Calibration Proposal (see Section 3.6).

8.10.6 Treasury

(This item appears in the APT form only for GO proposals)

Mark this keyword if you are submitting a GO proposal in the Treasury category (see Section 3.2.4).

8.11 Proposal PDF Attachment

List the location on your computer of the PDF file that is to be attached to your Phase I submission. This file should contain the items described in Chapter 9.

8.12 Principal Investigator

Enter the name (last name first) and e-mail address of the PI. Please use standard ASCII. There can be only one PI per proposal. Choose the correct institutional affiliation. For U.S. PIs (see Section 12.2), the institutional affiliation is defined as the institution that will receive funding if the proposal is approved. List the country of the institutional affiliation, and for U.S. investigators, also the state. Please mark the appropriate box for PIs with an institutional affiliation in an ESA member country. Next, please enter the full institutional address, postal code, and telephone number.

8.13 Co-Investigators

Co-investigators (CoIs) can be added in APT as necessary in Phase I; once a program is approved (Phase II), a Co-I can only be added with prior approval (see Section 10.2). APT by default will provide one blank CoI template. Please add other CoIs or delete as necessary. For each CoI, list the name and e-mail address. Choose the correct institutional affiliation. For U.S. CoIs (see Section 12.2), the institutional affiliation is defined as the institution that will receive funding if the proposal is approved. List the country of the institutional affiliation, and for U.S. investigators, also the state. Please mark the appropriate box for PIs with an institutional affiliation in an ESA member country. If a proposal has a non-U.S. PI and one or more U.S. CoIs, then you *must* mark the ‘Admin US PI’ box for one of the U.S. CoIs. This indicates which U.S. CoI will be the Administrative PI for overseeing the grant funding for U.S. investigators (see Chapter 12). Note that for CoIs, unlike for the PI, there is no need to enter the full institutional address, postal code, and telephone number.

8.14 Observation Summary (OS)

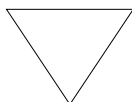
(This item appears in the APT form only for GO and SNAP proposals)

The OS lists the main characteristics of the observations that you propose to obtain. In general you must include in the OS *all* the configurations, modes and spectral elements that you propose to use, and *all* the targets that you propose to observe. Note the following:

- The OS can include observations of fixed targets (i.e., all targets outside the solar system whose positions can be defined by specific celestial coordinates), generic targets (i.e., targets defined by certain general properties, rather than by specific coordinates), and solar-system targets (i.e., moving targets). Targets that have not yet been discovered or identified may generally be included only under special circumstances (see Section 4.1.3), and should be given generic target names.
- For SNAP proposals, the OS should describe a typical snapshot observation for one or a few of the targets. A complete and unique description of the target list should be provided in the ‘Scientific Justification’ section of the proposal (see Section 9.1).
- For Long-Term Programs, the OS should include information for *all* the proposed observations, not just the ones requested in Cycle 12.

- Parallel observations must be included in the OS, and marked as such using the relevant special requirement flags (see Table 8.1). Auto-parallel observations with ACS (see Section 4.2.3) should *not* be listed. For NICMOS, list all observations with all cameras which will be used for parallel observations.
- Target acquisition observations (see [Section 5.2 of the HST Primer](#)) need not be included in the OS, unless they are themselves used for scientific analysis.
- Normal calibration observations that are often or routinely taken (e.g., STIS wavelength calibration exposures or fringe flats) need not be included in the OS. However, the OS should include any special calibration exposures on internal sources or on external targets (see Section 4.3). Special internal calibrations should be listed separately from external calibration exposures. When these special calibrations require additional orbits, they should be specified. The need for these calibrations should be justified in the ‘Description of the Observations’ (see Section 9.2).
- The legal values of instrument parameters for Phase I proposals are available in the APT pull-down menus. Please refer to the Instrument Handbooks to determine which types of observations are actually feasible.

The OS consists of individual ‘observation blocks’, each containing several separate pieces of information.



All exposures for a given target that use the same ‘configuration’, ‘Science mode’ and ‘Coronagraphy’ mode may be summarized in a single observation block.

Observation blocks are numbered sequentially in the APT Phase I proposal form. Each observation block should include the items that are listed and discussed below in separate sub-sections.

8.14.1 Target Name

The target naming conventions for HST are defined in detail in the STScI [Phase II Proposal Instructions](#). A direct internet link to these conventions is available on the [Cycle 12 Announcement Web Page](#). Please adhere to these naming conventions throughout your proposal. For generic targets use a short text description either of the target location (e.g., **RANDOM-FIELD**) or of the target itself (e.g., **NEXT-SUPERNOVA**).

8.14.2 Coordinates

Supply the coordinates for fixed targets only. In Phase I, target positions with accuracies of order ± 1 arcmin are sufficient for the TAC and panel review (except in crowded fields where the identity of the target may be in question). However, in Phase II significantly more accurate coordinates are required, and it is the responsibility of the proposers to provide these. See the STScI Phase II documentation for details.

8.14.3 V-Magnitude

Supply the apparent *total* magnitude in the V passband for the entire target (galaxy, planet, etc.), if known. This information is used only for scientific review, not for exposure-time calculations. Note that some of the instruments have bright object safety limits. Observations that violate these limits are infeasible. See [Section 5.1 of the HST Primer](#), or the Instrument Handbooks (see [Section 1.4.3](#)) for details.

8.14.4 Configuration

Enter the Scientific Instrument configuration. A pull-down menu shows the available and allowed options.

8.14.5 Science Mode

Enter the science mode. A pull-down menu shows the available and allowed options (which depend on the choice of Configuration).

8.14.6 Coronagraphy

If you are proposing coronagraphic observations with STIS, NICMOS, or ACS, then set this keyword to 'yes'.

8.14.7 Selected Element(s)

Enter all of the desired spectral elements (i.e., filters and gratings) using the ‘Spectral Element Selection’ screen. Pull-down menus show the available and allowed options (which depend on the choice of Configuration and Science Mode). Note the following:

- Each line denotes a set of exposures with the same spectral elements. For example if you are taking 4 exposures with the B filter and 2 with the V filter, line 1 would give the B filter as Element 1, and line 2 would give the V filter as Element 1.
- Element 2 is used in the case when one filter is crossed with another. For example, if you are going to use the V band filter with a polarizer, the V filter would be Element 1 and the polarizer would be Element 2.
- If a STIS grating is used, then first select the grating and subsequently give the central wavelengths in Angstroms for the exposures.

8.14.8 Total Orbits

Enter the total number of orbits (i.e., the sum of the orbits for all the exposures to which the given observation block refers). Consult [Chapter 6 of the HST Primer](#) for instructions on how to calculate the appropriate number of orbits for your observations.

8.14.9 Special Requirement Checkboxes

Mark one or more of the special requirement checkboxes, if applicable. The meanings of the checkboxes are indicated in the table below. Note that for snapshot observations, only the ‘duplication’ checkbox is allowed.

Table 8.1: Special Requirement Flags for the Observation Summary

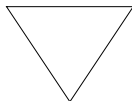
Flag	Use this flag for
Coordinated Parallel	All of the exposures specified in this observation block are to be done in coordinated parallel mode (see Section 4.2).
CVZ	Continuous Viewing Zone observations (see Section 4.1.1).
Duplication	Observations which duplicate or might be perceived to duplicate previous or upcoming GO and/or GTO exposures (see Section 5.2.1).
Low Sky	Low-sky observations (see Section 5.5.1 of the HST Primer).
Shadow	Shadow Time observations (see Section 5.5.2 of the HST Primer).
Target of Opportunity	Target-of-Opportunity observations (see Section 4.1.2).
Pure Parallel	All of the exposures specified in this observation block are to be done in pure parallel mode (see Section 4.2).

Preparation of the PDF Attachment

In this chapter . . .

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9.8 Previous Related HST Programs / 76

As described in Chapter 7, a Phase I proposal consists of a completed APT proposal form and an attached PDF file. The present chapter describes the items that must be addressed in the attached PDF file. As described in Section 7.2, template files are available in several popular word-processing environments for the creation of the PDF file. Chapter 8 describes the items that must be filled out in the APT proposal form.



Your PDF Attachment should obey the page limits discussed in Section 7.1.3. Note that there is a limit on the total number of pages, as well as on the amount of text in the ‘Scientific Justification’ section.

9.1 Scientific Justification

This section should present a balanced discussion of background information, the program's goals, its significance to astronomy in general, and its importance for the specific sub field of astronomy that it addresses. The members of the review panels will span a range of scientific expertise (see Section 6.1.1), so you should write this section for a general audience of scientists.

Depending on the type of proposal, the following items should also be included:

- GO Treasury, AR Legacy and Pure Parallel proposals should address the use to the astronomical community of the data products that will be generated by the program.
- SNAP proposals should provide a complete and unique description of the target sample.
- AR proposals should describe how the project improves upon or adds to the previous use of the data.
- Theory proposals should include a description of the scientific investigations that will be enabled by the successful completion of the program, and their relevance to HST.
- Calibration proposals should describe what science will be enabled by the successful completion of the program, and how the currently supported core capabilities, their calibrations, and the existing pipeline or data reduction software are insufficient to meet the requirements of this type of science.

9.2 Description of the Observations

(This item is required only for GO and SNAP proposals)

Please provide a short description of the proposed observations. Explain the amount of exposure time and number of orbits requested (e.g., number of objects, examples of exposure-time calculations and orbit estimates for some typical observations). You should summarize your target acquisition strategies and durations where relevant. For CVZ targets, state the number of CVZ opportunities available in the cycle.

Discuss and justify any non-standard calibration requirements (see Section 4.3). You should estimate the number of orbits required for these special calibrations, and include them in the OS (see Section 8.14).

Depending on the type of proposal, the following items should also be included:

- Long-term projects should provide summary information for the entire project, along with a cycle-by-cycle breakdown of the requested spacecraft orbits.
- Treasury Programs should discuss the data products that will be made available to the community, the method of dissemination, and a realistic time line. It is a requirement that data products be delivered to STScI in suitable digital formats for further dissemination via the HST Data Archive or related channels. Any required technical support from STScI and associated costs should be described in detail.
- Calibration proposals should present a detailed justification of how they will achieve the goals of the program, and if applicable, a description of the conditions under which these goals will be achieved.
- Calibration proposals should discuss what documentation, and data products and/or software will be made available to STScI to support future observing programs.

9.3 Special Requirements

(This item is required only for GO and SNAP proposals)

List and justify any special scheduling requirements, including requests for:

- Target of Opportunity (TOO) observations. For TOO observations, estimate the TOO's probability of occurrence during Cycle 12, and state how soon HST must begin observing after the occurrence (see Section 4.1.2).
- CVZ observations (see Section 4.1.1).
- Shadow time or Low-sky observations (see [Section 5.5 of the HST Primer](#)).
- Time-critical observations (see Section 4.1.4).
- Early acquisition observations (see [Section 5.2.1 of the HST Primer](#)).

- Target acquisitions that use the ‘Reuse target offset’ function (see [Section 5.2.2 of the HST Primer](#)).
- Real-time interactions (see [Section 4.1.5](#), and [Section 2.6.1 of the HST Primer](#)).
- Scheduling of STIS/MAMA and STIS/CCD observations (other than target acquisitions) in the same visit (see [Section 6.2.3 of the HST Primer](#)).
- Scheduling of coronagraphic observations in the same orbit with a roll of the spacecraft between observations (see [Section 6.2.3 of the HST Primer](#)).
- Requests for expedited data access (see [Section 7.2 of the Primer](#)).
- Other special scheduling requirements (e.g., requests for non-SAA impacted observations).

Also, if applicable, discuss the benefits of or need for a non-default proprietary period request (see [Section 5.1](#) and [Section 8.7](#)).

9.4 Coordinated Observations

(This item is required only for GO proposals)

If you have plans for conducting coordinated observations with other facilities that affect the HST scheduling, please describe them here (examples are coordinated or simultaneous observations with other spacecraft or ground-based observatories). Describe how the observations will affect the scheduling.

If you have plans for supporting observations that do *not* affect HST scheduling, then *don't* describe them here. If they improve your science case, then describe them in the ‘Scientific Justification’ section of the proposal (see [Section 9.1](#)).

A limited feasibility check on coordinated observations between HST and a few other observations (Chandra, XTE, and FUSE) may be performed via the Visual Observation Layout Tool ([VOLT](#)), developed at the Goddard Space Flight Center. See the VOLT web site for more information. Note that VOLT cannot be used for detailed (Phase II) scheduling of HST observations.

9.4.1 Joint HST-Chandra Observations

Proposers requesting joint HST-Chandra observations (see Section 3.7) *must* provide a full and comprehensive technical justification for the Chandra portion of their program. This justification must include:

- the choice of instrument (and grating, if used),
- the requested exposure time, justification for the exposure time, target count rate(s) and assumptions made in its determination,
- information on whether the observations are time-critical; indicate whether the observations must be coordinated in a way that affects the scheduling (of either the Chandra or the HST observations),
- the exposure mode and chip selection (ACIS) or instrument configuration (HRC),
- information about nearby bright sources that may lie in the field of view,
- a demonstration that telemetry limits will not be violated,
- a description of how pile-up effects will be minimized (ACIS only).

Technical documentation about Chandra is available from the [Chandra X-ray Center \(CXC\) Web Page](#), which also provides access to the Chandra Help Desk. The primary document is the Proposer's Observatory Guide, available from the [Chandra User Documents Web Page](#) and the [Chandra Proposer Web Page](#). Full specification of approved observations will be requested during the Chandra Cycle 5 period when detailed feasibility checks will be made.

Proposers requesting joint HST-Chandra observations must specify whether they were awarded Chandra time in a previous Chandra or HST cycle for similar or related observations.

9.4.2 Joint HST-NOAO Observations

Proposers requesting joint HST-NOAO observations (see Section 3.8) must provide a full and comprehensive technical justification for the NOAO portion of their program. This justification must include:

- the telescope(s) and instrument(s) on which time is requested,
- the requested observing time per telescope/instrument, a specification of the number of nights for each semester during which time will be required, a breakdown into dark, grey and bright time, and an explanation of how the required exposure time was estimated,

- information on whether the observations are time-critical; indicate whether the observations must be coordinated in a way that affects the scheduling (of either the NOAO or the HST observations),
- a description of any special scheduling or implementation requirements,

Successful proposers will be asked to supply additional details about the observations, i.e., the same details required for NOAO proposals for the particular telescope/instrument. This “Phase II - NOAO” information must be submitted by the April 30, 2003 NOAO deadline for the Fall 2003 semester. Submission instructions will be forthcoming following notification of the results of the HST review.

Technical documentation about the NOAO facilities is available from the [NOAO Web Page](#). Questions may be directed to the NOAO Proposal Help Desk by email to noaoprop-help@noao.edu. NOAO will perform feasibility checks on any approved proposals.

Proposers requesting joint HST-NOAO observations must specify whether they were recently (in the last two years) awarded NOAO time for similar or related observations.

A full and comprehensive scientific justification for the requested NOAO observing time and facilities must be given in the ‘Scientific Justification’ section of the proposal (see Section 9.1).

9.5 Justify Duplications

(This item is required only for GO and SNAP proposals)

Justify, on a target-by-target basis, any potential duplication with previously accepted GO or GTO observing programs. Use the ‘Duplication’ checkbox in the OS (see Section 8.14) to identify the duplicating observations. See Section 5.2.1 for policies on duplications.

9.6 Analysis Plan

(This item is required only for AR and Theory proposals)

All AR proposals should provide a detailed data analysis plan. Describe the data sets that will be analyzed and estimate how many data sets will be analyzed. Inclusion of a complete target list is not required. Discuss available resources, individual responsibilities where appropriate, and how the analysis will allow you to achieve your objectives.

Legacy AR proposals should also discuss the data products that will be made available to the community, the method of dissemination, and a realistic time line. It is a requirement that data products be delivered to STScI in suitable digital formats for further dissemination via the HST Data Archive or related channels. Any required technical support from STScI and associated costs should be described in detail.

Theory proposals should discuss the types of HST data that will benefit from the proposed investigation, and references to specific data sets in the HST Data Archive should be given where possible. They should also describe how the results of the theoretical investigation will be made available to the astronomical community, and on what time scale the results are expected.

Calibration proposals should discuss what documentation, and data products and/or software will be made available to STScI to support future observing programs.

9.7 Budget Narrative

(This item is required only for AR and Theory proposals)

Describe concisely, but completely, what the requested funds will support (if awarded). Use words rather than dollar amounts (e.g., 3 months of support, including overhead and fringe benefits, for a graduate student who will work on the data reduction, and a 18 GByte hard disk drive for storage of the data and data analysis products). Provide a justification for why the requested items are necessary to achieve the goals of the program. See Chapter 12 for details on Grant Policies and allowable costs.

9.8 Previous Related HST Programs

Please list the program number and status of the data for all accepted GO/SNAP/AR programs of the PI which are relevant to the current proposal. Include a list of *major* publications resulting from the previous HST observations and provide a sentence or two describing the significance of each paper. Related publications based on theory and/or data from other telescopes should be included. Unpublished data from early cycles should be explained. A significant publication record will be regarded by the Review Panels and TAC as a strong plus. GTO programs and publications may be included at the PI's discretion.



CHAPTER 10:

Proposal Implementation and Execution

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10.1 Notification

The panels and the TAC will meet approximately two months after the proposal submission deadline. Electronic notification of the outcome of the Phase I selection process will be sent to all proposers within a few weeks thereafter (early April 2003). The comments on the proposal from the panel will be sent about 4 weeks after the notification emails.

10.2 Phase II Submission

Successful GO/SNAP proposers must submit a Phase II program which provides complete details of the proposed observations. Detailed instructions on the preparation of Phase II programs are provided in the STScI Phase II documentation. Complete observational details must be provided by the Phase II submission deadline, approximately one and one half months after notification of the Phase I outcome (i.e., mid-May 2003). Accurate target coordinates must also be supplied at this time, except for certain Targets of Opportunity (or in other exceptional circumstances, provided that these circumstances were clearly described in the Phase I proposal). Failure to submit a Phase II program by the required deadline *will* result in loss of the time allocation. Program changes after the Phase II deadline are not generally allowed, but may be allowed in special situations. The policies that apply to such changes are described in the [Policy Document for the Telescope Time Review Board \(TTRB\)](#), available on the Web.

Proposers are not allowed to make changes to the list of investigators (PI and CoIs) after acceptance of the Phase I proposal, unless permission for this is granted by the Head of the Science Policies Division. Requests for this should be well-justified, and must be submitted to spd_staff@stsci.edu.

10.3 Program Coordinator and Contact Scientist Support

Accepted observing programs are assigned a Program Coordinator (PC), whose role is to help the observer deliver a Phase II program that is syntactically correct and will schedule successfully on the telescope.

Selected programs (e.g., Target of Opportunity or moving target programs, or those using complicated observing strategies) will also be assigned a Contact Scientist (CS). The role of the CS is to provide advice on observing strategies, and to answer specific questions about instrument performance. Observers who are not automatically assigned a CS may request one. The CS is generally an Instrument Scientist involved in the calibration and characterization of the primary instrument used in the observer's program.

10.4 Duplication Checking

Some computer-aided duplication checks are carried out in Phase II, in part by STScI and also by observers who wish to check whether any of their own observations are being duplicated. Any duplications found that were not explicitly justified in the Phase I proposal *and* recommended by the review panels or TAC will be disallowed. No compensatory observing time will be allowed and the observing time will be removed from the allocation.

10.5 Technical Review

In Phase I, STScI does not perform technical reviews for the majority of the submitted proposals (exceptions include, e.g., Calibration, TOO and Treasury proposals). However, in Phase II a full technical feasibility review is performed for all proposals. Special attention is given to observations that are particularly complex, are human and technical resource-intensive, or require the use of limited resources (such as real-time acquisitions or TOO programs). All technically challenging or infeasible observations are flagged. Note that it is the responsibility of the PI to ensure that none of the observations violate bright objects constraints (see [Section 5.1 of the HST Primer](#)).

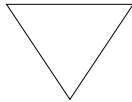
10.6 Proposal Scheduling

After Technical Review, observations determined to be feasible are scheduled for execution. The scheduling process attempts to optimize the overall HST efficiency. STScI will not contemplate requests to advance or postpone the scheduling of individual programs based on other considerations, with the possible exception of compelling scientific arguments.

10.7 Unschedulable or Infeasible Programs

Proposers should be aware that after acceptance of a proposal, the actual execution of the observations may in some cases prove impossible. Possible reasons include:

- The accepted observation may be found to be infeasible or extremely difficult for technical reasons only after receipt of the Phase II information; TOO and time-critical observations can be particularly complex to plan and execute, and will be completed only to the extent that circumstances allow.
- The observing mode or instrument selected may not be operational; or
- Suitable guide stars or scheduling opportunities may not exist.



Hence: All HST observations are accepted with the understanding that there can be no guarantee that the observations will actually be obtained.

Note also that the STScI Director reserves the right to disallow at any time any or all observations of an approved program if it is demonstrated that incorrect or incomplete information was provided in the Phase I proposal that may have significantly influenced the approval recommendation by the review panels or TAC.

10.8 Access to Data Products

Data products are stored in the HST Data Archive. Any processing or scientific analysis of the data beyond the standard “pipeline” calibrations performed by STScI are the responsibility of the observer.

Observers retrieve their data directly from the Data Archive, either through the MAST web site or the StarView interface. In order to retrieve proprietary data from the Archive, proposal PIs and those designated by them must first register as Archive users. This can be done through the [Data Archive Registration Web page](#) on the MAST web site. STScI plans to eliminate the need to register as an archive user for retrieval of non-proprietary data from the HST Data Archive. An update on the status of registration will be [posted](#) when the modified archive distribution

software is implemented. HST data normally become non-proprietary one year after they are taken.

The HST [Data Handbook](#) describes the data that are produced by the instruments. The [Space Telescope Science Data Analysis Software \(STSDAS\) Web Page](#) has links to the software that is used to calibrate and analyze HST data, and to documentation on its use (see also [Section 7.1.1 of the HST Primer](#)).

- Observers with questions about the *retrieval* of their data should contact the [Archive Hotseat](#) (see Appendix A.1).
- Observers with questions about the *analysis and calibration* of their data should contact the STScI Help Desk (see Section 1.5).

10.9 Archival Research Support

STScI provides limited assistance in the reduction and analysis of archived data. Although a Contact Scientist is not usually assigned to a funded AR program, STScI will do so upon request. The CS will serve as a single point of contact to help resolve calibration and data analysis issues. However, proposers should plan to conduct the bulk of their archival research at their home institutions, and should request funds accordingly. Limited resources preclude extensive assistance in the reduction and analysis of data by non-funded archival researchers.

- Archival Researchers with questions about the *retrieval* of data should contact the [Archive Hotseat](#) (see Appendix A.1).
- Archival Researchers with questions about the *analysis and calibration* of data should contact the STScI Help Desk (see Section 1.5).

10.10 Visits to STScI

After observations have been obtained, observers who are new to HST may find it useful to visit STScI for 2-3 days to learn how to deal with their data. Also, in cases of particularly complex or difficult programs, observers may consider visiting STScI before the Phase II deadline.

Expenses for such visits to STScI can be included in budgets for STScI grant funding if they conform to STScI's General Grant Provisions (see Chapter 12 for details).

Visits can be arranged through the STScI Help Desk (see Section 1.5). Observers who visit STScI will be assisted by STScI staff to the extent that resources permit.

10.11 Failed Observations

HST observations fail at a rate of a few percent. Some of these failures result from occasional guide stars that cannot be acquired, or from an instrument anomaly, or the telescope happening to be in a safe mode when a particular observation was scheduled. Such failures, which are obviously beyond the proposer's control, are usually rescheduled for an automatic repeat. When this is the case, the proposer receives a notice to this effect.

A smaller fraction of failures do not have a clear cause, and may not be evident from our internal reviews of data quality. If you believe your observation has failed or is seriously degraded, then you may request a repeat using the [Hubble Observation Problem Report \(HOPR\) Web Form](#). The HOPR must be filed within 90 days after the observations are taken. In cases where the failure resulted from proposer error (e.g., incorrect target coordinates), a repeat will not be granted. In cases where the failure was a result of incorrect instrument performance, or incorrect information provided by STScI, a repeat is usually granted.

The policies that apply to failures and repeats are described in the [Policy Document for the Telescope Time Review Board \(TTRB\)](#), available on the Web. We wish to emphasize in particular:

- Standard policy dictates that if observations are to be repeated, the degraded/failed observations will be made public.
- If an observer has obtained more than 90% of the planned observations and the missing data are not uniquely important, then a repeat is not normally granted.
- If a snapshot or pure parallel exposure fails during execution it will *not* be repeated, regardless of the cause of the failure.
- Observations taken using Available-but-Unsupported modes that fail due to the use of the unsupported mode will not be repeated.
- Observations that are lost due to bright object violations will not be repeated.

10.12 Publication of HST Results

It is expected that the results of HST observations and Archival Research will be published in the scientific literature. All publications based on HST data must carry the following footnote (with the first phrase in brackets included in the case of Archival Research):

“Based on observations made with the NASA/ESA Hubble Space Telescope, obtained [from the Data Archive] at the Space Telescope Science Institute, which is operated by the Association of Universities for Research in Astronomy, Inc., under NASA contract NAS 5-26555. These observations are associated with program # ____.”

If the research was supported by a grant from STScI, the publication should also carry the following acknowledgment at the end of the text:

“Support for program #____ was provided by NASA through a grant from the Space Telescope Science Institute, which is operated by the Association of Universities for Research in Astronomy, Inc., under NASA contract NAS 5-26555.”

The relevant program ID should be entered in these phrases where indicated.

One *preprint* of each publication based on HST research should be sent as early as possible to the following addresses:

- Dr. David Leckrone, HST Senior Scientist, Code 440, Goddard Space Flight Center, Greenbelt, MD 20771 USA (dleckrone@hst.nasa.gov).
- Office of Public Outreach, STScI, 3700 San Martin Drive, Baltimore, MD 21218, USA (villard@stsci.edu).
- Librarian, Space Telescope Science Institute, 3700 San Martin Dr., Baltimore, MD 21218, USA (library@stsci.edu).

If desired, the OPO and Library copies can both be sent to the Library. It is also acceptable to send a link to an online version of the preprint by email. Note that this requirement includes both refereed and non-refereed publications, but *not* abstracts or poster papers. It is important to maintain the accuracy and completeness of the HST bibliography. Also, the advance information provided by a preprint is important for planning and evaluation of the scientific operation of the HST mission, and may be used for the selection and preparation of press releases.

10.13 Dissemination of HST Results

We remind HST observers that they have a responsibility to share interesting results of their HST investigations with the public at large. The Office of Public Outreach (OPO) of STScI is available to help observers use their HST data for public information and education purposes. Proposers can find guidelines and examples of these activities on the OPO Web page that discusses the [Release of Scientific Findings to the Public](#).

The Hubble Heritage project aims to give wide exposure to HST observations that are visually stimulating to the lay public. Investigators who feel that their data may be relevant to the Hubble Heritage project, either as-is, or with a small investment of extra observing time (for example to obtain an extra waveband) are encouraged to send an email to heritage@stsci.edu. Information on the project is available at the [Hubble Heritage Project Web Page](#).

Education & Public Outreach Proposals

In this chapter . . .

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11.2 HST E/PO Proposals / 86

11.3 The Initiative to Develop Education Through Astronomy and Space Science (IDEAS) Grant Program / 87

11.1 NASA OSS E/PO Policies

The NASA Office of Space Science (OSS) has developed a comprehensive approach to providing educational outreach to all educational levels as well as enhancing the public understanding of space science. OSS has incorporated these objectives as integral components of all its missions and research programs. There are two documents that establish the basic policies and guidelines for all NASA and OSS Education and Public Outreach (E/PO) activities:

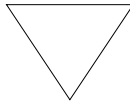
- NASA Strategic Plan
- The OSS/EPO Strategy

These documents are available on the [NASA Office of Space Science web site](#).

11.2 HST E/PO Proposals

In accordance with these OSS E/PO policies, 2% of the HST Cycle 12 budget has been allocated for E/PO funding. STScI announces the opportunity for *accepted* U.S. HST Cycle 12 GO/AR/SNAP or Theory investigators and current Hubble Fellows to submit proposals for an E/PO supplement to the parent research program. Guaranteed Time Observers (see Section 3.10) are not eligible to apply for an HST Cycle 12 E/PO Grant.

The spirit of the HST Cycle 12 E/PO Grant Program is to encourage collaborative efforts between professional astronomers/space scientists and professional educators that would broaden the knowledge and understanding of the latest discoveries of the Hubble Space Telescope. The HST Cycle 12 E/PO proposal should have intellectual linkage to the parent research program that would provide educational institutions with current astronomy/space science content. Up to \$10,000 per year may be proposed for an E/PO program, with a possible teamed GO/AR/SNAP effort of up to \$50,000.



The HST Cycle 12 E/PO Grant Program's Call for Proposals will be released on the program's web site at the beginning of June 2003. The deadline for submitting an HST Cycle 12 E/PO proposal is Friday August 22, 2003 at 5:00 p.m. EDT. For more information or questions about the HST Cycle12 E/PO Grant program, please send email to cycle_epo@stsci.edu.

11.2.1 Assistance for the Preparation of E/PO Proposals

The Office of Space Science has established the Education Support Network, which is a national space science education/public outreach infrastructure to directly aid astronomy/space science personnel in identifying and developing high quality E/PO opportunities and establishing partnerships between the space science and E/PO communities. The purpose of this infrastructure is to provide coordination, background, linkages, and services needed for a vital, national, coordinated, long-term E/PO program. Of particular interest to proposers are two elements as follows:

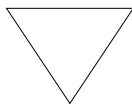
The Initiative to Develop Education Through Astronomy and Space Science (IDEAS) ■

- Four OSS theme-oriented Forums have been established to help orchestrate and organize the education aspects of OSS space science missions in a comprehensive way.
- Seven regional E/PO Broker/Facilitators have been selected to search out and establish high leverage opportunities, arrange alliances between educators and OSS-supported scientists, and help scientists turn results from space science missions and programs into educationally appropriate activities to be disseminated regionally and nationally.

Prospective proposers are strongly encouraged to make use of these infrastructure resources to help identify suitable E/PO opportunities and arrange appropriate alliances. Points of contact and addresses for all of the E/PO Forums and Broker/Facilitators may be found at the [Space Science Education/Public Outreach Support Organizations](#) web site.

11.3 The Initiative to Develop Education Through Astronomy and Space Science (IDEAS) Grant Program

The Initiative to Develop Education through Astronomy and Space Science (IDEAS) Grant Program is another education and public outreach grant program that is administered by STScI. It provides start up funding for creative education and informal science programs that feature collaboration between astronomers/space scientists and education professionals. The mission is to find ways to translate astronomy/space science for education and informal science communities to stimulate the interest of students and the general public as well as to help them better understand the universe.



The 2003 Call for Proposals can be found on the [IDEAS](#) web site. The proposal submission deadline is Friday, October 24, 2003 at 5:00 p.m. ET. For more information about the IDEAS Grant Program, please send email to ideas@stsci.edu.

Grant Funding and Budget Submissions

In this chapter . . .

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12.3 Allowable Costs / 91
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12.5 Award of Funds / 92

12.1 Overview

Subject to availability of funds from NASA, STScI will provide financial support to eligible investigators of approved Cycle 12 programs. Such funding is awarded under the general conditions contained in the document General Grant Provisions of the Space Telescope Science Institute, referred to hereafter as the ‘General Grant Provisions’. The most recent version of this document is available at the STScI Grants Administration Office Web Page.

Budgets are not due in Phase I, but are required in Phase II from successful (GO, SNAP, AR, Theory and E/PO) proposers only. Separate budgets must be submitted by all investigators who request funding. Investigators who are not eligible for or who do not request funding do not need to send a budget. Detailed instructions for budget preparation and submission using the Grant Management System will be sent to successful proposers after the Phase I review has been completed.

Below we present a brief overview of the STScI funding policies and procedures. The information presented here is of an introductory nature only, and is not intended to be complete. The governing policies are always those contained in the General Grant Provisions. Investigators preparing AR or Theory proposals should not include in the total dollar amount (see Section 8.6.3) and budget narrative (see Section 9.7) of their Phase I proposal any costs that violate the General Grant Provisions.

Questions concerning funding policies and budget submissions should be directed to the STScI Grants Administration Office (see Appendix A.1).

12.2 Eligibility for STScI Grant Funds

Proposals for funding will be accepted from Universities and other nonprofit research institutions, private for-profit organizations, Federal employees, and unaffiliated scientists. *Only U.S. PIs and CoIs* are eligible to request funding.

U.S. Investigators are defined to be those investigators that fall in one of the following categories:

- U.S. Citizens residing in the U.S., or abroad if salary and support are being paid by a U.S. institution.
- U.S. Permanent residents and foreign national scientists working in and funded by U.S. institutions in the U.S.

These definitions include U.S. CoIs on observing projects with non-U.S. PIs.

Proposals by non-U.S. PIs that have one or more U.S. CoIs *must* designate one of the U.S. CoIs as the ‘Administrative PI’ (see Section 8.13). This person will have overall oversight and responsibility for the budget submissions of the U.S. CoIs.

When a U.S. investigator obtains grant funds for a project that also involves non-U.S. investigators, then no funding may flow through the U.S. investigator to the non-U.S. investigators.

12.3 Allowable Costs

Support may be requested for the acquisition, calibration, analysis, and publication of HST data, and related costs. Costs of the following types may be acceptable, if they conform to the General Grant Provisions:

- Salaries and wages.
- Costs for individuals providing research assistance, such as graduate students, post-doctoral research associates or science data aides.
- Fringe benefits.
- Publication costs.
- Travel.
- Computer services.
- Permanent equipment.
- Materials and supplies.
- Indirect costs.
- Funds to support ground-based observations.

Some of these costs should not amount to more than a certain absolute amount, or percentage of the total budget (this is the case, e.g., for funds to support ground-based observations). Please refer to the General Grant Provisions for details.

For-profit organizations should note that profit is not an allowable cost.

Preparatory funding may be requested if necessary to prepare for the receipt of HST data. Proposers may request up to 25% of the funds for their programs to be awarded prior to the start of the Cycle 12 observing schedule. Preparatory funds are part of the overall funding allocated for the program, and are not additional funds. Note that all pre-award expenditures are incurred at the risk of the investigator, and that all funding is contingent upon the availability of funds from NASA at the time the award is made.

12.4 Grant Period

It is anticipated that STScI will award funding for a period of one to two years, depending on the nature and complexity of the project. If the requested support is for more than one year, funding for the project will be on an annual basis, with additional funding for each subsequent grant year awarded after a favorable review of an annual performance report that will be required.

Long-term projects that are approved for more than one cycle of observations will be funded on an annual basis. A budget for the analysis of current cycle observations must be submitted with an estimate of the funding requirements for subsequent cycles. Funding for subsequent cycles will be provided through an amendment to an existing STScI grant after the receipt of a detailed budget for each subsequent cycle by the budget deadline for that cycle.

12.5 Award of Funds

Near the start of Cycle 12, each PI or Administrative PI of a program that has requested funding will receive notification from the STScI Director concerning the specific funding allocation. It is anticipated that requested preparatory funding will be awarded soon thereafter. Additional funding up to the approved funding allocation will be awarded after the receipt of observational data for the given program.



APPENDIX A:

Contact Information

In this appendix . . .

A.1 Space Telescope Science Institute / 93
A.2 Space Telescope - European Coordinating Facility / 94
A.3 Canadian Astronomy Data Centre / 95
A.4 National Astronomical Observatory of Japan / 95

A.1 Space Telescope Science Institute

Internet:

<http://www.stsci.edu/>

Address:

3700 San Martin Drive, Baltimore, Maryland 21218, USA

Telephone:

[1] 410-338-xxxx (where xxxx is the extension number)

Main switchboard extension: 4700

Fax:

ext: 4767

STScI Help Desk:

ext: 1082; email: help@stsci.edu

from within the U.S. call toll-free: 1-800-544-8125

Archive Hotseat:

ext: 4547; email: archive@stsci.edu

Director's Office:

Director: Steven Beckwith; ext: 4710; email: svwb@stsci.edu

Science Policies Division:

Head: Duccio Macchetto; ext: 4790; email: macchetto@stsci.edu

Technical Manager: Brett Blacker; ext: 1281; email: blacker@stsci.edu

Grants Administration Office:

Manager: Elyse Wagner; ext: 4200; email: wagner@stsci.edu
Branch Chief: Ray Beaser; ext: 4200; email: beaser@stsci.edu

Office of Public Outreach:

Head: Ian Griffin; ext: 4567; email: griffin@stsci.edu

Observation and Data Management Division:

Observation Planning Branch Chief: Denise Taylor; ext: 4824; email: dctaylor@stsci.edu

Instruments Division:

ACS Branch Chief: Roeland van der Marel; ext 4931; email: marel@stsci.edu

NICMOS Branch Chief: Daniela Calzetti; ext 4518; email: calzetti@stsci.edu

STIS Branch Chief: Paul Goudfrooij; ext 4981; email: goudfroo@stsci.edu

WFPC2 Branch Chief: Brad Whitmore; ext: 4474; email: whitmore@stsci.edu

A.2 Space Telescope - European Coordinating Facility

Internet:

<http://www.stecf.org/>

Address:

ST-ECF, European Southern Observatory, Karl-Schwarzschild-Strasse 2, D-85748 Garching bei München, Germany

Telephone:

[49] 89-320-06-291

Fax:

[49] 89-320-06-480

Email:

stdesk@eso.org

Comments:

The ST-ECF provides assistance to HST users in Europe. The ST-ECF produces a Newsletter, which, although aimed primarily at European HST users, includes articles of general interest to the HST community. To receive the Newsletter, send full name and postal address to the ST-ECF email address.

A.3 Canadian Astronomy Data Centre

Internet:

<http://cadcwww.hia.nrc.ca/>

Address:

CADC, Dominion Astrophysical Observatory, 5071 W. Saanich Rd., Victoria, B.C. V8X 4M6, Canada

Telephone:

[1] 604-363-0025

Email:

cadc@dao.nrc.ca

Comments:

The CADC provides assistance to HST users in Canada.

A.4 National Astronomical Observatory of Japan

Internet:

<http://dbc.nao.ac.jp/>

Address:

NAOJ, 2-21-1, Osawa, Mitaka-City, Tokyo, 181-8588, Japan

Telephone:

[1] 422-34-3600

Email:

data_center@dbc.nao.ac.jp

Comments:

The NAOJ provides assistance to HST users in Japan.

Scientific Keywords

The Tables in this Appendix list the Scientific Keywords that are valid for use in the Phase I proposal template (see Section 8.9).

Table B.1: Generic Keywords

ABSORPTION LINES	IMAGING
ASTROMETRY	MULTIWAVELENGTH STUDY
CALIBRATION	RADIATIVE TRANSFER
CHEMICAL ABUNDANCES	SPECTROSCOPY
DYNAMICS	SURVEY
DUST	THEORY
EMISSION LINES	VARIABILITY
EVOLUTION	

Table B.2: Solar System Keywords

ASTEROIDS	PLANETARY PLASMAS
COMETS	PLANETARY SATELLITES
EXOSPHERIC ATMOSPHERES	RINGS AROUND PLANETS
GIANT PLANETS	SUPPORT OF NASA PLANETARY MISSIONS
KUIPER BELT OBJECTS	SURFACES OF PLANETS/MOONS/OTHER
PLANETARY ATMOSPHERES	TERRESTRIAL PLANETS
PLANETARY INTERIORS	

Table B.3:Galactic Keywords

ATMOSPHERES AND CHROMOSPHERES	OLD FIELD STARS
CENTRAL STARS OF PLANETARY NEBULAE	OPEN STAR CLUSTERS
CLUSTER BINARY STARS AND BLUE STRAGGLERS	PLANETARY NEBULAE
DETACHED BINARIES	PROTO-PLANETARY DISKS
ECLIPSING BINARIES	PROTO-PLANETARY NEBULAE
ERUPTIVE BINARY STARS AND CATAclysmic VARIABLES	STAR COUNTS
EXTRA-SOLAR PLANETS	STELLAR ACTIVITY
GALACTIC BULGE	STELLAR EVOLUTION AND MODELS
GALACTIC CENTER	SUBDWARFS
GALACTIC DISK	SUPERNOVA REMNANTS
GALACTIC HALO	T TAURI STARS
GIANTS AND AGB STARS	UV-BRIGHT STARS
HERBIG-HARO OBJECTS	VARIABLE AND PULSATING STARS
LOW-MASS AND COOL STARS	VERY LOW MASS STARS AND BROWN DWARFS
MAIN SEQUENCE STARS	WHITE DWARFS
MASSIVE STARS	WINDS/OUTFLOWS/MASS-LOSS
NEUTRON STARS AND PULSARS	WOLF-RAYET STARS
NOVAE	X-RAY BINARIES
PECULIAR BINARY STARS	YOUNG STARS AND PROTOSTELLAR OBJECTS

Table B.4:Galactic or Extra-Galactic Keywords

ACCRETION DISKS	JETS
BLACK HOLES	MICROLENSING
DARK MATTER	MOLECULAR CLOUDS
GLOBULAR CLUSTERS	STAR FORMATION
H II REGIONS	RESOLVED STELLAR POPULATIONS
INTERSTELLAR AND INTERGALACTIC MEDIUM	

Table B.5: Extra-Galactic Keywords

AGN PHYSICS	HUBBLE DEEP FIELDS
BAL QUASARS	INTERACTING AND MERGING GALAXIES
BL LAC OBJECTS AND BLAZARS	INTRACLUSTER MEDIUM
CLUSTERS OF GALAXIES	IR-LUMINOUS GALAXIES
COOLING FLOWS	IRREGULAR GALAXIES
COSMOLOGICAL PARAMETERS AND DISTANCE SCALE	LARGE SCALE STRUCTURE AND PECULIAR VELOCITIES
DAMPED LYMAN-ALPHA ABSORPTION SYSTEMS	LINERS
DWARF GALAXIES	LOCAL GROUP GALAXIES
ELLIPTICAL GALAXIES	MAGELLANIC CLOUDS
GALAXY BULGES	LOW SURFACE BRIGHTNESS GALAXIES
GALAXY CENTERS	LYMAN-ALPHA FOREST CLOUDS
GALAXY DISKS	METAL ABSORPTION SYSTEMS
GALAXY FORMATION AND EVOLUTION	RADIO GALAXIES
GALAXY HALOS	RADIO-LOUD QUASARS
GALAXY MORPHOLOGY AND STRUCTURE	RADIO-QUIET QUASARS
GAMMA-RAY BURSTS	SEYFERT GALAXIES
GLOBULAR CLUSTER SYSTEMS	SPIRAL GALAXIES
GRAVITATIONAL LENSING	STARBURST GALAXIES
GROUPS OF GALAXIES	STELLAR POPULATIONS IN EXTERNAL GALAXIES
HIGH REDSHIFT GALAXIES	SUPERNOVAE
HOST GALAXIES	YOUNG STAR CLUSTERS IN EXTERNAL GALAXIES

Glossary of Acronyms and Abbreviations

ACIS	AXAF CCD Imaging Spectrometer
ACS	Advanced Camera for Surveys
APT	Astronomer's Proposal Tool
AR	Archival Research
ATP	Astrophysics Theory Program
AURA	Association of Universities for Research in Astronomy, Inc.
CADC	Canadian Astronomy Data Centre
CCD	Charge-Coupled Device
CoI	Co-Investigator
CPAR	Coordinated Parallel Observation
CS	Contact Scientist
CVZ	Continuous Viewing Zone
CXC	Chandra X-ray Center
DD	Director's Discretionary
DEC	Declination
DUP	Duplicate Observation
EDT	Eastern (U.S.) Daylight-savings Time
EST	Eastern (U.S.) Standard Time

E/PO	Education/Public Outreach
ESA	European Space Agency
EST	Eastern (U.S.) Standard Time
FGS	Fine Guidance Sensor(s)
FTP	File Transfer Protocol
FUV	Far Ultraviolet
GO	General Observer
GSFC	Goddard Space Flight Center
GTO	Guaranteed Time Observer
HDF	Hubble Deep Field
HET	Hobby-Eberly Telescope
HOPR	Hubble Observation Problem Report
HRC	High Resolution Channel (on ACS) or High Resolution Camera (on Chandra)
HST	Hubble Space Telescope
HTML	Hyper Text Markup Language
IDEAS	Initiative to Develop Education through Astronomy and Space Science
IR	Infrared
LOW	Low Sky Background
MAMA	Multi-Anode Microchannel Array
MAST	Multi-mission Archive at Space Telescope
MMT	Multiple Mirror Telescope
NASA	National Aeronautics and Space Administration
NICMOS	Near Infrared Camera and Multi-Object Spectrometer
NOAO	National Optical Astronomy Observatory
NUV	Near Ultraviolet
NVO	National Virtual Observatory
OS	Observation Summary

OSS	Office of Space Science
PAEC	Planned and Archived Exposures Catalog
PC	Planetary Camera or Program Coordinator
PDF	Portable Document Format
PI	Principal Investigator
PPAR	Pure Parallel Observation
RA	Right Ascension
SAA	South Atlantic Anomaly
SBC	Solar Blind Channel
SHD	Shadow Time
SIRTF	Space Infra-Red Telescope Facility
SM	Servicing Mission
SNAP	Snapshot
STAC	Space Telescope Advisory Committee
ST-ECF	Space Telescope - European Coordinating Facility
STIS	Space Telescope Imaging Spectrograph
STScI	Space Telescope Science Institute
STSDAS	Space Telescope Science Data Analysis Software
TAC	Telescope Allocation Committee
TOO	Target of Opportunity
U.S.	United States
UTC	Coordinated Universal Time
UV	Ultraviolet
VTT	Visual Target Tuner
WFC	Wide Field Camera (on WFPC2) or Wide Field Channel (on ACS)
WF/PC	Wide Field and Planetary Camera 1
WFPC2	Wide Field and Planetary Camera 2

Internet Links

APT (Astronomer's Proposal Tool)

<http://apt.stsci.edu/>

Archival Pure Parallel Program

<http://archive.stsci.edu/hst/parallels/>

Canadian Astronomy Data Centre

<http://cadwww.hia.nrc.ca/>

Chandra Proposer Information

<http://asc.harvard.edu/prop.html>

Chandra User Documents

<http://asc.harvard.edu/udocs/docs/docs.html>

Chandra X-ray Observatory

<http://chandra.harvard.edu/>

Chandra X-ray Center (CXC)

<http://asc.harvard.edu/>

CVZ Tables

http://www.stsci.edu/spd/cycle12/CVZ_Tables.html

Cycle 11 Approved Programs

<http://www.stsci.edu/ftp/proposer/cycle11/cy11-approve.html>

Cycle 12 Announcement Web Page

<http://www.stsci.edu/spd/cycle12/announce.html>

Data Archive

<http://archive.stsci.edu/>

Data Archive Registration

<http://archive.stsci.edu/registration.htm>

Data Handbook

http://www.stsci.edu/hst/HST_overview/documents/datahandbook

DD Submission Template

<http://www.stsci.edu/ftp/proposer/dd.html>

Duplication Checking

<http://archive.stsci.edu/cgi-bin/duplication>

General Grant Provisions of the Space Telescope Science Institute

<http://www.stsci.edu/ftp/stsci/grants/ggp302.pdf>

Grants Administration Office

<http://www.stsci.edu/ftp/stsci/grants/>

Grants Management System

<http://gms.stsci.edu/>

HST Cycle 12 E/PO Program

<http://cycle-epo.stsci.edu/>

HST Program Information

<http://www.stsci.edu/public/propinfo.html>

HST Proposal Catalogs

<http://archive.stsci.edu/hst/catalogs.html>

HST Treasury/Large/Legacy Programs

<http://archive.stsci.edu/hst/tall.html>

Hubble Deep Field (HDF)

<http://www.stsci.edu/ftp/science/hdf/hdf.html>

Hubble Deep Field-South (HDF-S)

<http://www.stsci.edu/ftp/science/hdfsouth/hdfs.html>

Hubble Heritage Project

<http://heritage.stsci.edu/>

Hubble Observation Problem Report

<http://www.stsci.edu/public/request.html>

Hubble Second Decade Committee Treasury Program Report

http://sso.stsci.edu/second_decade/recommendations/index.html

IDEAS (Initiative to Develop Education through Astronomy and Space Science)

<http://ideas.stsci.edu/>

Multi-mission Archive at STScI (MAST)

<http://archive.stsci.edu/mast.html>

NASA Office of Space Science (OSS)

<http://www.hq.nasa.gov/office/oss/>

NASA/OSS E/PO Support Network

<http://spacescience.nasa.gov/education/resources/ecosystem/index.htm>

NASA/OSS Strategic Planning and Policy

<http://spacescience.nasa.gov/admin/pubs/index.htm>

National Astronomical Observatory of Japan

<http://dbc.nao.ac.jp/>

National Optical Astronomy Observatory (NOAO)

<http://www.noao.edu/>

NOAO/NASA Collaboration Web Page

<http://www.noao.edu/gateway/nasa/>

Origins Forum

<http://origins.stsci.edu/>

Planned and Archived Exposures Catalog

<http://archive.stsci.edu/hst/catalogs.html>

Policy Document for the Telescope Time Review Board (TTRB)

http://www.stsci.edu/hst/HST_overview/documents/uir/UIR_policy_0207

Release of Scientific Findings to the Public

<http://outreachoffice.stsci.edu/news/newspolicy.shtml>

Scientific Instruments

http://www.stsci.edu/hst/HST_overview/instruments

SIRTF Legacy Program

<http://sirtf.caltech.edu/SciUser/legacy/>

SNAP User Information Report

http://www.stsci.edu/hst/HST_overview/documents/

Space Telescope - European Coordinating Facility

<http://www.stecf.org/>

Space Telescope Science Data Analysis Software (STSDAS)

<http://stdas.stsci.edu/STSDAS.html>

Space Telescope Science Institute

<http://www.stsci.edu/>

StarView

<http://starview.stsci.edu/>

Visual Observation Layout Tool (VOLT)

<http://pioneer.gsfc.nasa.gov/public/volt/home.html>

Virtual Observatory Forum

<http://www.voforum.org/>

