STIS Cycle-7 Calibration Plan

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Overview

These pages provide an overview of the STIS Cycle-7 calibration plan.

Servicing Mission Orbital Verification (SMOV) provided a good indication that STIS works and will produce science data close to the quality anticipated prior to launch. While there were reasonably thorough tests of instrument performance during SMOV, many basic calibrations remained, as well as the assessment and monitoring of the long-term stability of the instrument (in terms of sensitivity, cosmetic defects, thermal drifts, dark current, etc.). The cycle-7 calibrations are thus critical for most of the science observations and it is in every observer's interest to become familiar with the calibration plan.

There are not enough orbits to provide a direct calibration of the dispersion solution, sensitivity, PSF, scattered light, etc. for every mode, or even every supported mode on STIS. The philosophy in developing the calibration plan has been to obtain calibration observations for a carefully selected set of modes (e.g. several prime grating settings for a given mode, including the most frequently used settings) and derive calibrations for the intermediate modes by interpolation or by modelling. It is likely that the spacing of the calibrations both in time and in number of grating settings will evolve as we gain more understanding of the instrument.

The descriptions here are intended to provide an overview of the calibration program without an overwhelming amount of detail on the specific observations. For further information on the observations, consult the phase-2 proposals, which are available from the STIS calibration web page, talk to your contact scientist (if you are a general observer), or send email to help@stsci.edu.

Many of the "products" of the calibrations are Instrument Science Reports (ISRs), which are periodically posted to the STIS web pages and announced in the monthly electronic Space Telescope Analysis Newsletters (STANs). Other standard "products" are new calibration database (CDBS) reference files. These are available through the HST archive, and will be tagged as "recommended" for a given data set if the calibration has changed enough that it might affect science observations.

Proposal ID 7600: CCD Performance Monitor

Last Revised: April 9, 1997

Purpose:

Measure the baseline performance of the CCD system.

Description:

This activity measures the baseline performance and commandability of the CCD subsystem. Only primary amplifier D is used. Bias, Dark, and Flat Field exposures are taken in order to measure read noise, dark current, CTE, and gain. Numerous bias frames are taken to permit construction of "superbias" frames in which the effects of read noise have been rendered negligible. Dark exposures are made outside the SAA. Full frame and binned observations are made, with binning factors of 2 x 1, 1 x 2, 2 x 2, 4 x 1, and 4 x 2. Bias frames are also taken in subarray readouts to check the bias level for ACQ and ACQ/PEAK observations. All exposures are internals, except for the dark current exposures which require a longer exposure time than the nominal 30 min of an occultation orbit.

Accuracy: Bias level: better than 0.1 ADU at any position within CCD frame; read-out noise negligible. Dark current: good to 0.5 electron/hour. RMS noise level about 0.05 electron per hour per pixel. Systematic error in hot pixels may well exceed this limit.

Products: Possible updates of the following CDBS files: Superbias frame and Superdark frame. Possible update of the Gain values. Possible flight software updates of tables CCDBiasSubtractionValue, BadPixelTable, and NumBadPixels. Possible reports in STAN and ISR. A TIPS report will be given.

Special Scheduling Requirements: 1 time in Jun 1997, 1 time in Dec 1997.

Fraction of GO/GTO Programs Supported: 40%

Resources: 25 internal orbits
Comments on orbit estimate: 1 visit of 14 orbits, 1 visit of 11 orbits

Proposal ID 7601: STIS CCD Dark and Bias Monitor

Last Revised: 14 April 1997

Purpose: Monitor the darks and biases for the STIS CCD

Description: Obtain darks a biases at GAIN=1 and GAIN=4 weekly in order to monitor CCD behaviour and chart growth of hot and bad pixels. See how well the anneals work for the CCD.

Accuracy: $> 5\%$ — Hopefully better with the use of superdarks and hot pixel tables.

Products: Both reference files (hot pixel tables, superdarks and superbiases), and an ISR.

Special Scheduling Requirements: weekly

Fraction of GO/GTO Programs Supported: 100%

Resources: 182 internal orbits
Comments on orbit estimate: – Need 7 visits/week to obtain darks and biases for GAIN=1 and GAIN=4 settings on the STIS CCD. We will also test for any low level sources of noise. These regular observations will be taken with the default amplifier in gain 4. Tests of dark current at different gains, with different amplifiers. This programme is modeled after the WFPC-2 dark-current calibration program 6188. The justification for regular monitoring of the dark rate 1) it provides a test of low-level instrument noise of a wide range of observing conditions; and 2) it will provide high S/N calibration frames for cycle-7 science.

Proposal ID 7602: On-orbit STIS CCD Flats

Last Revised: 9 April 1997

Purpose: Obtain flats for CCD modes that were not taken during ground tests.

Description: Due to the press of ground tests of STIS before insertion into HST, some calibration activities were not able to be scheduled on the ground. As a result, some of the CCD flats were deferred as either SMOV activities or Cycle 7 calibrations. The flats to be obtained here are G230LB and G230MB short wavelength dispersed light flats, and the narrowband F28X50OII and F28X50OIII apertures.

Accuracy: S/N from 70 to 15, depending on wavelength: at 1713, S/N $\sim$ 15; for 3315, S/N $\sim$ 70. All spectral settings use the Deuterium lamp. The narrowband apertures use the Tungsten lamp.

— Photometry of sources using the modes measured will have an error $>$ 10% due to the flat-fielding.

Products: Both reference/calibration files (i.e. flats) and an ISR will be delivered.

Special Scheduling Requirements: By Aug 31 1997 (arbitrary date early in the cycle).

Fraction of GO/GTO Programs Supported: 10%

Resources: 8 internal orbits
Comments on orbit estimate: One-shot proposal.

This is a make-up proposal for flats that were not done during ground tests.

Proposal ID 7604: Cycle 7 MAMA Dark Measurements

Last Revised: 6 May 1997

Purpose: This test performs the routine monitoring of the MAMA detector dark noise. This proposal will provide the primary means of checking on health of the MAMA detectors systems through frequent monitoring of the background count rate. The purpose is to look for evidence of change in dark indicative of detector problem developing.

Description: Five times a week 1 23min exposure is taken with the FUV and NUV MAMAs with the shutter closed. The exposures are taken in ACCUM mode. The length of the exposures is chosen to make them parallels.

Accuracy: 1% — Each measurement will give a statistical uncertainty of 1% for the global dark rate.

Products: CDBS DRK, BPX files; ISR

Special Scheduling Requirements: Schedule five visits per week for each detector

Fraction of GO/GTO Programs Supported: 65%

Resources: 880 internal orbits
Comments on orbit estimate: 1 orbit per MAMA, 5 executions per week for 6 months (5 x 26 times 2 detectors)

Proposal ID 7605: STIS CCD Target Acquisition Workout

Last Revised: May 5, 1997

Purpose:

To test the STIS target acquisition software using both ACQ mode (point and diffuse sources),and ACQ/PEAK mode (using both direct and dispersed images).

Description:

In the first visit, a faint (V=18.7) isolated point source (PKS1255-316) is acquired. An image (after the blind pointing) is obtained, followed by a point source acquisition and a confirmation image. A peakup acquisition in 1 axis (using the 52X0.1 slit) is then performed, with a followon confirmation image. A 2-axis peakup (using the 0.1X0.2 slit) is done, with a confirmation image. In visit 2, a diffuse acquisition of an isolated planetary nebula (NGC6833) is obtained. After the initial pointing image (done in the O II filter where the nebula is strong), a diffuse source acquisition is performed on the entire nebula (0.8" checkbox), with a confirmation image. In visit 3, the moving target IO is acquired, After the initial pointing image, a diffuse source acquisition (1.0" checkbox) is performed, with a confirmation image at the end. We will also obtain observations to support analysis of the CCD fringing in the near-IR; a separate Phase I proposal covers these observations. In visit 4, the bright target (GD153) is acquired (initial image, point source acquisition, confirmation image) followed by a imaging ACQ/PEAK. In visit 5, we acquire the same bright target (initial image, point source acquisition, confirmation image) followed by a dispersed light (using G430L) ACQ/PEAK.

Accuracy: For ACQ mode, the target should be placed within less than 0.1 arcseconds, while for ACQ/PEAK, the target should be centered to within less than 15% of the slit width. — None.

Products: Documentation updates (ISR, STAN, Instrument Handbook) will be prepared. Could also result in changes to the FSW target acquisition tables and proposal processing (e.g. step sizes, numbers of steps in a patter, minimum S/N requirements).

Special Scheduling Requirements: should be executed in early Cycle 7, with the IO observation to occur before mid-June. The remaining visits should be scheduled with GD153 occuring first, followed by PKS1255-316 and NGC 6833/

Fraction of GO/GTO Programs Supported: 95%

Resources: 6 prime orbits
Comments on orbit estimate: 1 orbit per visit (4), 2 orbits for Io

Proposal ID 7634: CCD Imaging Flat-Field Stability

Last Revised: 22 April 1997

Purpose: Investigate flat-field stability over a monthly period.

Description: Obtain a series of CCD flats using the MIRROR and without aperture every month to monitor the characteristics of the CCD reponse. Also look for the developement of new cosmetic defects. Copied in large part from SMOV 7099.

Accuracy: $< 5\%$

— How accurately one can flatten one's science data and obtain photometry.

Products: Reference files, and an ISR.

Special Scheduling Requirements: Monthly thoughout Cycle 7.

Fraction of GO/GTO Programs Supported: 30%

Resources: 18 internal orbits
Comments on orbit estimate: 1 orbit repeated monthly

Proposal ID 7645: STIS CCD Hot Pixel Anneal.

Last Revised: 22 April 1997

Purpose: The effectiveness of the CCD hot pixel annealing process is assessed by measuring the dark current behavior before and after annealing and by searching for any window contamination effects. In addition CTE performance is examined by looking for traps in a low signal level flat. Follows on from SMOV proposal 7107.

Description: The chacteristics of the CCD will first be defined by a series of Bias, Dark and flat-field exposures. The CCD Thermoelectric cooler (TEC) will then be turned off to allow the CCD detector temperature to rise (from about -80C to +5C). The CCD will be left in the uncooled state for approximately 12 hours. At the end of this period, the TEC will be turned back on and the CCD cooled down to its normal operating temperature. Bias, Dark and flat-field images will be repeated to check for changes in the CCD characteristics. Because the CCD window is on the CCD housing and not bonded to the chip, the window is actually warmest when the CCD is being cooled (because the TEC power warms the housing and coldest during the TEC-off annealing process. The flat field exposures will permit evaluation of any window contamination acquired during the annealing period. This programme will pick-up where the current SMOV programme stops in a seamless way – probably the 97.209 SMS. Also, we will not link the 3 visits/month to facilitate scheduling.

Accuracy: n/a

— We want to see if CCD hot pixels can be annealed a la WFPC-2.

Products: Reference files, (flats, darks and biases), updates to hot pixel tables, reports and postings to the Web, along with an ISR.

Special Scheduling Requirements: monthly

Fraction of GO/GTO Programs Supported: 30%

Resources: 144 internal orbits
Comments on orbit estimate: 8 orbits, repeated monthly

Proposal ID 7636: STIS CCD Spectroscopic Flatfield Monitor

Last Revised: 22 April 1997

Purpose: Obtain CCD flats on the STIS CCD in spectroscopic mode.

Description: With the internal tungsten flat field lamp, take flats at one wavelength setting each for the low-resolution G430L and G750L gratings, with enough exposure time to ensure S/N = 100 per pixel. Repeat one grating (G430L) at GAIN=1 and GAIN=4 to monitor any gain dependent effects. Take 3 exposures for each grating to facilitate cosmic ray removal. Essentially a repeat of SMOV 7142 for Cycle 7.

Accuracy: $< 5\%$

— How well science data can be flattened (i.e. photometry).

Products: Both reference files, and an ISR.

Special Scheduling Requirements: Monthly, throughout cycle.

Fraction of GO/GTO Programs Supported: 30%

Resources: 12 internal orbits
Comments on orbit estimate: 2 orbits repeated monthly - assumned 6 month run for calibration proposals.

Proposal ID 7637: CCD Residual Images After Saturation

Last Revised: May 5, 1997

Purpose: Measure the residual effect of overillumination of the CCD as a function of color (UV and RED).

Description: Overexpose (by a factor of $\sim$10) the CCD by taking a slitless spectrum of a bright star. Take a few dark frames afterwards to study the residual effect over time. Repeat the experiment, now taking bias frames instead of dark frames to study the effect of read-outs. Do this whole procedure using three different gratings, one in the UV (G230LB), one in the blue (G430L) and one in the red (G750L) to check for any dependence on color. Also repeat the experiment in imaging mode, overexposing by a factor $\sim$100 to study the remanence effect of a large overillumination factor.

Accuracy: sub-DN level — Interpret as remanence level, how long it persists, and how fast it decays per readout.

Products: ISR, possible STAN, issue for Handbook upgrade.

Special Scheduling Requirements: As soon as possible (i.e., early October 1997)

Fraction of GO/GTO Programs Supported: 30%

Resources: 5 prime orbits
Comments on orbit estimate: We have to use an actual star (prime orbit) because the internal lamps are way too faint in the far blue.

Proposal ID 7639: CCD Contamination/Sensitivity over full field

Last Revised: April 22, 1997

Purpose: Monitor CCD sensitivity over the whole field of view.

Description: Measure a photometric standard star field in Omega Cen in 50CCD mode every few months to monitor CCD sensitivity over the whole field of view. Keep the spacecraft orientation within a suitable range (± 5 degrees) to keep the same stars in the same part of the CCD for every measurement. The second observation is performed at an orientation rotated by 180 degrees with respect to the other observations to study the effect of CTE (to first order). This test will give a direct transformation of the 50CCD magnitudes to the Johnson-Cousins system for red sources. These transformations should be accurate to 1%. The stability of these transformations will be measured to the sub-percent level. These observations also provide a check of the astrometric and PSF stability of the instrument over its full field of view.

Accuracy: Percent level.

Products: ISR, STAN

Special Scheduling Requirements: Every three months for six months, after that 6-monthly.

Fraction of GO/GTO Programs Supported: 40%

Resources: 4 prime orbits
Comments on orbit estimate: 1 orbit visits, repeated 4 times.

Proposal ID 7641: STIS CCD flatfielding of stellar sources

Last Revised: 4/20/97

Purpose:

The purpose of this proposal is to measure accuracy of the CCD flatfielding around dust features on the filters.

Description:

A reasonably dense star field will be observed with a dense sampling of dither positions. The field will be positioned so that at least one bright star crosses the edge of the most prominent dust feature as the dither positions are changed. The observations will be done with the 50CCD and with the F28X50LP filters.

After flatfielding with the standard pipleline flats, the brightnesses of the stars will be measured at each dither position. The excess variance over that expected from counting statistics will quanitify the spatially-dependent uncertainties in the flatfielding correction. The variation in flux from the bright star as it crosses the edge of the dust feature will be used to test procedures for removing the dust features via modeling.

Accuracy: 0.1% — S/N $>$ 1000 for at least 10 stars in the field.

Products: Improved CDBS FLT files.

Special Scheduling Requirements: Can be CVZ, but doesn't have to be.

Fraction of GO/GTO Programs Supported: 20%

Resources: 2 prime orbits
Comments on orbit estimate: (e.g. 4 orbit visits, repeated monthly)

Proposal ID 7642: Scattered CCD red halo

Last Revised: 5 May 1997

Purpose:

Measure PSF of a red star with the CCD at red wavelengths, to characterize the internal scattering of long-wavelength light within the CCD itself.

Description:

Thermal vaccuum testing revealed that the STIS CCD is prone to internal scattering of long-wavelength photons. At $\sim$ 900 nm, the integrated counts in this "red halo" amounts to about 30% of the total. Thermal vacuum test data were taken with a slightly extended source and with different CCD voltage settings than the flight values, and hence do not provide an accurate characterization of the scattered halo for astronomical point sources. This calibration program will observe a red star through the F28x50OIII-CCD filter, taking advantage of the redleak at >1 micron to get an estimate of the red halo at the longest wavelenths. It will observe a star through F28X50LP to characterize the halo at wavelengths more appropriate to observers. Finally, it will take a spectrum using G750L to characterize the wavelength dependence of the halo.

Accuracy: 2% — S/N in PSF at 1" from star center

Products: ISR?

Special Scheduling Requirements: Reasonably early in cycle 7. Results have a bearing on observing strategy for black-hole search proposals, which have a lot of orbits.

Fraction of GO/GTO Programs Supported: $\sim$25%

Resources: 2 prime orbits
Comments on orbit estimate: (e.g. 4 orbit visits, repeated monthly) Just a guess.

Proposal ID 7643: MAMA Fold distribution

Last Revised: 6/4/97

Purpose:

The performance of MAMA microchannel plates can be monitored using a MAMA fold analysis procedure. The fold analysis provides a measurement of the distribution of charge cloud sizes incident upon the anode giving some measure of changes in the pulse-height distribution of the MCP and, therefore, MCP gain.

Description:

While globally illuminating the detector with a flat field the valid event (VE) rate counter is monitored while various combinations of row and column folds are selected. The procedur is implemented using special commanding and is the same for the FUV and NUV MAMAs with the exception of the gratings/aperture/lamp combinations used for the flat fields. The procedure is described in TIR STIS-97-09.

Accuracy: 5% — Position of the peak in the fold distribution can be measured to about 5% accuracy from this procedure.

Products: TIR

Special Scheduling Requirements: Execute once at the end of SMOV, then every 6 months.

Fraction of GO/GTO Programs Supported: 50%

Resources: 2 internal orbits
Comments on orbit estimate:

Proposal ID 7644: NUV-MAMA Monitoring Flats

Last Revised: 4 Jun 1997

Purpose:

This program will obtain NUV-MAMA flat-field observations for the construction of monthly Delta-flats for each detector.

Description:

This program will obtain NUV-MAMA flat-field observations with sufficient counts to construct bi-monthly Delta-flats. That is, ∼10 visits will be required to construct a D-flat with S/N ∼ 100 per low-res pixel. This program will also provide the trending basis for a new flat-field proposal if the flat-field characteristics change substantially over time.

Pre-flight analysis indicates that the P-flats apply to all dispersions and wavelength settings. This Cycle-7 calibration program calls for obtaining flats with G230M at 2095 and 2659 in order to monitor any wavelength-dependent changes that may occur. Delta-flats will be constructed bi-monthly using flats at both cenwave settings.

Accuracy: 1% —accuracy is per pixel

Products: reference files (D-flats), ISR

Special Scheduling Requirements:

The NUV-MAMA exposures should execute every week, begining on August 1. The exposures should alternate between the two NUV grating settings, cycling among the SLIT-STEP positions in sequence, one per exposure.

Fraction of GO/GTO Programs Supported: 50%

Resources: 72 internal orbits
Comments on orbit estimate: 1 orbit per week

Proposal ID 7645: FUV-MAMA Flats

Last Revised: 29 Jan 1998

Purpose:

This program will obtain FUV-MAMA flat-field observations with the Kr lamp for the construction of on-orbit D-flats for select modes. An exposure with the HITM lamp in imaging mode will also be obtained to test the viability of this setup for flat-field monitoring and the periodic construction of Delta-flats.

Description: Description:

This program will obtain a set of FUV-MAMA flat-field observations with sufficient counts to construct pixel-to-pixel flat fields (D-flats) for select modes. Approximately 9 visits will be required to construct a D-flat, which is defined as S/N = 100 per low-res pixel. Experience with pre-flight and on-orbit monitoring flats show that the flat-field characteristics are in large measure color- and mode-independent, so that high-quality D-flats constructed with the G140M settings should suffice for all science programs.

This Cycle-7 calibration program calls for obtaining flats with G140M at 1470 Ang with multiple SLIT-STEP positions to illuminate below the fiducial bars. In order to preserve lamp lifetime, the first visit will be followed by a 4-week delay before executing the remaining visits. This strategy will allow for verifing the lamp output with sufficient time to modify this program if the illumination does not match the prediction. The first visit will also include an exposure with the HITM2 lamp in imaging mode to verify the detector illumination, and to validate this lamp as a viable alternative for the Kr lamp for flat-field monitoring and the periodic construction of Delta-flats. The remaining visits will be executed one or two per week until the end, in April 1998.

Accuracy: 1% —Accuracy is per low-res pixel (2x2 high-res pixels)

Products: reference files (L- and D-flats), ISR

Special Scheduling Requirements: Initiate this program in March; program to be completed by the end of April/early May, 1998.

Fraction of GO/GTO Programs Supported: 35%

Resources: 9 internal orbits
Comments on orbit estimate: Nine 1-orbit visits, repeated 1-2 times/week

Proposal ID 7646: STIS CCD Scattered Light near Earth Limb

Last Revised: 15 May 1997

Purpose:

This program will determine the effect of scattered light from the bright limb of the Earth on the background of STIS CCD images.

Description:

Scattered light from the Earth background at low limb angle (∼10 to 30 degrees) will be measured with the STIS CCD using the 50CCD (clear) and F28x50LP (long pass) apertures. Observations will consist of multiple 480 s, CR-SPLIT=4 exposures taken with grazing Earth limb passes (i.e., CVZ) to achieve sufficient S/N. The series will be executed during both bright and dark Earth conditions. Observations can be done in gyro mode with no need for fine lock. The telescope will be pointed at 8 different positions (2 in RA x 4 in Dec); RA will be sun and anti-sun, while Dec positions will be along the orbit pole and at two different pointings separated by several degrees.

Accuracy: 1 DN/s The rate of background accumulation in the passbands will be measured to an accuracy of ∼1 DN/s or better at multiple limb angles.

Products: ISR, TIPS presentation, possible PDB update to bright Earth limb avoidance angle.

Special Scheduling Requirements:

The final coordinates of the targets should be recomputed if the schedulability window changes; if the observation date is changed the coordinates will need to be updated as well. The pointings should allow a measurment of the dark- and bright-Earth background (i.e., HST pointings toward the sun and the anti-sun) with limb angles from ∼10 to 40 deg. Since the purpose of this program is to measure the Earth background, it will be necessary to ensure that no bright sources are in the field of view. A check of the selected field of view against the background stellar/galaxy sources using the Digital Sky Survey will be needed.

Fraction of GO/GTO Programs Supported: 20%

Resources: 8 prime orbits
Comments on orbit estimate:

This program need be executed only once, but will require exposures during both bright Earth and dark Earth conditions.

Proposal ID 7647: NUV-MAMA Flats

Last Revised: 29 Jan 1998

Purpose:

This program will obtain NUV-MAMA flat-field observations with the D2 lamp for the construction of on-orbit D-flats for select modes. An exposure with the HITM lamp in imaging mode will also be obtained to test the viability of this setup for flat-field monitoring and the periodic construction of Delta-flats.

Description:

This program will obtain a set of NUV-MAMA flat-field observations with sufficient counts to construct pixel-to-pixel flat flat fields (D-flats) for select modes. Approximately 10 visits will be required to construct a D-flat, which is defined as S/N = 100 per low-res pixel. Experience with pre-flight and on-orbit monitoring flats show that the flat-field characteristics are color- and mode-independent, so that high-quality D-flats constructed with the G230M settings should suffice for all science programs.

This Cycle-7 calibration program calls for obtaining flats with G230M at 2659 Ang with multiple SLIT-STEP positions to illuminate below the fiducial bars. In order to preserve lamp lifetime, the first visit will be followed by a 4-week delay before executing the remaining visits. This strategy will allow for verifing the lamp output with sufficient time to modify this program if the illumination does not match the prediction. The first visit will also include an exposure with the HITM1 lamp in imaging mode to verify the detector illumination, and to validate this lamp as a viable alternative for the D2 lamp for flat-field monitoring and the periodic construction of Delta-flats. The remaining visits will be executed one or two per week until the end, in May 1998.

Accuracy: 1% —Accuracy is per low-res pixel (2x2 high-res pixels)

Products: reference files (L- and D-flats), ISR

Special Scheduling Requirements: Initiate this program in early April; program to be completed by the end of May/early June, 1998.

Fraction of GO/GTO Programs Supported: 40%

Resources: 10 internal orbits
Comments on orbit estimate: Ten 1-orbit visits, repeated 1-2 times/week

Proposal ID 7648: STIS CCD G230LB and G230MB Wavelength Calibrations

Last Revised: 5 May 1997

Purpose: To determine dispersion solutions for wavelengths on the blue end of the spectral range of the G230LB and G230MB gratings.

Description:

Wavelength dispersion solutions are required for regions bluer than 2000 A. Only ground-based (in air) calibrations are currently available representing wavelength coverage longer than 2000 A. Deep engineering wavecals will be taken using the Pt/Cr-Ne line lamp and the appropriate 2-pixel wide long slit, 52x0.1; GAIN=4. One observation at the central wavelength of 2375 for the G230LB will be obtained; three observations for the G230MB (at central wavelengths of 1713, 1854 and 1995). Observations are pure internals.

Accuracy: 0.2 pixels

— A S/N∼100 was obtained for SMOV proposal 7077 for the peak of the stronger spectral lines to ensure accurate Gaussian fitting. Exposure times were selected in that proposal to provide less than 30,000 counts at the peak in order to prevent significant non-linearity effects.

Products: A STIS ISR providing the derived wavelength dispersion solutions for the configurations specified. This proposal will feed possible updates to the CDBS dispersion solution reference table (`_dsp`).

Special Scheduling Requirements: none

Fraction of GO/GTO Programs Supported: 1.7%

Resources: 1 internal orbits
Comments on orbit estimate:

Proposal ID 7649: STIS MAMA Missed Dispersion Solutions

Last Revised: 5 June 1997

Purpose: To determine dispersion solutions for two settings of the echelle grating E140M deferred during SMOV. Additionally, all settings for the Echelle gratings E230M and E230H will be included.

Description:

SMOV proposal 7078 includes the central (prime) wavelengths for the E140H at 1416A and E140M at 1425, and E230H at 2513. Therefore, in this proposal, we will obtain deep engineering wavecals of the two remaining central prime wavelengths of the E140H and all remaining prime settings for the Echelle gratings E230H and E230M will be obatined. The Pt/Cr-Ne (CIM) line lamp will be used with the appropriate supported 2-pixel wide slit. Observations are pure internals.

Accuracy: 0.1 pixels

— A S/N of at least 30 is planned for SMOV proposal 7078 for the peak of the stronger spectral lines to ensure accurate Gaussian fitting.

Products: A STIS ISR providing the derived wavelength dispersion solutions for the configurations specified. Reference Table (`_dsp`).

Special Scheduling Requirements: none

Fraction of GO/GTO Programs Supported: 3.5%

Resources: 2 internal orbits
Comments on orbit estimate: internal exposures only; not expected to require more than 2 orbits

Proposal ID 7650: STIS Yearly CCD Wavelength Monitor

Last Revised: 10 February 1998

Purpose: To obtain deep engineering wavecals for all CCD gratings at several wavelength centers as a yearly monitor of derived dispersion solutions.

Description:

Wavelength dispersion solutions will be determined on a yearly basis as part of a long-term monitoring program. Deep engineering wavecals for each CCD grating will be obtained. Wavelength centers will be selected at extreme and central settings of each grating. Intermediate settings will also be taken to check the reliability of derived dispersion solutions. Only Prime modes will have been selected for observation in this program. The purely internal wavelength calibrations will taken using the Pt/Cr-Ne line lamp and the appropriate 2-pixel wide long slit, 52x0.1; GAIN=4.

Accuracy: 0.2 pixels

— A S/N$\sim$100 was obtained for SMOV proposal 7077 for the peak of the stronger spectral lines to ensure accurate Gaussian fitting. Exposure times were selected in that proposal to provide less than 30,000 counts at the peak in order to prevent significant non-linearity effects.

Products: A STIS ISR providing the derived wavelength dispersion solutions for the configurations specified. Updates to CDBS will be made as necessary.

Reference Table

Special Scheduling Requirements: none

Fraction of GO/GTO Programs Supported: 38%

Resources: 6 internal orbits
Comments on orbit estimate: Yearly monitoring program to be executed once during each cycle.

Proposal ID 7651: STIS MAMA Dispersion Solution Check

Last Revised: 10 February 1998

Purpose: To obtain deep engineering wavecals for all MAMA gratings at several wavelength centers as a yearly monitor of derived dispersion solutions.

Description:

Wavelength dispersion solutions will be determined on a yearly basis as part of a long-term monitoring program. Deep engineering wavecals for each MAMA grating will be obtained. Wavelength centers will be selected at extreme and central settings of each grating. Intermediate settings will also be taken to check the reliability of derived dispersion solutions. Only Prime modes will have been selected for observation in this program. The purely internal wavelength calibrations will taken using the Pt/Cr-Ne (CIM) line lamp and the appropriate 2 pixel wide supported slit.

Accuracy: 0.1 pixels

— A S/N$\sim$100 was obtained for SMOV proposal 7077 for the peak of the stronger spectral lines to ensure accurate Gaussian fitting. Exposure times were selected in that proposal to provide less than 30,000 counts at the peak in order to prevent significant non-linearity effects.

Products: A STIS ISR providing the derived wavelength dispersion solutions for the configurations specified. Updates to CDBS will be made as necessary.

Reference Table

Special Scheduling Requirements: none

Fraction of GO/GTO Programs Supported: 62%

Resources: 20 internal orbits
Comments on orbit estimate: Yearly monitoring program to be executed twice during cycle-7 (nominally once during each cycle.

Proposal ID 7652: LSF measure of the CCD-spectroscopic modes

Last Revised: 04/20/97

Purpose: To measure the LSF of CCD spectroscopic modes with an external target.

Description:

The aim of this proposal is to measure the LSF for a few different modes at different positions of the detector. An object with a large number of narrow emission lines will be observed with a narrow slit. This will then be compared with the LSF derived from spectral lamp.

Hen 1357 is a young planetary nebula with a size of about 1 arcsec. It has an abundance of emission lines from UV to IR, with line widths of the order of 8 km/s, and hence suitable for this proposal.

Accuracy: 0.1 pixels — Should be within 0.1 pixels of the cal-lamp.

Products: ISR

Special Scheduling Requirements:

Fraction of GO/GTO Programs Supported: 20%

Resources: 2 prime orbits
Comments on orbit estimate: (2 single oribit visits, second visit contingent on the results of the first, repeated after a year)

Proposal ID 7653: LSF measure of the MAMA-spectroscopic modes

Last Revised: 05/28/97

Purpose: To measure the LSF of MAMA spectroscopic modes with an external target.

Description: The aim of this proposal is to measure the LSF for a few different modes at different positions of the detector. An object with a large number of narrow interstellar absorption lines will be observed with a narrow slit. This will then be compared with the LSF derived from spectral lamp.

HD28497 is an B2V type star, which shows extremely narrow interstellar components as observed with the UHRS (R = 600,000) spectrometer at AAT. It has a large number interstellar components in the UV region as well, which will be suitable for LSF measurements in the Echelle modes. For the low-res, first order modes, Hen 1357 will be observed, which has emission lines with line widths < 8 km/s.

Accuracy: 0.1 pixels — Should be within 0.1 pixels of the cal-lamp.

Products: ISR

Special Scheduling Requirements:

Fraction of GO/GTO Programs Supported: 20%

Resources: 2 prime orbits
Comments on orbit estimate: (2 visits, second visit contingent on the results of the first, repeated after a year)

Proposal ID 7654: Slitless Spectroscopy, CCD

Last Revised: 05/05/97

Purpose: To calibrate the dispersion solution and the sensitivity as a function of the target-position in slitless spectroscopy.

Description:

The purpose of this proposal is to calibrate the dispersion solution as a function of the target-position in slitless spectroscopy. Apart from a constant shift, the coefficients of the dispersion solution may depend on the position of the target on the detector in slitless mode. This proposal will determine the constant shift as well as the change in the dispersion coefficients. In some modes, particularly in the Echelle modes, the sensitivity can have a dependance on the position of the object on the detector, which should also be determined.

The target must have sufficient number of narrw absorption lines to determine the dispersion solution. The object selected in this case is BD+75D325 which is a spectrophotometric standard, and has been studeied extensively earlier both with HST and ground based telescopes. This object has an abundance of lines, which is suitable for this particular project.

Accuracy: $\sim$1 pixel in dispersion solution, 0.05 sensitivity. — From cross-correlation of the absorption line spectra.

Products: ISR.

Special Scheduling Requirements:

Fraction of GO/GTO Programs Supported: $\sim$10%

Resources: 4 prime orbits
Comments on orbit estimate: Estimate only–will revise based on Phase II

Proposal ID 7656: STIS Spectroscopic and Imaging Sensitivity, CCD

Last Revised: 15 May 1997

Purpose: This program is the basic sensitivity measurement for all supported CCD imaging and spectroscopic modes. It is run once a year. Sensitivity measurements are done for all primary tilts of the gratings used with the CCD (except 8975 of G750L) and for the MAMA G140L and G230L gratings. Imaging sensitivity measurements are done with all apertures, including the neutral density filters (except the ND5 filter).

Description: Observe astronomical standard stars through a wide slit (52X2) with CRSPLIT=2. Wavelength settings for spectroscopy:

```
G750L    7751
G750M    5734,6252,6768,7283,7795,8311,8825,9336,9851,
         10363
G430L    4300
G430M    3165,3423,3680,3936,4194,4451,4706,4961,5216,
         5471
G230LB   2375
G230MB   1713,1854,1995,2135,2276,2416,2557,2697,2836,
         2976,3115
G140L    1475
G230L    2376
```

Standard point source target acquisition. No peak-up Standard point source target acquisition. No peak-up required. Since contemporaneous flats are recommended for GO's, add the flats for G750L and for G750M at all wavelength settings longward of 7000 A. Counting statistics of 1% per resolution element are required for the flat.

Apertures for imaging:

```
50CCD
F28x50LP
F28x50OIII
F28x50OII
F25ND3
F25NDQ1
F25NDQ2
F25NDQ3
F25NDQ4
```

Take exposures for imaging at the field center and the four Take exposures

for imaging at the field center and the four corner points for each filter.

Accuracy: 1% — Each spectroscopic measurement will give a statistical uncertainty of 1% at the central wavelength of the primary tilt. Same for the imaging measurements.

Products: CDBS absolute sensitivity tables.

Special Scheduling Requirements: The entire program should be executed once per year

Fraction of GO/GTO Programs Supported: 35%

Resources: 17 prime orbits
Comments on orbit estimate: There are an additional 8 on hold orbits

Proposal ID 7657: STIS Spectroscopic and Imaging Sensitivity, MAMA

Last Revised: 4 June 1997

Purpose: This program is the basic sensitivity measurement for all supported MAMA imaging and spectroscopic modes. It is run once a year. Sensitivity measurements are done for all primary tilts of the gratings and the prism used with the MAMAs, except for the G140L and G230L gratings, which are done together with the CCD gratings. G230LB is included for cross-calibration purposes. Imaging sensitivity measurements are done with all apertures, including a neutral density filter. They are done in dispersed mode due to BOP limitations.

Description: Observe astronomical standard stars through a wide slit (52X2 for 1st order, 0.2x0.2 for echelle). Wavelength settings for spectroscopy:

```
G230M    (1687),1769,1851,1933,2014,2095,2176,2257,(2338),
         2419,2499,2579,2659,2739,2818,2898,(2977),3055,
         3134
G140M    (1173),1222,1272,1321,1371,(1420),1470,1518,1567,
         (1616),1665,1714
E230M    (1978),(2707)
E140M    (1425)
E230H    1763,2013,2263,(2513),2762,3012
E140H    1234,(1416),1598
G230LB   2375
```

Standard point source target acquisition. Peak-up Standard point source target acquisition. Peak-up for echelle required. There are two runs. During the first run only those wavelengths are observed which were not included in the SMOV test. During the second run, all wavelength settings will be done. Wavelengths which are covered in the SMOV test are in parenthesis.

Apertures for imaging:

```
25MAMA
F25QTZ
F25SRF2
F25MGII
F25CN270
F25CIII
F25CN182
F25LYA
F25ND3
```

Take exposures for imaging in dispersed mode at the field Take exposures

for imaging in dispersed mode at the field center and at 2 offset positions for each filter. Use G140L and G230L to disperse the light.

The entire test should be done twice. First, at the beginning of C7, and then a repeat after about 12 months.

Accuracy: 1% — Each spectroscopic measurement will give a statistical uncertainty of 1% at the central wavelength of the primary tilt. Same for the imaging measurements.

Products: CDBS absolute sensitivity tables.

Special Scheduling Requirements: The entire program should be executed once per year

Fraction of GO/GTO Programs Supported: 70%

Resources: 65 prime orbits
Comments on orbit estimate: $\pm$ 5 orbits

Proposal ID 7659: Daily Darks to Update Acquisition Bad Pixel Table

Last Revised: May 24 1997

Purpose: To take daily darks to identify hot pixels for update to the acquisition on-board FSW hot pixel table. Daily hot pixel lists can also be used for science data analysis.

Description:

Each day a single crsplit=3 15 minute dark exposure will be executed. The dark will be processed to identify bad pixels so that the STIS FSW BadPixelTable used for acquisitions can be updated on a short timescale. Each day one visit of this proposal should be executed. This proposal should begin execution by the second week in June, sooner if possible.

Accuracy: Hot pixels greater than 1 electron/sec/pixel will be identified.

Products: Daily or few-daily updates to the FSW Acquisition BadPixelTable.

Special Scheduling Requirements:

Proposal should execute BETWEEN June 1 1997 and September 1 1997.

Fraction of GO/GTO Programs Supported: 40%

Resources: 150 internal orbits
Comments on orbit estimate: one orbit per day for 4 months.

Proposal ID 7660: STIS to FGS Alignment check

Last Revised: 6 May 1997

Purpose:

Check the transformation of the STIS CCD detector reference frame to the FGS reference frame, which needs to be verified after the FGS-FGS update.

Description:

CCD images will be taken of a known star field (NGC 188) with the full field camera aperture in place in order to determine the transformation of the STIS CCD detector frame with respect to the FGS reference frame. Images will be taken at an initial pointing and at positions offset in V2 and V3. Internal images of a small reference aperture (0.2x0.2) will be obtained before and after the external images. V2 and V3 offsets will be included as POS TARGs.

Accuracy: $\pm$ 0.5 arcsec location; $\pm$ 0.2 deg orientation —Location of the STIS reference aperture in FGS frame.

Products:

ISR, update to PDB SIAF file, camera mode MSM positions. Location of a STIS reference aperture in V2-V3 coordinates and its rotation angle with respect to the FGS reference frame are determined. The rotation matrix in the NSSC-1 used for target acquisition slews and the aperture locations in the aperture file in the PDB may be updated. Changes to the locations of the full set of STIS apertures may be determined analytically from the results previously obtained for the reference aperture in SMOV program 7066.

Special Scheduling Requirements: Execute Sept. - Oct. 1997.

Fraction of GO/GTO Programs Supported: 100%

Resources: 1 prime orbits
Comments on orbit estimate: Previously executed in SMOV, program 7133.

Proposal ID 7661: STIS MAMA Filter Red Leak Measurement

Last Revised: May 2, 1997

Purpose: To measure the red leak of the MAMA filters.

Description: Obtain spectra of the standard star BD+75 325 with gratings G430L (4300) and G750L (7751 and 8975) in slitless mode (to serve as templates) and with the MAMA filters F25CIII, F25CN182, F25CN270, F25MGII, F25QTZ, and F25SRF2 to characterize the red leak (which has been seen in measurements of the flight spares of the narrow-band filters). The combinations to be measured are: G430L (4300) with F25CIII, F25CN182, F25CN270, F25MGII, F25QTZ, F25LYA, and F25SRF2; G750L (7751 and 8975) with F25CN270 and F25MGII. Also obtain images of the star through filters F25CIII and F25CN182 to serve as a sanity check on the spectral measurements.

Accuracy: 1%

Products: Updates to transmission files for the filters to be used with the ETC; updates to the Handbook.

Special Scheduling Requirements: nothing special

Fraction of GO/GTO Programs Supported: 3%

Resources: 2 prime orbits
Comments on orbit estimate: 1 visit executed 1 time

Proposal ID 7665: CCD Geometric Distortion

Last Revised: 29 Apr 97

Purpose:

This calibration provides a determination of first order spectra shape for the CCD for those modes missing from ground testing.

Description:

The extraction of first order spectra requires knowledge of the spectral shape (cross-dispersion offset along the dispersion direction) as a function of where along the cross-dispersion direction the star is initially placed. The shape may be easily defined for any cross-dispersion position by obtaining a single high signal to noise spectrum and then using a centroiding in cross-dispersion to trace the offsets along the spectral order. The observations take high signal to noise spectra of Eta UMa at a large number of initial cross-dispersion placements for G230LB and two settings of G230MB. In two cases these fill in for data missing from the ground testing, and in a third case repeat a ground test as a verification.

Accuracy: 0.1 pixel

— The calibration will result in knowledge of the central position of first order spectra in cross-dispersion to 0.1 pixel at any point along the dispersion, and for any initial placement within ± 25" of the object in the cross-dispersion direction.

Products: Reference files, TIR.

Special Scheduling Requirements: This program has a high priority for early scheduling as the results are needed to support routine pipeline calibrations A BETWEEN for 10-AUG-97 to 12-SEP-97 has been used to force the earliest execution possible that also allows three months for review and implementation.

Fraction of GO/GTO Programs Supported: 10%

Resources: 2 prime orbits
Comments on orbit estimate: single visit; from final RPS2 run

Proposal ID 7666: CCD Linearity and Shutter Stability Test

Last Revised: 4:00 22 April 1997

Purpose:

This calibration tests for non-linearity in the CCD and its shutter at various combinations of low and high count level, gain, and for imaging and spectral modes.

Description:

CCDs sometimes exhibit global and/or localized non-linearities. Such effects can be subtle, but important contributors to error budgets for routine science observations and are sometimes recognized only after limitations are detected in careful analyses of science data. This proposal obtains data that directly explores for possible non-linearities at both low and high signal levels. Internal flats will be obtained with staggered exposure times and resulting count levels to provide a calibration of deferred charge, and these also provide a sensitive means of detecting low-level traps. Imaging and spectral observations will be taken at both low and high count levels and with a range of exposure times and gain settings to explore for a full range of possible non-linearities, including a search for long versus short exposure offsets as claimed for WFPC2.

As a by product of the linearity tests this program will provide a precise measurement of shutter-shading, the spatial dependence of exposure time due to finite travel time of the shutter, and a characterization of the random component in repeatability of exposure times.

Accuracy: 1% — The goal is to define all non-linearities and shutter timing effects to a level consistent with maintaining relative accuracies of 1% photometry over the full field of the CCD and at the full range of useful exposure levels from signal to noise of order one to near saturation of the CCD.

Products: ISR

Special Scheduling Requirements: A group (M67) of stars has been selected for which an ORIENT of about 290 degrees is convenient, this forces execution to be between Oct. '97 and Jan '98. For alpha Cen and in order to utilize a small sub-array in cross dispersion an orient of 357 degrees is required which forces the observation to April-May '98.

Fraction of GO/GTO Programs Supported: 30%

Resources: 3 prime orbits; 4 internal orbits
Comments on orbit estimate: three visits; from near-final RPS2 run

Proposal ID 7667: MAMA Geometric Distortion

Last Revised: 10:00 5 May 1997

Purpose:

This calibration provides a determination of first order spectra shape for the MAMAs (only for missing set from ground testing).

Description:

The extraction of first order spectra requires knowledge of the spectral shape (cross-dispersion offset along the dispersion direction) as a function of where along the cross-dispersion direction the star is initially placed. The shape may be easily defined for any cross-dispersion position by obtaining a single high signal to noise spectrum and then using a centroiding in cross-dispersion to trace the offsets along the spectral order.

Accuracy: 0.1 pixel — The calibration will result in knowledge of the central position of first order spectra in cross-dispersion to 0.1 pixel at any point along the dispersion, and for any initial placement within ± 12" of the object in the cross-dispersion direction.

Products: reference files, TIR

Special Scheduling Requirements: This program has a high priority for early scheduling as the results are needed to support routine pipeline calibrations A BETWEEN for 25-AUG-97 to 8-SEP-97 has been used to force the earliest execution possible that also allows three months for review and implementation. This time is forced in detail by the ORIENT and CVZ.

Fraction of GO/GTO Programs Supported: 30%

Resources: 5 prime orbits
Comments on orbit estimate: single visit; from near-final RPS2 run

Proposal ID 7668: INCIDENCE ANGLE CORRECTION FOR NON-CONCENTRIC SLITS–CCD

Last Revised: 29 Apr 97

Purpose: This test will provide incidence angle corrections for CCD observations using non-concentric slits. This test fills in missing calibrations from ground testing.

Description: Corrections to the default wavelength solutions are required for observations taken through any of the non-concentric slits. The default dispersion solutions are obtained for a reference slit. Slits that are not concentric with the reference slit require a correction to the dispersion solution. The corrections provide for a zero-point as well as a first-order correction (linear dispersion) to the calibrated wavelength scale.

Accuracy: 0.2 pixel

Products: CDBS reference file (`_iac`).

Special Scheduling Requirements: None.

Fraction of GO/GTO Programs Supported: $\sim$3%

Resources: 2 internal orbits
Comments on orbit estimate: Based on RPS2.

Proposal ID 7669: INCIDENCE ANGLE CORRECTION FOR NON-CONCENTRIC SLITS–MAMA

Last Revised: 27 May 97 Date: 27 May 97

Purpose: This test will provide incidence angle corrections for CCD observations using non-concentric slits. This tests fills in missing calibrations from ground testing.

Description: Corrections to the default wavelength solutions are required for observations taken through any of the non-concentric slits. The default dispersion solutions are obtained for a reference slit. Slits that are not concentric with the reference slit require a correction to the dispersion solution. The corrections provide for a zero-point as well as a first-order correction (linear dispersion) to the calibrated wavelength scale.

Accuracy: 0.2 pixel

Products: CDBS reference file (`_iac`).

Special Scheduling Requirements: None.

Fraction of GO/GTO Programs Supported: ∼3%

Resources: ? internal orbits
Comments on orbit estimate: Based on RPS2.

Proposal ID 7670: MAMA Ramp-up Check

Last Revised: 29 Apr 97 Date: 21 Apr 97

Purpose:

The purpose of this program is to measure the short term stablility of the count rates on both MAMA detector immediately after high- voltage turnon.

Description:

Each MAMA detector will be exercised in each of two visits. Each visit consists of an ACQ followed by a TIME-TAG observation filling up the rest of the orbit.

Accuracy: 1% counting statistics

Products: ISR

Special Scheduling Requirements: It is critical that each of the two visits follow a period of SAA impacted orbits such that the high-voltage has been off and is turned on immediately prior to the ACQ.

Fraction of GO/GTO Programs Supported:

Resources: 2 parallel orbits
Comments on orbit estimate: Based on RPS2.

Proposal ID 7672: STIS CCD Sensitivity Monitor–Cycle 7 Completion

Last Revised: January 27, 1998

Purpose: Monitor sensitivity of each CCD grating mode to detect any change due to contamination or other causes.

Description: Obtain exposures in each of the 3 low-resolution CCD spectroscopic modes every 2 months, and in each of the 3 medium-resolution modes every 4 months, using the same high-declination calibration standard, and ratio the results to the first observations to detect any trends. Also repeat one of the M mode exposures with Gain=4.

Accuracy: Minimum S/N of 50 at the wavelength of least sensitivity.

Products: Interim and final reports on sensitivity monitor.

Special Scheduling Requirements: Should begin August 1, 1997 and be repeated as specified above through June 1999.

Fraction of GO/GTO Programs Supported: 100%

Resources: 18 prime orbits
Comments on orbit estimate: 1 orbit every 2 months for L modes 1 additional orbit every 4 months for M modes

Proposal ID 7673: STIS MAMA Sensitivity and Focus Monitor–Cycle 7 Completion

Last Revised: January 26, 1998

Purpose: Monitor sensitivity of each MAMA grating mode to detect any change due to contamination or other causes. Also monitor the STIS focus in a spectroscopic mode.

Description: Obtain exposures in each of the 2 low-resolution MAMA spectroscopic modes monthly, in each of the 2 medium-resolution modes every 2 months, and in each of the 4 echelle modes every 4 months, using unique calibration standards for each mode, and ratio the results to the first observations to detect any trends. In addition, each monthly L sequence will be preceded by two spectroscopic ACQ/PEAKs with the CCD/G230LB and crossed linear patterns, with the purpose of measuring the focus (PSF across the dispersion as a function of UV wavelength).

Accuracy: Minimum S/N of 50 at the wavelength of least sensitivity for L modes, and at the central wavelengths for M and E modes. 10% for focus changes, i.e FWHM of the profile across the dispersion.

Products: Interim reports and ISR on sensitivity monitor. ISR on focus monitor. If the focus quality is found to degrade significantly, a separate program to take corrective action (such as an adjustment of the STIS tip/tilt mirror) may be implemented.

Special Scheduling Requirements: Should begin August 1, 1997 and be repeated as specified above through June 1999.

Fraction of GO/GTO Programs Supported: 100%

Resources: 42 prime orbits
Comments on orbit estimate: 1 orbit monthly for L modes plus focus monitor 1 orbit every 2 months for M modes 2 orbits every 4 months for E modes

Proposal ID 7674: IR Standards

Last Revised: 12 May 1997

Purpose:

Establish a set of absolute flux standards on the WD scale that extend the existing wavelength coverage to 10300A with the STIS G750L grating setting. The NICMOS calibration will be based on these results shortward of 10300A, while the standards will be extended longward via NICMOS observations in cycle 8.

Description:

Observations will use the G750L grating with an effective resolution of about 15 Angstroms. Typical exposure times per target will be 10 to 30 minutes, for a minimum S/N of 30 (1000 counts/px). Overheads including guide star and target acquisition account for about 20 additional minutes. After the GS ACQ, the ACQ, and the FLAT, there are 30 minutes remaining in the orbit, plus or minus 20%. One orbit per target will be required to obtain a spectrum covering the 0.53 to 1.03 microns spectral range. Because of the fringing problem on the CCD, flats are required. No ACQ/PEAK is need, since initial results suggest that the standard ACQ is accurate to the required 0.02" centering in the 0.1 flat slit.

As in previous calibration proposals with FOS, two visits per target, separated by at least two weeks, are required to establish reliable standards by verifying the repeatability of the observations and to check for stellar variability.

See ISR CAL/SCS-010 for more details. All targets have flux distributions already in CDBS up to 9200A, in general, as detailed in Bohlin (1996, AJ, 111, 1743). All coordinates are J2000 and are from Turnshek et al. (1990, AJ, 99, 1243), while Turnshek (1989, #2. Optical Calibration Targets, STScI) has proper motions.

Accuracy: 2%

The four White Dwarf standards are internally consistent to 1-2%, as observed by FOS at shorter wavelengths. So the extension to 10300A should be comparably accurate.

Exposure times for the brighter targets are generally limited by saturation of the CCD, which is assumed to be 80,000 electrons to provide a good amount of headroom. Since the CCD amplifier output limit is ∼24,000, operate at Gain=4, so that up to 80,000 electrons (counts) can be recorded. Exposure time of 30 min=1800s is assumed (1600 actual). Use CR-split=4 for exposures longer than 1600s in order to keep each exp to less than ∼9 min. Use CR-split=4 for shorter exposures in order to build up signal, which is limited by the 80,000

count saturation limit on each of the individual exp. For each star, the count rate and WL of the hottest px predicted by the ETC is tabulated along with the total rate and WL at the long WL cutoff of the CDBS spectrum or of the G750L. The fraction=38% used by the ETC for counts in central px is good for G750L at 5500A. SMOV observations of G191B2B demonstrate that the actual rate at 10300A is ∼0.5 of the prediction and about 0.8 at 8500-9200A.

Products: High fidelity STIS calibration for G750L. A set of 16 standard stars that can be used to cross-calibrate NICMOS in the overlapping wavelength range and to provide standard sources for other observations by the astronomical community. There is a dearth of standard stars at such long wavelengths.

Special Scheduling Requirements: (e.g. Apr 1998, ∼1yr after SMOV; or e.g. Nov. 1998 to enable...)

Fraction of GO/GTO Programs Supported: N/A

Resources: 27 prime orbits
Comments on orbit estimate: One orbit each visit. Two visits for 13 stars and one visit for 1 stars. Of the 17 priority 1 & 2 stars originally proposed in ISR CAL/SCS-010, BD+33d2642 is probably variable, AGK+81d266 & GD153 are done by other STIS cal programs, and BD+75d325 has been observed once.

Proposal ID 7711: STIS CCD G750L fringing flats.

Last Revised: 30 May 1997

Purpose: Investigate and monitor the STIS CCD flat-field fringing in the G750L grating at it's nominal wavelength setting (7751A). We also take WAVECALs at the same GAIN and wavelength setting. Typical S/N = 100 for each integration, and GAIN=4 on each.

Description: Investigate and monitor the STIS CCD flat-field fringing in the G750L grating at it's nominal wavelength setting (7751A). We also take WAVECALs at the same GAIN and wavelength setting. Typical S/N = 100 for each integration, and GAIN=4 on each. We will take 3 flats each visit for CR-rejection, and 1 WAVECAL for each visit. We have a visit every 3 days for this monitor to run for 4 months.

Accuracy: better than 1%

— We hope to be able to correct for fringing in STIS CCD spectra at a better than 1% level using these data as flats.

Products: Reference files, and an ISR.

Special Scheduling Requirements: Need data within the first 6 months of the start of Cycle 7

Fraction of GO/GTO Programs Supported: $\sim$10%

Resources: 50 internal orbits
Comments on orbit estimate: 3 visits/week, repeated for 4 months

Proposal ID 7720: MAMA Full Field Sensitivity Monitor

Last Revised: June 1 1997

Purpose: To monitor the sensitivity of the FUV-MAMA and NUV-MAMA over the full field.

Description: (1-2 paragraphs) By observing the globular cluster NGC6681 once every 6 months at roughly the same orientation (to keep the same stars in the same area of the detectors) we will monitor the full field sensitivity of the MAMA detectors and also monitor the astrometric and psf stability. These observations will be used to look for contamination, throughput changes, or formation of colour centers in the photocathode and window that might be missed by spectroscopic monitoring or difficult to interpret in flatfielding.

Accuracy: 1%

— counting statistics signal-to-noise on bright stars

Products: ISRs, phometric and astrometric accuracy and stabilitiy information for GOs and reference files.

Special Scheduling Requirements: Schedule visits 1 and 7 in September 1997

Fraction of GO/GTO Programs Supported: 70%

Resources: 10 prime orbits
Comments on orbit estimate: 2 orbits per visit, 1 visit executed every 6 months.

Proposal ID 7723: Grating Scatter

Last Revised: 5/29/97

Purpose:

Measure the scattering and the far-wings of the LSF vs. wavelength by observing red stars at blue wavelengths.

Description:

This proposal is an on-orbit test of grating scatter for astronomical targets with red spectral energy distributions. A red star with a known spectral-energy distribution will be observed in the CCD modes G230LB and G230MB, and in the MAMA modes with G140L, G230L, and G230M. The CCD spectra will be compared to the MAMA spectra to measure the wavelength dependence of the scattered light on the CCD. The FUV and NUV spectra will be compared to model expextations (and to each other in the wavelength region of overlap) to assess whether scattered red light is a significant source of background for the MAMA modes.

Accuracy: 1% — S/N = 100 in the scattering profile in 10 wide bins covering the spectral range of each mode. Actual uncertainties are likely to be dominated by systematics, rather than counting statistics.

Products: ISR

Special Scheduling Requirements:

Fraction of GO/GTO Programs Supported: 10%

Resources: 4 prime orbits
Comments on orbit estimate: (e.g. 4 orbit visits, repeated monthly)

Proposal ID 7728: FUV-MAMA Monitoring Flats

Last Revised: 4 Jun 1997

Purpose:

This program will obtain FUV-MAMA flat-field observations for the construction of Delta-flats for select modes.

Description:

This program will obtain FUV-MAMA flat-field observations with sufficient counts to construct Delta-flats every ∼3 months for select modes. That is, 4 to 5 visits will be required to construct a D-flat with S/N > 50 per low-res pixel. This program will also provide the feasibility and trending basis for a new flat-field proposal if the flat-field characteristics are time-dependent and/or are different than what was observed in ground testing.

Pre-flight analysis of the P-flats is incomplete, so it is not known whether the ground P-flats will apply to all wavelength settings for a given grating. This Cycle-7 calibration program calls for obtaining flats with G140L and with G140M at 1272 and 1518 in order to monitor wavelength- dependent changes that may be present. Delta-flats will be constructed every ∼3 months if the flats are wavelength dependent, or two months for the M mode if not, by using flats at all cenwave settings.

This proposal should begin in August 1997, and will be revised after a few months to include multiple SLIT-STEP positions and (possibly) wider slits, and resubmitted for the remainder of Cycle 7.

Accuracy: 2% —accuracy is per low-res pixel

Products: reference files (D-flats and/or P-flats), ISR

Special Scheduling Requirements:

The FUV-MAMA exposures should execute every week, begining on August 1. The exposures should alternate between the three FUV grating settings, and cycle among the SLIT-STEP positions in sequence, one per exposure, once the enabling command development is in place.

Fraction of GO/GTO Programs Supported: 35%

Resources: 15 internal orbits
Comments on orbit estimate: 1 orbit per week, for 15 weeks

Proposal ID 7774: Deep MAMA PSFs

Last Revised: June 1 1997

Purpose: To determine the PSF profile as a function of wavelength for the MAMA imaging modes, extending into the wings of the PSF.

Description:

Deep images of isolated point source targets will be made in STIS MAMA camera modes (FUV and NUV) using a selected set of narrow band filters. Broad band psf data will be obtained from SMOV proposal 7080. The data will be used to estimate the camera PSF near the field center. The derived psf's will be used to determine the image resolution for the case of a faint star near a bright star, image deconvolution, estimating the spectroscopic lsf, etc. The images acquired in this activity should have a peak pixel signal-to-noise of about 100 in the near wings.

Accuracy: signal to noise 10 per pixel in the near wings ofthe PSF

Products: ISRs, ETC update for encircled energies, aperture throughput files for CDBS and WWW, PSFs for WWW.

Fraction of GO/GTO Programs Supported: 70%

Resources: 4 prime orbits
Comments on orbit estimate:

Proposal ID 7658: CCD External Flats: Sky Parallels

Last Revised: 4/22/97

Purpose:

Sky flats will provide an independent measurement of the spatial sensitivity variations of the STIS CCD, and a test of the applicability of internal flats to astronomical sources.

Description:

Roughly 150 orbits of parallel imaging observations will be obtained. A typical exposure through the 50CCD filter will have roughly 300 counts from the sky. The images will cleaned of cosmic rays and masked to remove sources. Unmasked pixels will be combined from the different images to produce a sky flat. This flat should have a signal to noise ratio of more than 100 per pixel, and will be used to provide an illumination correction appropriate for external sources to the flats obtained with the internal tungsten lamp. Two-thirds of the observations should be done with the 50CCD clear filter (to derive a high S/N flat that may ultimately be better for the pipeline than the lamp flats), and one-third through F28x50LP (to provide an illumination correction to the pipeline flats).

Accuracy: 1% — S/N = 100 per pixel in the final flat.

Products: Improved pipeline FLT reference file.

Special Scheduling Requirements: We will need to discuss practicalities of scheduling this proposal with PRESTO. The best data will be obtained from fields at high galactic latitude (>20 degrees), with high zodiacal background and low earthshine. If it is practical to select such fields in advance, that would be good, but if not the less useful data can be weeded out after the images are obtained.

Fraction of GO/GTO Programs Supported: 20%

Resources: 150 parallel orbits
Comments on orbit estimate: These sky flat observations should be attached to external observations in the WFPC-2 and NICMOS Cycle-7 calibration program, where practical. The absolute minimum goal is 50 orbits in 50CCD, which would suffice to derive an illumination correction. The 150 orbits will produce high enough S/N (at least in the 50CCD clear filter) to contemplate replacing the the pipeline lamp flats with sky flats.

Proposal ID 7805: Contamination: Tie SMOV Stars to Cycle 7 Star

Last Revised: 9/4/97

Purpose: (1-2 lines) Two key issues remain from the early contamination monitoring and flux calibration of the first order CCD modes. We request 3 additional orbits to carry out observations will should resolve these issues.

First, the fundamental standard G191B2B, which is the primary FOS standard for defining the absolute flux scale, was observed early in SMOV, prior to the settling of the instrument and the capability to do acquisitions. Thereafter it went into solar avoidance. Due to either contamination/sensitivity changes or to the centering of the source on the detector (see below) in these early observations, we now believe we cannot use them to define the fundmantal flux scale. That leaves us, currently, with only the standard GD153, which we also observed in SMOV. Since the original plan was to use the SMOV G191B2B observations to set the absolute first order flux scale, we did not ask for additional orbits in the Cycle 7 Cal plan to observe it this fall. However, given the uncertainty in the early results, we now plan to obtain two one orbit visits observing this fundamental standard to set the absolute flux scale for STIS. Calibration of all the L modes and M modes will be tied to these L mode observations. Accordingly we request to execute these two orbits in November, when G191B2B comes out from behind the sun, so that the sensitivity update in January can include these results.

Second, the contamination monitor observations of GD153 obtained during SMOV show evidence for changes in sensitivity in the G230LB (down) and G430L (up) modes. These change could be due either to actual changes in sensitivity (i.e., changes in contamination) or they may also be due to differing projections of the spectra on the detector over the coarse of the 4 months during which the observations were taken. During that time there were MSM updates which changed the projection of the spectra on the detector and there were also drifts internal to STIS. The STIS drifts have now stopped and the the MSM updates are also completed. Thus we seek one additional orbit to observe GD153 to get a final point, way out along the baseline. This should allow us to, fairly unambiguously, determine whether the observation is consistent with no-contamination or not. Coupled with vignetting studies, we should be able to determine, thereafter, whether or not contamination has affected STIS.

Description: (1-2 paragraphs) About 10,000 counts per resolution element can be obtained in less than 40 min for the STIS CCD spectral bands G230LB, G430L, and G750L. Overheads including guide star and target acquisition account for about 20 additional minutes. After the GS ACQ, the ACQ, and the G750L short slit FLAT, there are 30 minutes remaining in the orbit, plus or minus 20%. This proposal is a follow-on to SMOV proposal 7063 and can use

the same phase 2 template as the final version of 7063.

G191B2B must be observed twice to provide a firm and reliable calibration anchor point, because of its status as the brightest and most fundamental of the 4 pure hydrogen WD's, because the 3 SMOV observation were the earliest and poorly positioned on the CCD, and because no other cycle 7 observations of this most fundamental standard are planned.

Accuracy: (A number) 1%

— (How that accuracy is to be interpreted) The repeatability of the SMOV observations are about 0.2% when observing the same standard star with the same setup. Absolute fluxes of these 2 standards are known to ∼2%, while the relative flux of G191B2B/GD153 is uncertain by ∼1%.

Saturation of the CCD is assumed to be 80,000 electrons to provide a good amount of headroom. Since the CCD amplifier output limit is ∼24,000, operate at Gain=4, so that up to 80,000 electrons (counts) can be recorded. Exposure time of 27 min=1620s is assumed. The fraction=38% used by the ETC for counts in central px is good for G750L at 5500A. SMOV observations of G191B2B demonstrate that the actual rate at 10300A is ∼0.5 of the prediction and about 0.8 at 8500-9200A.

Products: (e.g. reference files, ISR, etc.) Confirmation that the change in sensitivity is less than ∼1% per year at all CCD wavelengths.

Special Scheduling Requirements: (e.g. Apr 1998, ∼1yr after SMOV; or e.g. Nov. 1998 to enable...)

Visit 1 - G191B2B, as soon as possible: mid 97Oct Visit 2 - G191B2B, 2-3 weeks after visit 1: early 97Nov Visit 3 - GD153, last half of 97 November, after emerging from solar avoidance on 97Nov10.

Fraction of GO/GTO Programs Supported: 50%

Resources: 3 prime orbits
Comments on orbit estimate: Two stars for three CCD low-disp modes. One orbit each star.

Proposal ID 7809: Prism Sensitivity and Faint Calibration Standard Extension

Last Revised: 29 Oct 1997

Purpose: This program is the basic sensitivity measurement for the Prism. It is run once a year. Sensitivity measurements are done for the Prism at a central wavelength of 1200 using the F25SRF2 and the 52x2 apertures. The faint white dwarf HS2027+0651 is used. Cross-calibration via all first-order L gratings is done as well.

Description: Observe the star HS2027+0651 with the Prism and the first-order gratings. 1) Standard target acquisition with the long-pass. 2) 6x6 confirmation image. 3) Spectra with G140L,G230L,G230LB,G430L, G750L using 52x2. 4) Spectra with Prism using 52x2 and F25SRF2. Since contemporaneous flats are recommended for GO's, add the flat for G750L. Counting statistics of 1% per resolution element are required for the flat.

Accuracy: 10% for Prism, 1% for gratings — Each spectroscopic measurement will give a statistical uncertainty of 1% at the central wavelength of the primary tilt. (10% for Prism).

Products: CDBS absolute sensitivity tables, ISR

Special Scheduling Requirements: Spring 1998

Fraction of GO/GTO Programs Supported: 1%

Resources: 3 prime orbits
Comments on orbit estimate: 3 orbits in 1 visit

Proposal ID 7810: Sensitivity of Important Secondary Wavelength Settings

Last Revised: 14 Nov 1997

Purpose: This program is the basic sensitivity measurement for five secondary wavelength settings which are heavily used in Cycle 7. It is run once a year. Sensitivity measurements are done for G750M at central wavelengths 6581, 8561, for G430M at 4781, for E140H at 1271, and for E230H at 2812.

Description: Observe the astronomical standard star BD+75D325 through a wide slit (52X2 for G750M and G430M; 0.2X0.2 for E140H and E230H) with CRSPLIT=2 for the CCD. Wavelength settings for spectroscopy: G750M 6581,8561, G430M 4781, E140H 1271, E230H 2812. Standard point source target acquisition. No peak-up required. Since contemporaneous flats are recommended for GO's, add the flat for G750M at 8561. Counting statistics of 1% per resolution element are required for the flat.

Accuracy: 1% — Each spectroscopic measurement will give a statistical uncertainty of 1% at the central wavelength.

Products: CDBS absolute sensitivity tables, ISR

Special Scheduling Requirements: Early 1998

Fraction of GO/GTO Programs Supported: 2%

Resources: 2 prime orbits
Comments on orbit estimate: 2 orbits in 1 visit

Proposal ID 7917: Effect of MAMA Charge Offsetting on Sensitivity and Dispersion

Last Revised: 9 Dec 1997

Purpose: In order to conserve charge on the STIS MAMA microchannel plates and maintain even detector quantum efficiency, the STIS MAMA spectroscopic modes are differentially offset each month along and across the detector. This 'dithering' of the spectra is a fundamental part of the operation of the MAMAs needed to preserve its lifetime. Thus it is important that we characterize the effect of the offseting on the science data.

Description: Because of the lack of a flat field with perfect high and low frequency corrections and because of intentional dithering of the spectral location on the MAMAs, changes in sensitivity and dispersion must be measured over the dithering range of ∼40 pixels. This dither range is at a smaller scale than previously measured, and in this case we are tilting the grating, not stepping the star. Changes at the percent level have been seen when the spectral position shifts by a few pixels. Because of the few pixel drifts internal to STIS, only the monthly dither positions at the central, at the extremes of +-20 px, and at +-10px will be measured in this proposal for the G140L and G230L modes. Additionally the effect of dither on the echelle modes will be sampled via an observation of E140M at nominal and the extreme settings.

Accuracy: 1% — Each spectroscopic measurement will give a statistical uncertainty of 1% if averaged over 10 pixels.

Products: ISR

Special Scheduling Requirements: Early 1998

Fraction of GO/GTO Programs Supported: 5%

Resources: 4 prime orbits
Comments on orbit estimate:

Proposal ID 7931: Scattered light in the echelle modes

Last Revised: 28 Jan 1998

Purpose: Measure the scattered light in the echelle modes between 1200 A and 3000 A using a previously observed star with black absorption lines.

Description: Observations of the reddened O star CPD-59D2603 done as part of ERO suggest significant scattering in the echelle modes. The effect is strongest at the shortest wavelengths. The purpose of this program is to quantify the scattering by extending the ERO observations to all other modes and wavelengths of interest to observers. CPD-59D2603 will be observed with E140M/H, E230M/H, G140M. and G230M. The 0.2x0.2, 0.1x0.09, and 0.2x0.06 apertures are used. The observations will be complemented by data taken in a Cycle 7 GO program. All spectral ranges contain strong saturated interstellar lines. The count rates in the line cores allow us to quantify the amount of scattered light.

Accuracy: 5% — Each spectroscopic measurement will give a statistical uncertainty of 5% after summation over the line core.

Products: Recommendation for Calstis upgrade, ISR

Special Scheduling Requirements: Summer 1998

Fraction of GO/GTO Programs Supported: 10%

Resources: 18 prime orbits
Comments on orbit estimate: 7 M mode and 11 H mode orbits

Proposal ID 7932: Spectral purity and slit throughputs for the first order

Last Revised: 23 Jan 1998

Purpose: SMOV data show that spectral lines are filled in when observed with large slits. This is because the OTA and the detector PSF are extended, in particular in the far-UV and the near-IR. Therefore an extracted spectrum at these extreme wavelengths is a complex superposition of spectrally pure and impure data, with the spectrally impure data coming from larger spatial distance. The purpose of this proposal is to measure and quantify this effect by observing strong absorption lines through slits of different sizes. The data are also useful to test model predictions for the slit throughputs.

Description: We will observe the Ca II triplet at 8600, Lya, and Hgamma. Spectral impurity is largest at the wavelengths of the triplet and Lya. We will bracket the effect with these two lines and interpolate in between, using Hgamma as a reference line. The three lines will be observed with four apertures: 52x2, 52x0.5, 52x0.2, 52x0.1, and 52x0.05. The expectation is to measure a spectrally pure line with the 0.05" slit. This will be tested by comparing the data for Hgamma and Lya to a pure hydrogen model atmosphere. We will use a hot white dwarf for Lya, a DA star for Hgamma, and a K giant for Ca II. These choices are a compromise between line strengths, brightness, and known spectral behavior.

Accuracy: 2% — The goal is to measure the flux in the line core to within 2%. The line cores reach about 10 to 40% of the continuum.

Products: ISR

Special Scheduling Requirements: Summer 1998

Fraction of GO/GTO Programs Supported: 10%

Resources: 13 prime orbits
Comments on orbit estimate: 6 orbits for GD71, 4 orbits for GRW, 3 orbits for HD101998

Proposal ID 7935: Cross Disperser Mode Test

Last Revised: 01/29/98

Purpose: To test the cross-disperser mode functionality and sensitivity.

Description: This program is to test the scientific capabilities and some of the implementation procedures of the STIS cross-disperser modes. The sensitivity of the cross-disperser modes in a few settings will be determined using a standard star. Slit throughputs of the orthogonal slits will also be determined using different slits. The results would be useful in determining the limiting magnitudes (for a given S/N and exposure time) for different cross-disperser modes.

One of the main rationale behind making these cross-disperser modes not available in cycle 7 was the fact that the NUV and FUV MAMA detectors are positioned such that the light in the cross-disperser modes falls in both NUV and FUV-MAMA detectors simultaneously. Thus the BOP checking procedure was complicated. Now that the MAMA detectors can be switched off at any given time, that is less of a constraint. However, it will be necessary to restrict the use of the cross-disperser modes to one detector at a time. Therefore to implement their use, the ground system would have to be modified to allow the use of only one MAMA per visit when the cross-dispersers are used and shut off the other MAMA. For this proposal, however, both MAMAs can be kept on. The target is chosen such that there is no overlight if both detectors are on at the same time.

Accuracy: — This proposal is mainly to test the modes.

Products: ISR.

Special Scheduling Requirements:

Fraction of GO/GTO Programs Supported: FutureOnly

Resources: 3 prime orbits
Comments on orbit estimate:

Proposal ID 7936: External to Internal Wavelength Correction

Last Revised: 2/20/98

Purpose: Quantitatively characterize the degree, if any, of offset of wavelength system for an external source from that determined by the internal wavelength calibration system.

Description: By virtue of its design, STIS is not expected to have any offset between wavelength systems calibrated with observations of external targets and those calibrated by observations of the internal linelamps. This short program will determine the size of any offset to the accuracy of measurement for observations with NUV MAMA E230M, G230M, CCD G230MB and possibly G430M. A precision IAU radial velocity standard, o Aql - spectral type F8V, will be used for the observations.

Accuracy: offsets corresponding to 0.1 pixels are the limiting size of offset that can be determined; velocity offset varies by disperser. — see above

Products: reference files and ISR

Special Scheduling Requirements: none

Fraction of GO/GTO Programs Supported: 100%

Resources: 3 prime orbits
Comments on orbit estimate: 1 visits

Proposal ID 7937: MAMA Off Axis Sensitivity (Vignetting)

Last Revised: 2/20/98

Purpose: Re-measure STIS relative response to a point source in G430L, G140L, and G140M modes along the slit direction.

Description:

This program follows up on previous measurements of the variation in STIS sensitivity perpendicular to the dispersion axis (program 7097). The spatial resolution is also measured as a function of position on the slit by placing a standard star at a number of positions spaced by ∼1" along a wide slit (52X2). Avoid the fiducial bars and field edges by at least 0.6". Target acquisition must be accurate to ∼0.1" to center the star in the slit. Obtain all positions with separate MAMA and CCD readouts. Grating G140L, Central wavelength 1425, approx 20 positions along the slit. Grating G140M, Central wavelength 1272, approx 20 positions along the slit. Grating G430L, Central wavelength 4300, approx 3-5 positions along the slit.

Accuracy: 1% over 20px, ie a minimum of 500 ct/px, for vignetting correction to L flats.

— based upon anticipated photon statistics in sampled spectra and on accuracy of POS_TARGS and acquisition.

Products: ISR (STAN, WWW as necessary), CDBS tables of L flats corrected for OTA vignetting

Special Scheduling Requirements: (e.g. Apr 1998, ∼1yr after last performed in SMOV, or monthly) none

Fraction of GO/GTO Programs Supported: 25%

Resources: 4 prime orbits
Comments on orbit estimate: Two visits, 2 orbits for each target.

Proposal ID 7943: Transmission of filtered echelle slits

Last Revised: 8 Jan 1998

Purpose: Measure the transmission of the echelle filtered slits between 1200 A and 3000 A using a well-established spectrophotometric standard star.

Description: This program confirms the STIS sensitivity vs. wavelength over the full STIS echelle wavelength range through observations of a standard star with filtered apertures. The corresponding SMOV test produced ambiguous results, possibly caused by an imperfect target acquisition. The 0.2x0.05ND and 0.3x0.05ND apertures will be measured. These apertures are of interest to users observing targets which are too bright for unfiltered apertures.

Accuracy: 5% — Each spectroscopic measurement will give a statistical uncertainty of 5% over most of the wavelength range. This is sufficient since the main purpose is bright object protection, and not photometric accuracy.

Products: CDBS absolute sensitivity tables, ISR

Special Scheduling Requirements: Summer 1998

Fraction of GO/GTO Programs Supported: 2%

Resources: 2 prime orbits
Comments on orbit estimate: 2 orbits in 1 visit

Proposal ID 7944: STIS CCD Sparse-field CTE test

Last Revised: 1/22/98

Purpose:

Measure the charge transfer efficiency of the STIS CCD in both the serial and parallel direction.

Description:

The sparse-field CTE will be measured via internal calibration internal lamp observations taken through narrow slits. The strategy of the test is as follows. If there is a CTE effect, charge will be left behind as the image is shifted through pixels during readout. The further the charge needs to be shifted to be read out, the more charge it will lose. Becase the D amp and the B amp read out at opposite ends of the CCD, the ratio in image intensity (B amp/D amp) should increase as the image position moves closer to the B amp and (and further from the D amp end).

For the parallel CTE measurement, the test will use the the cross-disperser slits: 0.05X29, 0.05x31NDB, and 0.05x31NDA slits, projected on different parts of the detector via special commanding of the slit wheel. For the serial CTE measurement, a small slit will be stepped along the detector in the serial direction (i.e. along AXIS1) using special commanding of the MSM. Amps C and D will be read out.

A two-orbit observation of a star field will be made to test whether the CTE measurement from the lamp observations reproduces that seen for a star field. Observations of the WFPC-2 photometric standard field will be made, with a range of exposure times and with readout from all four Amps.

Accuracy: 1% — Measurements will be precise enough to set an upper limit of 1% on the CTE.

Products: ISR.

Fraction of GO/GTO Programs Supported: 20%

Resources: 15 internal orbits
Comments on orbit estimate: Do externals only once (per cycle) as a sanity check. Do internals every 6 months. Currently 5 orbits per visit. This could be cut back for future cycles.

Proposal ID 7953: STIS Slit Wheel Repeatability

Last Revised: February 17, 1998

Purpose:

To check the stability of the STIS slit wheel by taking a sequence of comparison lamp spectra with grating G230M (3055) and 3 different slits.

Description:

Verify the repeatability of the slit wheel for 3 STIS slits (52X0.2, 52X0.1, and 52X0.05) by taking images with the Pt/Cr/Ne lamp and the MAMA detector. Use the G230M (3055) grating with the NUV-MAMA, and rotate the slit wheel among the 3 chosen slits.

Accuracy: 0.1 pixels

Products: ISR

Special Scheduling Requirements: at the beginning of the cycle

Fraction of GO/GTO Programs Supported: 100%

Resources: 1 internal orbits
Comments on orbit estimate: perform one time