STIS Cycle 8 Calibration Plan

ID	Proposal Title	Frequency	Estimated Time (orbits)		Scheduling Required	Resources Required (FTE)	Products	Accuracy Required	Notes
			"External"	"Internal"					
Routine Monitoring Programs									
8407	CCD Performance Monitor	2 per year		42		3 weeks	CDBS, IHB	0.1 ADU 0.5 e-/hr	Measures gain, readnoise, edge-response CTE, biases at non-standard gain.
8408	CCD Dark Monitor	14/week		840		6	CDBS	15% weekly 8% monthly	
8409	CCD Bias Monitor	weekly		426		6	CDBS	0.1 ADU	
8410	CCD Hot Pixel Annealing	monthly		168		4	CDBS, IHB		Removes hot pixels, tracks permanent growth.
8411	CCD Spectroscopic Flats	monthly		93		6	CDBS	<1%	
8412	CCD Imaging Flats	monthly		18		6	CDBS	<1%	
8413	CCD Dispersion Solutions	annually		6		2	CDBS	0.1 pixel	
8414	CCD Sparse-field CTE internal	2 per year		21		4	ISR, IHB	1%	Measures CTE using internal cal lamps and readouts through different amps.
8415	CCD Sparse-field CTE external	annually	6			3	ISR, IHB	1%	Measures CTE at low signal levels with varying background.
8416	CCD full-field sensitivity	every 3 months	2			2	ISR, IHB	1%	Monitor CCD sensitivity over whole field of view using standard star field.
8417	Slit wheel repeatability	annually		1		1	ISR	0.1 pixels	
8418	CCD Sensitivity Monitor	bimonthly	10			4	CDBS	2%	Standard star spectra at the field center.
8421	STIS Spectroscopic Sensitivity	annually	38			24	CDBS	1%	Basic sensitivity measure. Higher S/N, more modes than for contamination monitor.
8422	Imaging Sensitivity & PSF library	annually	14			8	CDBS, IHB, ISR, web	1%	Various standards observed on and off axis.

ID	Proposal Title	Frequency	Estimated Time (orbits)		Scheduling Required	Resources Required (FTE)	Products	Accuracy Required	Notes
			"External"	"Internal"					
8424	MAMA Sensitivity & Focus Monitor	monthly	25			7	CDBS	2% (sens) 10% (FWHM)	Standard star spectra at field center. ACQ-PEAK monitors focus.
8425	MAMA full-field Sensitivity	every 6 months	6			10	ISR	1%	Star cluster in imaging mode.
8426	MAMA Dark Monitor	2/week/ detector		260		8	CDBS		
8427	MAMA Fold distribution	every 6 months		4		1	ISR, TIPS	5%	Monitor performance of MAMA microchannel plates
8428	MAMA FUV flats	annually		18		4	CDBS	2%	Wavelength independent pixel-to-pixel response stability
8429	MAMA NUV flats	annually		20		4	CDBS	1%	Wavelength independent pixel-to-pixel response stability
8430	MAMA Dispersion Solutions	annually		10		8	CDBS	0.1 pixel	Yearly monitor of dispersion solutions.
Special Calibration Programs									
8434	MAMA Slitless spectroscopy		6			3	ISR, IHB CDBS	1 pixel	Dispersion solutions off axis for G140L, G230L and PRISM
8435	MAMA Echelle LSF Measurements		4			5	ISR, IHB, web	0.2 pixels FWHM	Three stars.
8433	MAMA Incidence Angle Corrections		4			3	CDBS		Dispersion measured off axis.
8419	CCD Coronographic PSF		12		3 orbits early	8	ISR, STAN, IHB	5% at 1"	Two stars with different spectral types. Outsourcing candidate.
	Optical Fringing		4			2	IHB, ISR	1%	HII region. Outsourcing candidate.
8423	HST Faint standards extension		15			20	PASP article	1% grating; 10% prism	Four stars. Outsourcing candidate.

ID	Proposal Title	Frequency	Estimated Time (orbits)		Scheduling Required	Resources Required (FTE)	Products	Accuracy Required	Notes
			"External"	"Internal"					
8431	MAMA Repeller wire		3	2	early	6	ISR, STAN, IHB		Tests highest spectral resolution capability in FUV. Outsourcing candidate.
TOTAL TIME (including all executions)			**149**	**1927**		**168**			

Proposal ID 8407: STIS Cycle 8: CCD Performance Monitor

Plan

Purpose	Measure the baseline performance of the CCD system.
Description	This activity measures the baseline performance of the CCD subsystem. Only primary amplifier D is used. Bias, Dark, and Flat Field exposures are taken in order to measure read noise, darkcurrent, CTE, and gain. Dark exposures are made outside the SAA. Full frame and binned observations are made. Bias frames arealso taken in subarray readouts to check the bias level for ACQ andACQ/PEAK observations. All exposures are internals.
Fraction GO/GTO Programs Supported	40%
Resources Required: Observation	42 internal orbits.
Resources Required: Analysis	3 weeks
Products	Reference files, Instrument Handbook
Accuracy Goals	0.1 ADU for gain, 0.5 e-/hour dark current
Scheduling& Special Requirements	Every 6 months. Schedule first visit early in the cycle.

Proposal ID 8408: STIS Cycle 8: CCD Dark Monitor

Plan

Purpose	Monitor the darks for the STIS CCD.
Description	
Fraction GO/GTO Programs Supported	Obtain darks at GAIN=1 in order to monitor CCD behaviour and chart growth of hot and bad pixels. See how well the anneals work for the CCD. This proposal is a continuation of 7949, except that bias observations have been moved to a consolidated bias calibration proposal. All exposures are internals and fit in occultation orbits.
Resources Required: Observation	840 internal orbits
Resources Required: Analysis	6 weeks
Products	Reference files (weekly darks and superdarks, bad pixel tables).
Accuracy Goals	15% weekly, 8% monthly (per pixel)
Scheduling& Special Requirements	Phase out cycle-7 calibration program and phase in this one during July, 1999.

Proposal ID 8409: STIS Cycle 8: CCD Bias Monitor

Plan

Purpose	Monitor the bias pattern in the STIS CCD
Description	Take full-frame bias exposures in binning factor 1x1, 1x2, 2x1, and 2x2 at gain=1, and at 1x1 binning in gain=4. All exposures are internals and fit in occultation orbits. This proposal consolidates all previous and planned bias calibration proposals. Most exposures are 1x1 binning at gain=1.
Fraction GO/GTO Programs Supported	30%
Resources Required: Observation	426 internal orbits
Resources Required: Analysis	6 weeks
Products	pdates of the CDBS Superbias reference files; Monitoring ISR.
Accuracy Goals	Bias level: better than 0.1 ADU at any position within CCD frame; read-out noise negligible.
Scheduling& Special Requirements	Phase in July 1999. Phase out cycle-7 binned bias monitor at the same time.

Proposal ID 8410: STIS Cycle 8: CCD Hot Pixel Annealing

Plan

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.
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 -83C 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. The flat field exposures will permit evaluation of any window contamination acquired during the annealing period.
Fraction GO/GTO Programs Supported	
Resources Required: Observation	168 internal orbits
Resources Required: Analysis	4 FTE weeks
Products	Darks become part of superdark reference files; ISR tracks annealing performance.
Accuracy Goals	n/a
Scheduling& Special Requirements	Schedule monthly

Proposal ID 8411: STIS Cycle 8: CCD Spectroscopic Flats

Plan

Purpose	Obtain CCD flats on the STIS CCD in spectroscopic mode.
Description	Take flats at GAIN=4 with the tungsten lamp for gratings G750M (cenwave 6581) and G430M (cenwave 5216). Take flats at GAIN=1 and GAIN=4 with the tungsten lamp for grating G430L. Take flats at GAIN=1 and GAIN=4 with the deuterium lamp for gratings G230MB (cenwave 2557 and 3115), G230LB, and G430L. Observations are being made at two wavelengths for G230MB because the bluest setting is substantially different from the rest. Each grating should be observed once during the year, except for monthly monitoring of G750M.
Fraction GO/GTO Programs Supported	30%
Resources Required: Observation	93 internal orbits
Resources Required: Analysis	6 FTE weeks
Products	PFL reference files for CCD; ISR
Accuracy Goals	<1%
Scheduling& Special Requirements	

Proposal ID 8412: STIS Cycle 8: CCD Imaging Flats

Plan

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 development of new cosmetic defects. Get flats for F28XOII and F28XOIII. Based on SMOV 7099. Continuation of 7634,with OII and OIII filters added.
Fraction GO/GTO Programs Supported	30%
Resources Required: Observation	18 internal orbits
Resources Required: Analysis	6 FTE weeks
Products	PFL reference files; ISR
Accuracy Goals	0.5% pixel-to-pixel, except 0.8% for OII.
Scheduling& Special Requirements	

Proposal ID 8413: STIS Cycle 8: CCD Dispersion Solutions

Plan

Purpose	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 (program 7650 was executed in Cycle 7). 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.
Fraction GO/GTO Programs Supported	38%
Resources Required: Observation	6 internal orbits
Resources Required: Analysis	2 FTE weeks
Products	DSP Reference file
Accuracy Goals	0.2 pixels
Scheduling& Special Requirements	First visit toward the beginning of cycle-8; second visit toward the end of the cycle.

Proposal ID 8414: STIS Cycle 8: CCD Sparse Field CTE Internal

Plan

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. 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. Because 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 in that case.
Fraction GO/GTO Programs Supported	20%
Resources Required: Observation	21 internal orbits
Resources Required: Analysis	4 FTE weeks
Products	ISR
Accuracy Goals	1%
Scheduling& Special Requirements	

Proposal ID 8415: STIS Cycle 8: CCD Sparse Field CTE External

Plan

Purpose Establish an accurate correction for low count level nonlinearity (CTE) that can be used for direct analysis of science data.

Description An exploratory Cycle 7 calibration proposal (7666) has been used to show that at low count levels the STIS CCD shows significant suppression of counts. The intensity and position dependence of the effect is consistent with CTE. (See Gilliland, Goudfrooij, and Kimble 1999, PASP, submitted for discussion.) A number of questions/issues came up in analyzing the existing calibration data that can only be pursued with more extensive observations: (1) This program will determine if suppression exists at higher background levels. (2) An x-dependence will be tested for. (3) Accurate results will be obtained for both spectroscopy and imaging modes. (4) An earlier visit will be repeated after two years to allow a check on time dependence.
The basic technique is to observe a sparse field of stellar sources (~500-1000 imaging, ~50 spectroscopy). Exposures are cycled through at short, medium and long exposures (X5 steps). For the new targets (NGC6752 - imaging, NGC346 - spectroscopy) the observations are done in the CVZ and the cycle of short to long exposures is repeated X3 in one CVZ orbit assuring that a subset of the exposures will be obtained at significantly higher sky background levels. Analysis consists of ratioing extracted counts at the different exposure times and seeking a solution (based on Stetson 1998, PASP, 110, 1448 equations) for CTE correction coefficients that linearizes the full set of counts.
The test will be repeated reading out through amp B, to provide confirmation that the effect is entirely due to CTE.

Fraction GO/GTO Programs Supported 20%

Resources Required: Observation 6 external orbits

Plan

Resources Required: Analysis	3 FTE weeks
Products	ISR, algorithm for calibration and coeficients
Accuracy Goals	CTE correction coefficients will be determined to a relative 1% accuracy.
Scheduling& Special Requirements	Two of the orbits are CVZ, each of these is formally 1.1-1.2 orbits long. We need to have science observations extending for a full 96 minute orbit in order to assure that a full bright sky visibility period is sampled. Since these two orbits are in two visits, an automatic report will show +2 orbits Requires special commanding to read out through different amplifiers.

Proposal ID 8416: STIS Cycle 8: CCD Full-Field Sensitivity

Plan

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.
Fraction GO/GTO Programs Supported	40%
Resources Required: Observation	2 external orbits
Resources Required: Analysis	2 FTE weeks
Products	PHT reference file; ISR, STAN
Accuracy Goals	1%
Scheduling& Special Requirements	One orbit every six months

Proposal ID 8418: STIS Cycle 8: CCD Sensitivity Monitor

Plan

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
Fraction GO/GTO Programs Supported	50%
Resources Required: Observation	10 external orbits
Resources Required: Analysis	4 FTE weeks
Products	PHT reference files; ISR
Accuracy Goals	2% at wavelength of least sensitivity
Scheduling& Special Requirements	1 orbit every 2 months for L modes 1 additional orbit every 4 months for M modes

Proposal ID 8417: STIS Cycle 8: Slit Wheel Repeatability

Plan

Purpose	To check the stability of the STIS slit wheel.
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.
Fraction GO/GTO Programs Supported	100%
Resources Required: Observation	1 internal orbit
Resources Required: Analysis	1 FTE week
Products	ISR
Accuracy Goals	0.1 pixel
Scheduling& Special Requirements	

Proposal ID 8421: STIS Cycle 8: STIS Spectroscopic Sensitivity

Plan

Purpose

This program is the basic sensitivity measurement for some once in Cycle 8. Sensitivity measurements are done for a few primary tilts of the gratings.

Description

Observe astronomical standard stars through a wide slit (52X2 for 1st order, 0.2x0.2 for echelle). CR-SPLIT=4 for CCD exposures lasting 1 orbit; CR-SPLIT=2 otherwise. The spectrophotometric standard stars GD71 and G191B2B are used.

Wavelength settings for spectroscopy:

G140L	1475
G230L	2376
G140M	1173,1222,1321,1420,1518,1616,1714
G230M	1687,1769,1933,2095, 2257,2419,2579, 2739, 2898, 3055, 3134
E140M	1425
E230M	1978,2707
E140H	1234,1598
E230H	1763,2513,3012
G230LB	2375
G430L	4300
G750L	7751
G230MB	1713,1995,2276,2557,2836,3115
G430M	3165,3423,3936,4451,4961,5471
G750M	5734,6768,7795,8825,9851

Contemporaneous CCD Flats are taken for CCD modes G750L and G750M.

Fraction GO/GTO Programs Supported

35%

Resources Required: Observation

38 external orbits

Resources Required: Analysis

24 FTE weeks

Plan

Products	PHT reference files. ISR.
Accuracy Goals	1%
Scheduling& Special Requirements	

Proposal ID 8422: STIS Cycle 8: STIS Imaging Sensitivity and PSF Library

Plan

Purpose This program has several goals: (1) to improve the calibration of the on-axis imaging sensitivity of STIS; (2) to obtain high S/N observations stars (both saturated and unsaturated) for a PSF library, and (3) to obtain narrow-band observations of a star field to improve on the STIS PSF model.

Description The calibration requirements vary for the different modes.

For the CCD modes we typically have only one standard star observation. The cycle-8 calibration will get us more standard stars to verify the absolute calibration.

For the MAMA broad-band imaging modes, we do not have a direct calibration; only an indirect one through the F25ND3 and spectroscopic measurements of the filter transmission. We intend to take spectra of one or two stars in NGC6681 to allow direct calibration of these imaging modes.

For the MAMA narrow-band imaging modes, we will verify the calibration from cycle-7, and improve the F25LYA calibration by using a star with good data in the core of Lya.

The standard stars will be used for PSF measurements, but also additional stars for a wider range of colors will be used for 50CCD, where several GO programs require PSF calibration.

Observations of a star-field with the OII filter will be included to improve modeling of STIS PSF in TinyTim. Subarrays will be used for the CCD to increase the data throughput. A test at two different gains will be included.

Fraction GO/GTO Programs Supported 35%

Resources Required: Observation 14 external orbits

Resources Required: Analysis 8 FTE weeks

Products PHT reference files

Plan

Accuracy Goals	1% photometry
Scheduling& Special Requirements	

Proposal ID 8424: STIS Cycle 8: MAMA Sensitivity and Focus Monitor

Plan

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 6 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).
Fraction GO/GTO Programs Supported	100%
Resources Required: Observation	25 external SAA free orbits
Resources Required: Analysis	7 FTE weeks
Products	Interim reports and ISR on sensitivity monitor. ISR on focus-monitor. If the focus quality is found to degrade significantly, aseparate program to take corrective action (such as an adjustment of the STIS tip/tilt mirror) may be implemented.
Accuracy Goals	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
Scheduling& Special Requirements	1 orbit monthly for L modes plus focus monitor 1 orbit every 2 months for M modes 2 orbits every 6 months for E modes

Proposal ID 8425: STIS Cycle 8: MAMA Full-Field Sensitivity

Plan

Purpose	To monitor the sensitivity of the FUV-MAMA and NUV-MAMA over the full field.
Description	By observing the globular cluster NGC668 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.
Fraction GO/GTO Programs Supported	30%
Resources Required: Observation	6 external SAA free orbits
Resources Required: Analysis	10 FTE weeks
Products	PHT reference files. Instrument Handbook; ISR
Accuracy Goals	1%
Scheduling& Special Requirements	One visit every six months

Proposal ID 8426: STIS Cycle 8: MAMA Dark Monitor

Plan

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 the dark rate, indicative of detector problems developing.
Description	Two times a week a 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 allow them to schedule in occultation.
Fraction GO/GTO Programs Supported	65%
Resources Required: Observation	260 internal SAA free orbits
Resources Required: Analysis	8 FTE weeks
Products	Updates to DRK and BPX reference files; ISR
Accuracy Goals	Each measurement will give a statistical uncertainty of 1% for the global dark rate.
Scheduling& Special Requirements	Two darks per detector per week. Schedule during occultation. The exposure times can be shortened if it becomes difficult to find enough free time during occultations.

Proposal ID 8427: STIS Cycle 8: MAMA Fold Distribution

Plan

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 procedure 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 STIS ISR 98-02
Fraction GO/GTO Programs Supported	50%
Resources Required: Observation	4 internal SAA-free orbits
Resources Required: Analysis	1 FTE weeks
Products	Technical Instrument Report and/or corrective action if serious changes are detected.
Accuracy Goals	Position of the peak in the fold distribution can be measured to about 5% accuracy from this procedure.
Scheduling& Special Requirements	

Proposal ID 8428: STIS Cycle 8: MAMA FUV Flats

Plan

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.

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-8 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.

Fraction GO/GTO Programs Supported 35%

Resources Required: Observation 18 internal SAA free orbits

Resources Required: Analysis 4 FTE weeks

Products PFL and/or DFL reference files; ISR if significant evolution is seen

Accuracy Goals 1%

Plan

Scheduling& Special Requirements	Schedule first visit in July or August, 1999, second visit a year later.

Proposal ID 8429: STIS Cycle 8: MAMA NUV Flats

Plan

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.

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-8 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 remaining visits will be executed one or two per week until the end.

Fraction GO/GTO Programs Supported 40%

Resources Required: Observation 20 internal SAA-free orbits

Resources Required: Analysis 4 FTE weeks

Products PFL and/or DFL reference files; ISR if significant evolution is seen.

Accuracy Goals 1%

Plan

Scheduling& Special Requirements	Schedule first visit in July or August, 1999, second visit a year later.

Proposal ID 8430: STIS Cycle 8: MAMA Dispersion Solutions

Plan

Purpose	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.
Fraction GO/GTO Programs Supported	62%
Resources Required: Observation	10 internal SAA-free orbits
Resources Required: Analysis	8 FTE week
Products	DSP reference files.
Accuracy Goals	0.1 pixels
Scheduling& Special Requirements	Schedule first visit toward the beginning of cycle-8; second visit toward the end of the cycle.

Proposal ID 8r19: STIS Cycle 8: CCD Coronographic PSF

Plan

Purpose	Acquire a set of deep, coronagraphic images of isolated, point source stars with STIS to facilitate correction of coronagraphic science observations for residual scattered light from the occulted objects.
Description	We plan a suite of deep STIS coronagraphic images of 2 isolated stars at each of 2 wedge locations.The calibration objects are isolated, point sources with no low-mass companions, no IR excesses, and observed at high galactic latitude to minimize the number of background point sources in the STIS field of view.We plan 3 consecutive orbits on each star at each wedge location (wedgeA1.0 and wedgeA1.8) to monitor how the PSF changes with time after the initial target acquisition, and to determine whether the PSF is more similar at the equivalent time from orbit to orbit, or whether it is more similar within any given orbit.
Fraction GO/GTO Programs Supported	1%
Resources Required: Observation	12 external orbits
Resources Required: Analysis	8 FTE weeks
Products	1. Operational recommendations on scheduling of coronagraphic observations, and assessment of the need to implement the capability to roll in orient during an orbit (as was done for NICMOS). 2. A library of deep PSF images to supplement the existing HD 60753 (B2) set and facilitate detection of circumstellar material and close companions.

Plan

Accuracy Goals	The S/N of each CR-SPLIT=8 observation set will be comparable to that obtained in typical GO/GTO coronagraphic observations. The goal is to have the individual subexposures as well exposed as possible without saturating anywhere in the image (<30000 DN everywhere).
Scheduling& Special Requirements	Schedule the first three orbits early in cycle-8. The remaining 9 orbits should be placed ON-HOLD pending analysis of the first three orbits.

Proposal ID <#>: STIS Cycle 8: Optical Fringing

Plan

Purpose	To ascertain whether optical interference due to the blocking filters on the STIS first-order gratings affects external observations.
Description	Obtain long-slit spectra of an HII region with smooth morphology and a low velocity dispersion. Compare the flux in the cross-dispersion direction with the flux in the same region of the nebula measured with a narrowband filter.
Fraction GO/GTO Programs Supported	1%
Resources Required: Observation	4 external orbits
Resources Required: Analysis	2 FTE weeks
Products	ISR; possible PASP article
Accuracy Goals	1%
Scheduling& Special Requirements	Schedule in the first half of cycle-8, assuming a suitable source can be identified.

Proposal ID 8423: STIS Cycle 8: HST Faint Standards Extension

Plan

Purpose

The HST absolute flux scale is based on 4 primary flux standards: G191B2B, HZ43, GD153, and GD71. For the new instruments with higher sensitivity being added to HST, fainter standards are required. We will expand the list of fainter spectroscopic calibration standards for COS and ACS, selecting 4 targets that meet the following criteria:

- |ecliptic latitude| > 50 degrees
- available V magnitude
- f(1500 Å) between 1 and 4 x 10^{-13} erg/s/cm/cm/Å
- T_eff and log g available from Balmer line analysis
- line free continuum
- T > 16,000 K
- negligible reddening.

Description

Observe the 4 stars with the prism and the first-order gratings.
1) Standard target acquisition with the long-pass.
2) Spectra with G140L,G230L,G230LB,G430L, G750L using 52x2.
3) Spectra with Prism using 52x2.

Fraction GO/GTO Programs Supported

2%

Resources Required: Observation

15 external orbits

Resources Required: Analysis

20 FTE weeks

Products

ISR, CDBS reference spectra tables

Accuracy Goals

10% for Prism, 1% for gratings

Scheduling& Special Requirements

Proposal ID 8431: STIS Cycle 8: MAMA Repeller Wire

Plan

Purpose	Internal and external observations will be taken with the FUV-MAMA repeller wire off to (a) verify commandability of this mode, (b) measure the LSF, (c) confirm that on-board Doppler compensation works to the required accuracy.
Description	compare the LSFs (in the E140H mode using the 0.1 x 0.025 arcsec slit and HI-RES mode) in data taken with the MAMA repeller field on and repeller field off. The aim is to demonstrate that a resolving power of 220, 000 can be achieved by STIS with an external target in the E140H mode using HI-RES mode, the 0.1x0.025 arcsec slit and the MAMA repeller field off. Observations of an external narrow-lined target will be taken in timetag mode, and in ACCUM mode with the repeller wire off to confirm the Doppler correction accuracy.
Fraction GO/GTO Programs Supported	1%
Resources Required: Observation	3 external orbits 2 internal orbits.
Resources Required: Analysis	6 FTE weeks
Products	ISR, Instrument Handbook
Accuracy Goals	LSF FWHM shall be measured to an accuracy of 0.2 pixels.
Scheduling& Special Requirements	This proposal will replace the not-yet-scheduled cycle-7 proposal. Special commanding required.

Proposal ID 8434: STIS Cycle 8: MAMA Slitless Spectroscopy

Plan

Purpose	Calibrate the dispersion solution and the sensitivity as a function of the target-position in MAMA first order slitless spectroscopy.
Description	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. The current plan is to do this test only for the L-modes and the PRISM; the , which may be extended to, which may be extended to M-modes will be calibrated in a later cycle if deemed necessary. The target must have sufficient number of narrow emission lines to determine the dispersion solution. The object selected in this case is He 2-38 which has been observed with IUE. This has a lot of emission lines, and does not violate the MAMA BOP limit.
Fraction GO/GTO Programs Supported	2%
Resources Required: Observation	6 external SAA-free orbits
Resources Required: Analysis	3 FTE weeks
Products	ISR, DSP reference file
Accuracy Goals	1 pixel in dispersion solution
Scheduling& Special Requirements	

Proposal ID 8435: STIS Cycle 8: MAMA Echelle LSF measurements

Plan

Purpose	To measure the LSF of the Echelle modes with an external target using a narrow slit.
Description	The aim of this proposal is to measure the LSF for the MAMA Echelle modes. In lack of a very-narrow emission-line source, objects with very narrow absorption lines (as confirmed from ground-based spectroscopy) will be observed with a narrow slit. For larger slits (0.2 x 0.2arcsec), we will attempt to get the LSF from existing observations taken with those slits. HD 28497 will be used for E140H; HD 89688 will be used for E230H; and G191B2B will be used for E140M and E230M.
Fraction GO/GTO Programs Supported	10%
Resources Required: Observation	4 external SAA-free orbits
Resources Required: Analysis	5 FTE weeks
Products	ISR
Accuracy Goals	The LSF FWHM shall be measured to an accuracy of 0.2 pixels.
Scheduling& Special Requirements	

Proposal ID 8433: STIS Cycle 8: MAMA Incidence Angle Corrections

Plan

Purpose	This test will measure incidence angle corrections for non-concentric MAMA apertures. These measurements were not made during 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. A target with narrow lines will be observed through the different FP-SPLIT apertures, and the dispersion solution will be measured.
Fraction GO/GTO Programs Supported	10%
Resources Required: Observation	4 external SAA-free orbits.
Resources Required: Analysis	3 FTE weeks
Products	IAC Reference file updates
Accuracy Goals	0.1 pixel
Scheduling& Special Requirements	