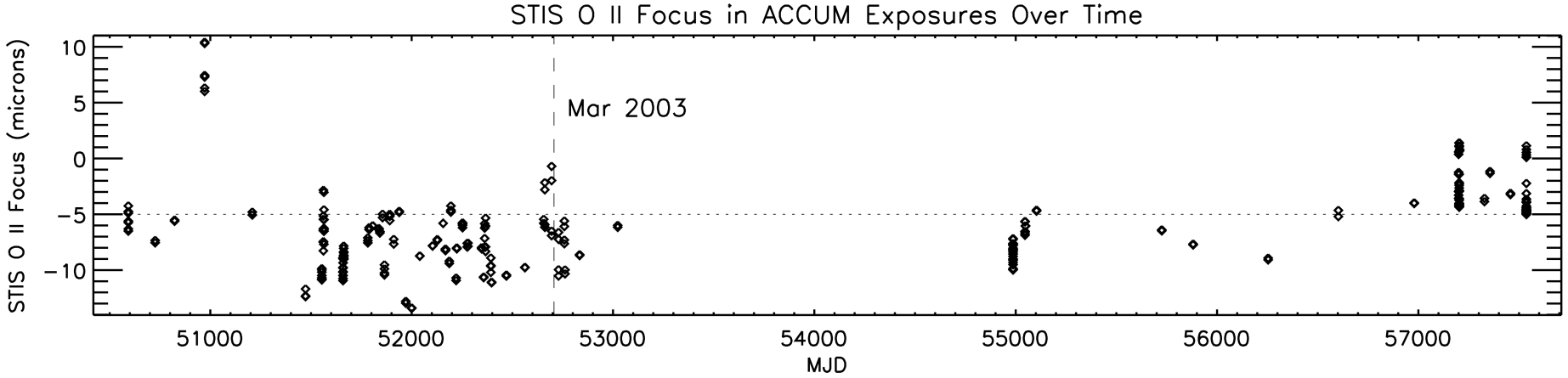
MAST Users Group Meeting

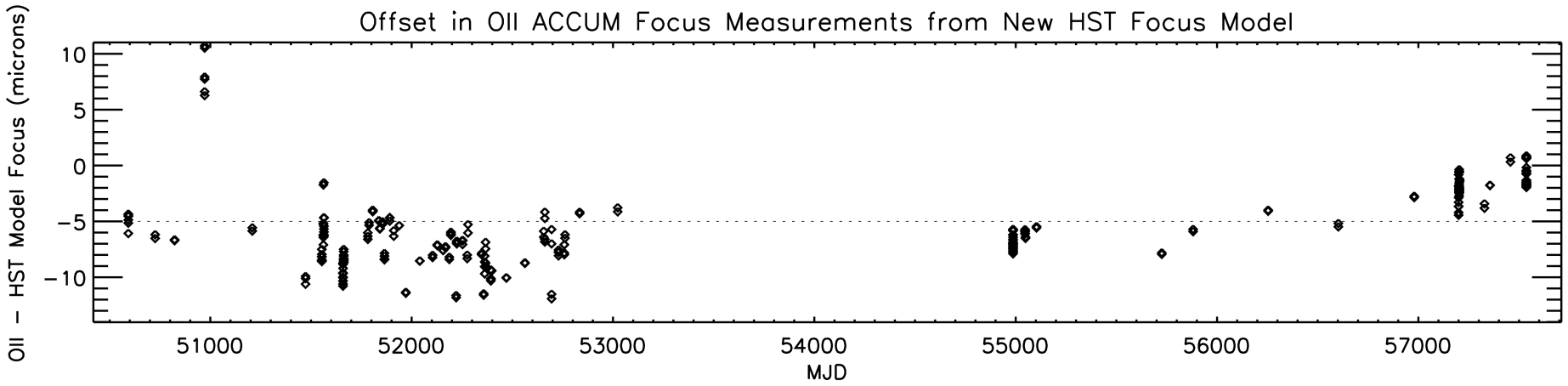
December 15-16, 2016

STIS Status Update

John Debes
STIS
Instruments Division

STIS Focus Measurements





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Cycle 24 Usage of STIS

Configuration/Mode	Percentage of STIS Prime Exposure Time		Percentage of STIS SNAP Exposure Time	
	C23	C24	C23	C24
CCD	**24.1%**	**31.1%**	**100%**	**--**
CCD/Imaging	0.7%	1.1%	--	--
CCD/Spectroscopy	23.4%	30.0%	100%	--
MAMA/FUV	**35.7%**	**41.3%**	**--**	**--**
FUV/Imaging	11.0%	14.3%	---	--
FUV/Spectroscopy	24.7%	27.0%	--	--
MAMA/NUV	**40.2%**	**27.6%**	**--**	**--**
NUV/Imaging	0.8%	0.1%	---	--
NUV/Spectroscopy	39.2%	27.5%	--	--

27% of Prime Orbits

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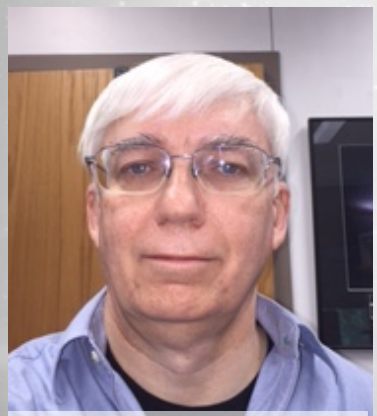
STIS Team

John Debes
Lead

Joleen Carlberg

Sean Lockwood

Tala Monroe
Deputy



Charles Proffitt

Allyssa Riley

Tony Sohn

Nolan Walborn

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Cycle 24 CCD Calibration Program

Title	External	External Parallel	Internal
STIS CCD Performance Monitor			**14**
STIS CCD Dark Monitor			**730**
STIS CCD Bias and Read Noise Monitor			**369**
STIS CCD Hot Pixel Annealing			**39**
STIS CCD Spectroscopic Flat-Field Monitor			**19**
STIS CCD Imaging Flat-Field Monitor			**4**
STIS CCD Spectroscopic Dispersion Solution Monitor			**3**
STIS CCD Sparse Field CTE			**50**
STIS CCD Full Field Sensitivity	**1**		**0**
STIS Slit Wheel Repeatability			**1**
STIS CCD Spectroscopic Sensitivity Monitor	**5**		

Cycle 24 MAMA Calibration Program

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Title	External	External Parallel	Internal
STIS MAMA Spectroscopic Dispersion Solution Monitor			**7**
STIS MAMA Full Field Sensitivity	**3**		
STIS MAMA Spectroscopic Sensitivity and Focus Monitor / COS Observations of Geocoronal Lyα Emission	**12**	**(3)**	
STIS FUV MAMA Dark Monitor			**54**
STIS NUV MAMA Dark Monitor			**52**
STIS MAMA NUV Flat-Field Monitor			**11**
STIS MAMA Fold Distribution			**2**
Contingency programs			
STIS MAMA Anomalous Recovery			**(6)**
STIS Focus Parallel Measurement	**(1)**	**(1)**	
Special Programs			
Monitoring the 3 Primary WD Standard Stars	**5**		

Total Cycle 24 Allocation: 26+(1) External, 3+(1) Ext. Parallel, 1355+(6) Internal

STIS Focus

- Phase retrieval of narrow band STIS filtered OII images appears to confirm a significant focus change starting in about 2011
  - OII focus is significantly offset from best spectroscopic & aperture focus
    - Historically measured OII focus out by equivalent -7.2 µm of secondary offset
    - Recent images taken with show only -4.5 µm offset
    - Offset stable over the last year
- Results suggest ~3 µm offset for spectroscopic apertures from previous focus may be cause of decreasing small aperture throughputs
- Mitigation:
  - Warn users, for now recommend increase in exposure times for small aperture programs that require specific SNR
  - Hit to efficiency small enough not to risk moving STIS corrector mechanism (not moved since 1997)
  - Calibration Program to continue focus monitoring with WFC3, ACS

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Echelle Blaze Correction

- FY17 will be a push to update/optimize spectroscopic calibrations, especially the echelle
- First priority is the echelle blaze function corrections, which have shifted and degraded with time
- Majority of orders can be corrected with a simple time dependent shift in the blaze function
- Small fraction of orders in E140M/1425, E140H/1598 show departures of 5-10% at the blue end of orders with new correction
- The STIS team is creating a working group within the team to work on solutions

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