



## 12010 - COS FUV Line Spread Function Characterization

Cycle: 17, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

### INVESTIGATORS

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### VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) SK-155	STIS/CCD STIS/FUV-MAMA	2	11-Sep-2009 21:10:27.0	yes

2 Total Orbits Used

### ABSTRACT

In this program we will observe the star Sk-155 (an O9b star in the SMC) with the high resolution E140H grating on STIS. Sk-155 was observed with COS during SMOV with the purpose of confirming the spectroscopic resolution of the FUV medium resolution gratings (G130M and G160M). Comparison of the E140H spectra with the COS spectra shows that the COS spectral resolution is likely significantly impacted by broad non-Gaussian wings in the COS LSF. Further tests and characterization of

this effect is critical for evaluating the final spectroscopic resolution of COS. However, the existing STIS/E140H spectra of Sk-155 only cover the wavelength range 1165-1350 Å (good for testing the G130M spectral resolution). They do not extend to long enough wavelengths to test the COS G160M spectral resolution. Therefore, in this supplemental STIS program we will use 2 HST orbits to re-observe Sk 155 with STIS. We will utilize the E140H grating with the 0.2x0.09 aperture and central wavelength of 1598 Å which covers the missing wavelength range 1500-1700 Å.

### **OBSERVING DESCRIPTION**

We will observe Sk-155 with the E140H high resolution grating, central wavelength 1598 Å, with the 0.2x0.09 aperture. Save for the central wavelength setting, this configuration duplicates that used in the Cycle 9 archival exposure of Sk-155 (central wavelength 1271 Å). We will aim for S/N=10 in the continuum near 1530 Å.

### **CALIBRATION JUSTIFICATION**

In this program we will observe the star Sk-155 (an O9b star in the SMC) with the high resolution E140H grating on STIS. Sk-155 was observed with COS during SMOV with the purpose of confirming the spectroscopic resolution of the FUV medium resolution gratings (G130M and G160M). Comparison of the E140H spectra with the COS spectra shows that the COS spectral resolution is likely significantly impacted by broad non-Gaussian wings in the COS LSF. Further tests and characterization of this effect is critical for evaluating the final spectroscopic resolution of COS. However, the existing STIS/E140H spectra of Sk-155 only cover the wavelength range 1165-1350 Å (good for testing the G130M spectral resolution). They do not extend to long enough wavelengths to test the COS G160M spectral resolution. Therefore, in this supplemental STIS program we will use 2 HST orbits to re-observe Sk 155 with STIS. We will utilize the E140H grating with the 0.2x0.09 aperture and central wavelength of 1598 Å which covers the missing wavelength range 1500-1700 Å.

Proposal 12010 - Visit 01 - COS FUV Line Spread Function Characterization

Sat Sep 12 01:10:32 GMT 2009

Visit	<b>Proposal 12010, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/FUV-MAMA, STIS/CCD Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	SK-155	RA: 01 14 50.2600 (18.7094167d) Alt Name1: AZV-479 Dec: -73 20 17.80 (-73.33828d) Equinox: J2000			V=12.48 B=12.33; F(1550) = 4.7e-13	Reference Frame: ICRS			
	<i>Comments: Sk-155 is an O9 Ib star in the SMC. As this is an extragalactic target and the proper motions are so small, they are not used.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) SK-155	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT	GS ACQ SCENARI O BASE1B3		1 Secs [==>]	[1]
	<i>Comments: S/N = 290 in 1 s (STIS121042)</i>									
	2		(1) SK-155	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1 Secs [==>]	[1]
	<i>Comments: S/N= 520 in 1 s (STIS121043)</i>									
3		(1) SK-155	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1598 A				2150 Secs [==>]	[1]	
<i>Comments: S/N = 10 in continuum at 1530 A in 2760 s ( F(1530 = 7.7e-13) (STIS121045)</i>										
4		(1) SK-155	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1598 A				3150 Secs [==>]	[2]	

