13614 - High-Redshift Starburst Galaxies Under the Cosmic Microscope: Unveiling the stellar histories of strongly lensed starburst galaxies

Cycle: 21, Proposal Category: GO

(Availability Mode: SUPPORTED)

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) SPT0125-47	WFC3/IR	1	09-Dec-2013 21:14:57.0	yes
02	(2) SPT0125-50	WFC3/IR	1	09-Dec-2013 21:15:04.0	yes
03	(3) SPT0418-47	WFC3/IR	1	09-Dec-2013 21:15:11.0	yes
04	(4) SPT2146-55	WFC3/IR	1	09-Dec-2013 21:15:16.0	yes
05	(5) SPT2147-50	WFC3/IR	1	09-Dec-2013 21:15:21.0	yes
06	(6) SPT0529-54	WFC3/IR	1	09-Dec-2013 21:15:26.0	yes

6 Total Orbits Used

ABSTRACT

We propose to study the stellar populations in a sample of strong gravitationally lensed starburst galaxies discovered by the South Pole Telescope (SPT) in a 2500 square degree survey of the southern sky. In the first extragalactic spectroscopic redshift survey with ALMA, we have obtained robust and unambiguous redshifts for these sources directly from their star forming gas, as traced by carbon monoxide. High-resolution ALMA imaging conclusively demonstrates that these sources are strong gravitationally lensed by foreground galaxies and allows us to make state-of-the-art lens models with a custom pipeline. The central aim of this proposal is to use Spitzer/IRAC to determine stellar masses for 14 of these sources to connect the rapid star formation observed with ALMA to the generations of stars that came before them. The combination of our unique ALMA dataset with the proposed Spitzer observations will allow a full characterization of the stars, gas, and dust in this cosmologically important class of primordial starburst galaxies which mark the epoch of stellar mass assembly in the Universe. We ask for 37 hours of Spitzer/IRAC and 6 orbits of HST/ACS+WFC3 to observe 14 high redshift starburst galaxies spanning $2.5<z<5.7$.

OBSERVING DESCRIPTION

We are observing 6 targets for 1 orbit each with WFC3 F140W. We will implement the dither patterm WFC3-IR-DITHER-BOX-MIN optimised for maximum resolution. The SPARS50 sample sequence will be applied for the multiaccum mode.

Visit

Proposal 13614, Visit 01

Tue Dec 10 02:15:34 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

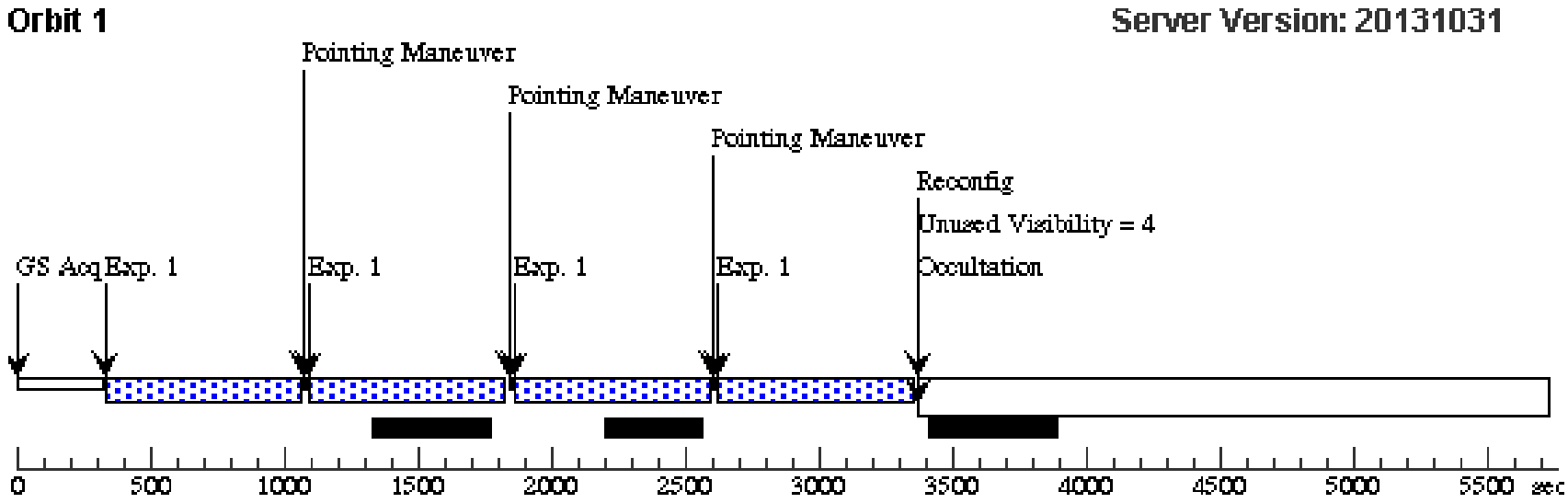
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SPT0125-47	RA: 01 25 7.1400 (21.2797500d) Dec: -47 23 56.00 (-47.39889d) Equinox: J2000	Redshift: 2.514	V=30+/-1 S_1.4mm = 43.8 mJy	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) SPT0125-47	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=SPARS50; NSAMP=15		Pattern 1, Exps 1-1 in Visit 01 (1)	702.938605 Secs (2811.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13614, Visit 02 Tue Dec 10 02:15:36 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

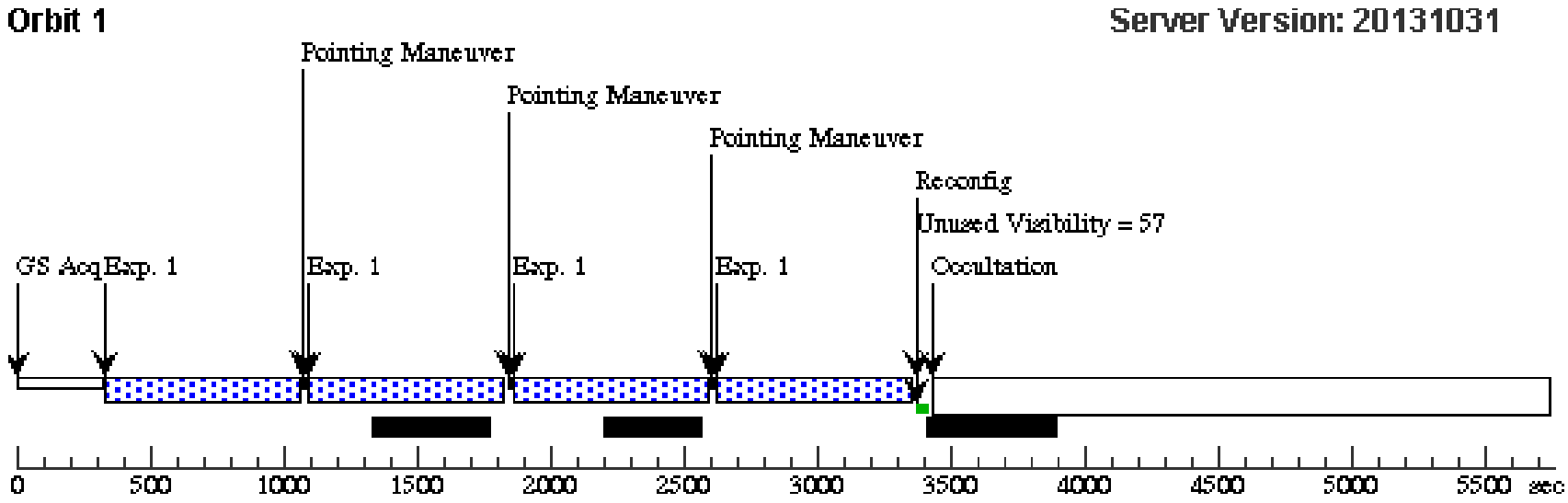
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SPT0125-50	RA: 01 25 48.4600 (21.4519167d) Dec: -50 38 21.10 (-50.63919d) Equinox: J2000	Redshift: 3.955	V=30+/-1 S_1.4mm = 38.2 mJy	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) SPT0125-50	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=SPARS50; NSAMP=15		Pattern 1, Exps 1-1 in Visit 02 (1)	702.938605 Secs (2811.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13614, Visit 03 Tue Dec 10 02:15:36 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

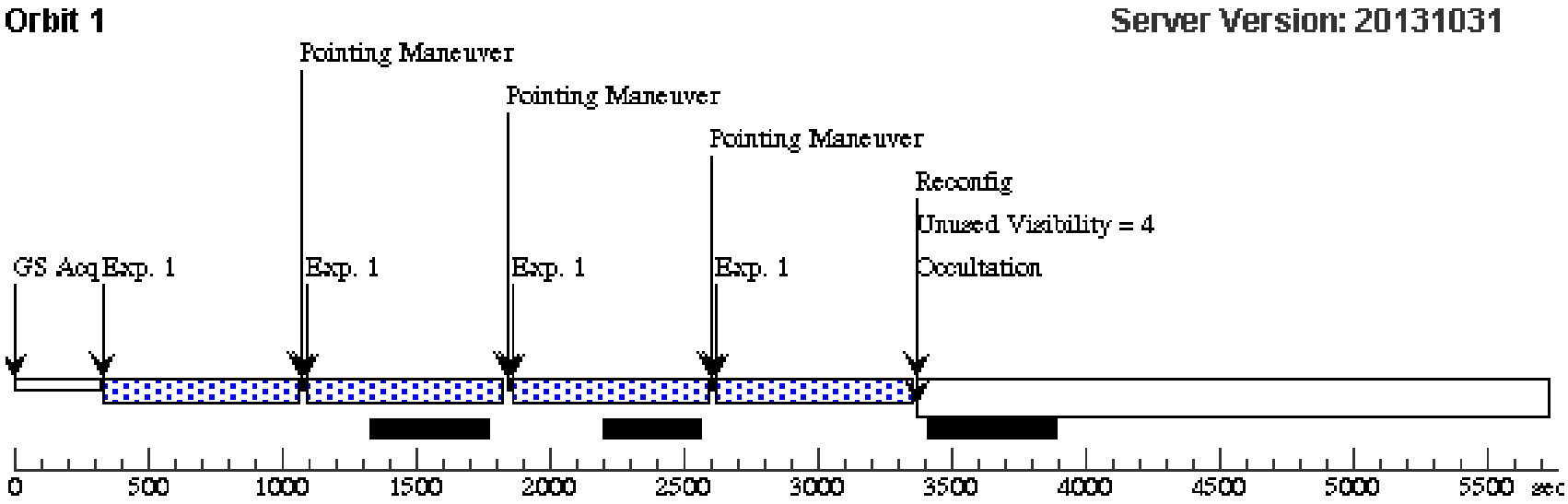
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SPT0418-47	RA: 04 18 39.9000 (64.6662500d) Dec: -47 51 48.70 (-47.86353d) Equinox: J2000	Redshift: 4.224	V=30+/-1 S_1.4mm = 36.5mJy	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) SPT0418-47	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=SPARS50; NSAMP=15		Pattern 1, Exps 1-1 in Visit 03 (1)	702.938605 Secs (2811.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13614, Visit 04 Tue Dec 10 02:15:37 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

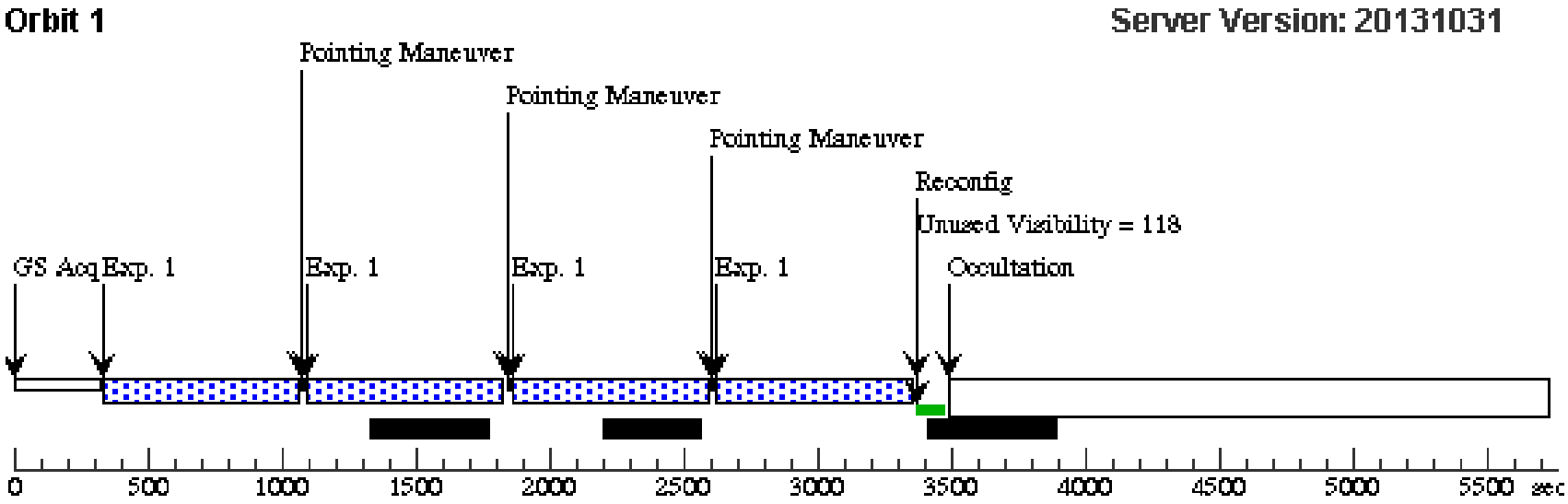
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SPT2146-55	RA: 21 46 54.2200 (326.7259167d) Dec: -55 07 53.70 (-55.13158d) Equinox: J2000	Redshift: 4.567	V=30+/-1 S_1.4mm = 26.2mJy	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) SPT2146-55	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=SPARS50; NSAMP=15		Pattern 1, Exps 1-1 in Visit 04 (1)	702.938605 Secs (2811.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13614, Visit 05 Tue Dec 10 02:15:38 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

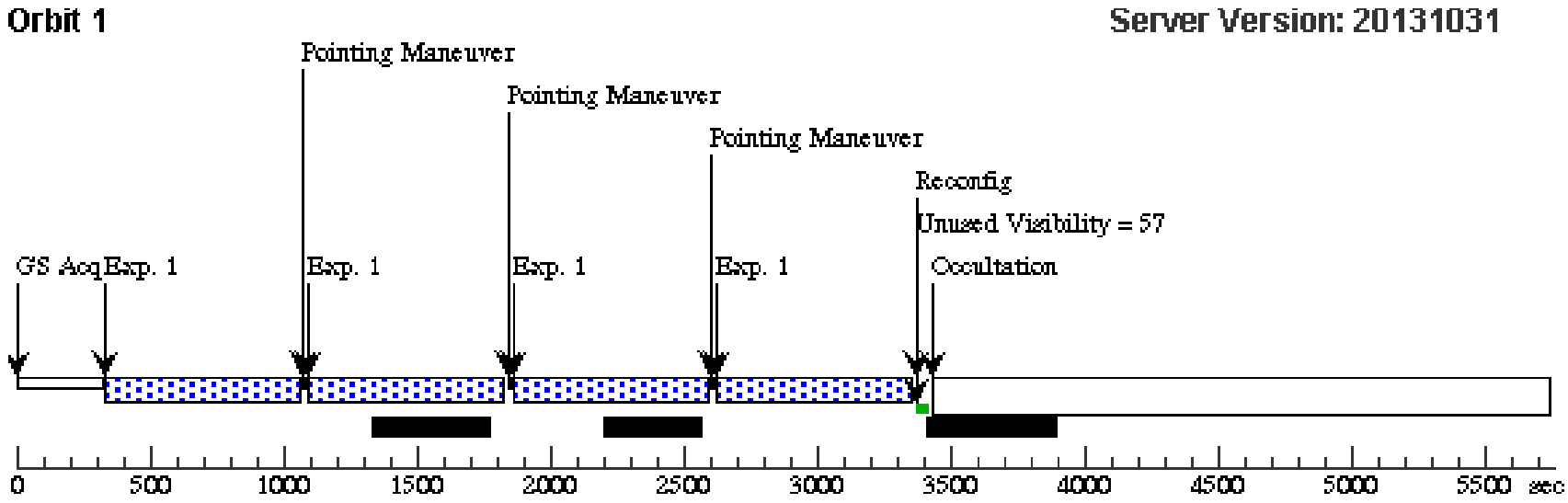
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	SPT2147-50	RA: 21 47 19.2600 (326.8302500d) Dec: -50 35 55.90 (-50.59886d) Equinox: J2000	Redshift: 3.761	V=30+/-1 S_1.4mm = 25.6mJy	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(5) SPT2147-50	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=SPARS50; NSAMP=15		Pattern 1, Exps 1-1 in Visit 05 (1)	702.938605 Secs (2811.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13614, Visit 06 Tue Dec 10 02:15:39 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	SPT0529-54	RA: 05 29 3.1800 (82.2632500d) Dec: -54 36 38.50 (-54.61069d) Equinox: J2000	Redshift: 3.369	V=30+/-1 S_1.4mm = 35.38mJy	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(6) SPT0529-54	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=SPARS50; NSAMP=15		Pattern 1, Exps 1-1 in Visit 06 (1)	702.938605 Secs (2811.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure