13730 - Maps of Recent Star Formation to Match ALMA Observations of the Nearest Nuclear Starburst

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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) NGC-253	WFC3/IR	1	08-Oct-2014 21:05:41.0	yes

1 Total Orbits Used

ABSTRACT

We propose narrow band WFC3 infrared imaging of the central part of NGC 253, the nearest nuclear starburst, with the goal of imaging the location of recent star formation traced by the Paschen β line. We will compare the distribution of Paβ emission to our understanding of the molecular ISM, built on a series of successful ALMA programs. These have revealed the location of star-forming clouds, shells carved by feedback, molecular outflows emerging from the disk, and a rich suite of interstellar molecules. Knowing exactly where (and how many) stars are forming is key to make the best use of these data. From the comparison of ALMA and HST Paβ data, we will be able to assess the efficiencies of feedback, test models of star formation, and help establish the interpretation of new molecular tracers. Our proposed observations target the off-line

filter (F130N) and will be combined with archival on-line imaging (F128N). Right now, those on-line data are not useful for science because the broad band data are inadequate for a quality continuum subtraction.

OBSERVING DESCRIPTION

This program aims to combine with the archive to produce relatively deep matched narrow band on and off line observations of Paschen Beta in the central part of the nearby starburst galaxy NGC 253. This will yield maps of ionizing photon production that are comparatively robust to extinction, which we aim to compare with existing and awarded ALMA observations of the dense, star-forming molecular gas (also at comparatively high resolution) in the same region. Variable, heavy extinction hampered the attempt in the archive to use broad band measurements for continuum subtraction so we pursue this simpler and more robust, though somewhat more costly approach.

Visit

Proposal 13730, NGC 253 Paschen Beta (01), scheduled Thu Oct 09 01:05:42 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1), (2)

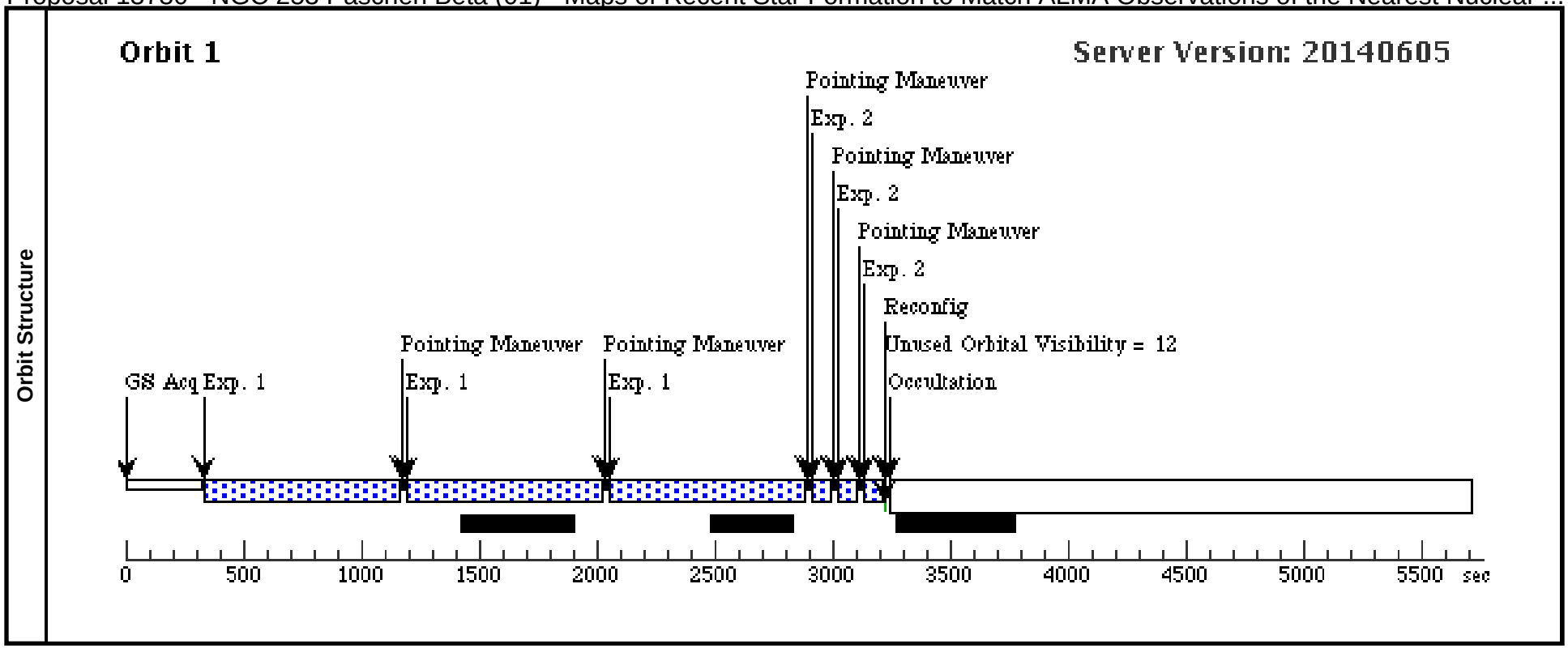
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC-253	RA: 00 47 33.1340 (11.8880583d) Dec: -25 17 17.52 (-25.28820d) Equinox: J2000		V=13.97	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	NGC 253 Paschen Beta OFF	(1) NGC-253	WFC3/IR, MULTIACCUM, IR-FIX	F130N	NSAMP=14; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in NGC 253 Paschen Beta (01) (1)	799.232938 Secs (2397.699 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2	NGC 253 Paschen Beta ON	(1) NGC-253	WFC3/IR, MULTIACCUM, IR-FIX	F128N	NSAMP=6; SAMP-SEQ=STEP100		Pattern 1, Exps 2-2 in NGC 253 Paschen Beta (01) (1)	49.230226 Secs (147.691 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20140605
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Reconfig
Unused Orbital Visibility = 12
Occultation
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 1
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec