10472 - SagDIG: a benchmark for understanding star formation in extreme low-metallicity galaxies

Cycle: 14, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(2) ESO594-G004-IIEPOCH	ACS/WFC	1	20-Jun-2005 11:22:25.0	yes

1 Total Orbits Used

ABSTRACT

A long-standing question in the field of galaxy evolution is whether metal-poor star-forming galaxies (like I ZW 18) posses a very old (>10 Gyr) stellar population. An excellent example of such a primordial galaxy is the Sagittarius dwarf irregular (SagDIG). Besides being very metal-poor, this object is exceptionally rich in atomic gas and shows evidence of propagating star formation. Such features make of SagDIG and ideal

target for the study of star formation and its triggering mechanism in extremely metal-poor environments. The deep, wide-field imaging capability of ACS is able to detect an unprecedented number of the oldest stellar population. Such data will enable the construction of both the star formation and chemical enrichment history. In particular, determining the epoch of formation of the first stars in such objects places a constraint on heirarchical galaxy formation in "bottom up" cosmologies.

OBSERVING DESCRIPTION

In cycle12 our observational strategy was aimed at obtaining deep exposures in the F475W, F606W and F814W filters of the SagDIG dwarf Irregular Galaxy. Now, on cycle14, we will repeat the F814W observations in order to decontaminate the SagDIG color-magnitude diagrams by exploiting the different parallaxes and proper motions of stars in SagDIG and the Galactic Bulge.
Our cycle12 observation strategy can be summarized as follows:
1) Orbit 1 dedicated to the F606W filter;
2) Orbit 2 dedicated to the F475W filter; and
3) Orbit 3 dedicated to the F814W filter.
Each orbit was split in 5 deep exposures (GAIN=2, CR_SPLIT=0), using a specially designed dithering pattern.
Cycle 14 observations will repeat the F814W observations.

REAL TIME JUSTIFICATION

Running the ORBIT PLANNER shows that we leave 0 seconds of unused visibility in the assigned orbit.

ADDITIONAL COMMENTS

This is the second epoch of a multi-cycle observations.

To re-observe the orientation used in Cycle 12 (87.29), Cycle 14 orientaion has to be between (267.2--267.3). This leaves 2 narrow observing windows: (1) 26-27 June 2005 and (2) 22-28 March 2006. Since this second-epoch data will be used to measure the proper-motion of stars, orientation is a curcial issue and we have to reduce (to the maximum) the residual distorsion errors. In fact, a 50 pixels displacements may result in a

systematic positioning error as high as 0.01 pixel (of the order of our random error).

If the observing windows are two narrow, we can add two other orientation ranges (260.0--267.2 and 267.3--275.0) that should exapnd the observability both in June 2005 and March 2006.

Proposal 10472 - Visit 01 - SagDIG: a benchmark for understanding star formation in extreme low-metallicity galaxies

Visit

Proposal 10472, Visit 01 Mon Jun 20 15:22:33 GMT 2005

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: NUMBER OF GYROS 3; ORIENT 267.2D TO 267.3 D

Comments: The awarded single orbit in cycle 14 will enable us to measure the proper-motion of the SagDIG dwarf irregular galaxy. We therefore repeat the F184W observations, obtained in cycle 12. Thus our observing strategy is simple and straightforward: re-observe the same field of cycle12. This however forces us to use the same orientation of cycle 12 observations. An orientation range between 267.2 and 267.3 satisfies our needs, and shows an observability window around
1) 26-27 June 2005 and (2) 22-28 March 2006.

If the observing windows are two narrow, we can add two other orientation ranges (260.0--267.2 and 267.3--275.0) that should exapnd the observability both in June 2005 and March 2006.

Diagnostics

(Visit 01) Warning: Number of Gyros overrides default value.

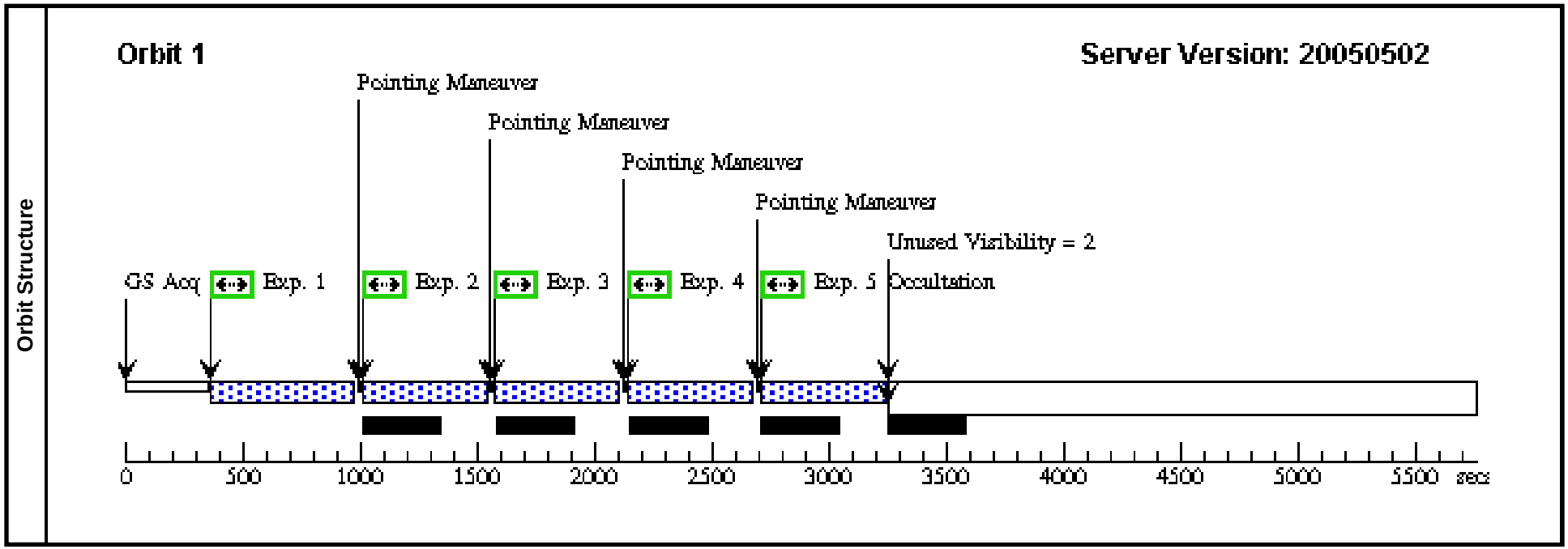
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ESO594-G004-IIEPOCH Alt Name1: SagDIG Alt Name2: UKS1927-177	RA: 19 29 58.4300 (292.4934583d) Dec: -17 40 49.78 (-17.68049d) Equinox: J2000 Plate Id: 01O4		V=15.5+/-0.0	Coordinate Source: GSC_SURVEY_PLATE

Comments: This is a star-forming, dwarf irregular galaxy.
Its diamaters are =2.9 2.1 arcmin (NED)*
E(B-V)=0.12 mag, A_B=0.522 (Schelgel et al. 1998)

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	i1	(2) ESO594-G004-IIEPOCH	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO; GAIN=2	GS ACQ SCENARIO BASE13GO	Sequence 1-5 Non-Int	410.0 Secs *[==>]*	 ***[1]***
Comments: The following 5 F814W ACS exposures are slightly dithered. The orientation is a serious limit because we intend to re-observe the same field observed in cycle 12, with the same orientation.									
2	i2	(2) ESO594-G004-IIEPOCH	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO; GAIN=2	POS TARG 0.21,0.22	Sequence 1-5 Non-Int	410.0 Secs *[==>]*	 ***[1]***
3	i3	(2) ESO594-G004-IIEPOCH	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO; GAIN=2	POS TARG 0.42,0.44	Sequence 1-5 Non-Int	410.0 Secs *[==>]*	 ***[1]***
4	i4	(2) ESO594-G004-IIEPOCH	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO; GAIN=2	POS TARG 0.23,0.01	Sequence 1-5 Non-Int	410.0 Secs *[==>]*	 ***[1]***
5	i5	(2) ESO594-G004-IIEPOCH	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO; GAIN=2	POS TARG 0.44,0.23	Sequence 1-5 Non-Int	408.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20050502
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 2
GS Acq
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec