



17929 - The true nature of Glimpse-C01: another star cluster hosting multi-age populations?

Cycle: 32, Proposal Category: GO

(Availability Mode: SUPPORTED)

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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>
04	(1) GLIMPSE-C01	ACS/WFC WFC3/IR	3	30-Jan-2025 09:00:30.0	yes

3 Total Orbits Used

ABSTRACT

Of the ~150 old globular clusters in the Milky Way, there are 3 outstanding systems that defy the globular cluster classification and show the presence of multi-age and multi-iron populations: Omega Centauri in the Galactic halo, Terzan 5 and Liller 1 in the bulge, which may be fossil witnesses to the past evolution and assembly of the Milky Way. The discovery of such systems provides a unique opportunity to gain deeper insights into the assembly history of the Milky Way. Analysis of archival HST observations of the Glimpse-C01 cluster suggests that it may be the fourth member of this emerging class of exotic clusters hosting multi-age, multi-iron stellar populations, and the first to be located in the Milky Way disk. To confirm this scenario, we require a second epoch of ACS and WFC3 observations to measure the proper motions of the stars in the direction of the cluster, which are the fundamental ingredient for distinguishing cluster members from field interlopers. Given the extreme crowding conditions and the severe reddening in the direction of the cluster, the proposed goal can be achieved by exploiting the high-resolution and stable astrometric optical/near-IR capabilities of the ACS/WFC and WFC3/IR cameras, while JWST observations would quickly saturate due to the target's relatively small distance from the Sun. The observations will be used to analyse and directly measure the age(s) of the stellar population(s) for the first time, and to reconstruct the cluster orbit in the Milky Way potential field, thus shedding light on its origin, the possible formation mechanism of its multi-age populations, and the role of the cluster in the Milky Way assembly history.

OBSERVING DESCRIPTION

The goal of the proposal is to sample the stellar population of the cluster Glimpse-C01 using a combination of ACS/WFC and WFC3/IR observations. Specifically, we plan to organize the observations into a single visit of three HST orbits.

The first orbit will be dedicated to WFC3/IR observations. It consists of a combination of images taken in the F110W and F160W filters with SAMP-SEQ=STEP25 and NSAMP=9-14. We use the IR-FIX aperture and apply small shifts among different exposures using POS_TARG.

The second and third orbits will be dedicated to ACS/WFC observations. We plan to obtain 3 exposures of 693-712 s in each orbit, using the ACS-WFC-DITHER-LINE pattern and the WFC-FIX aperture.

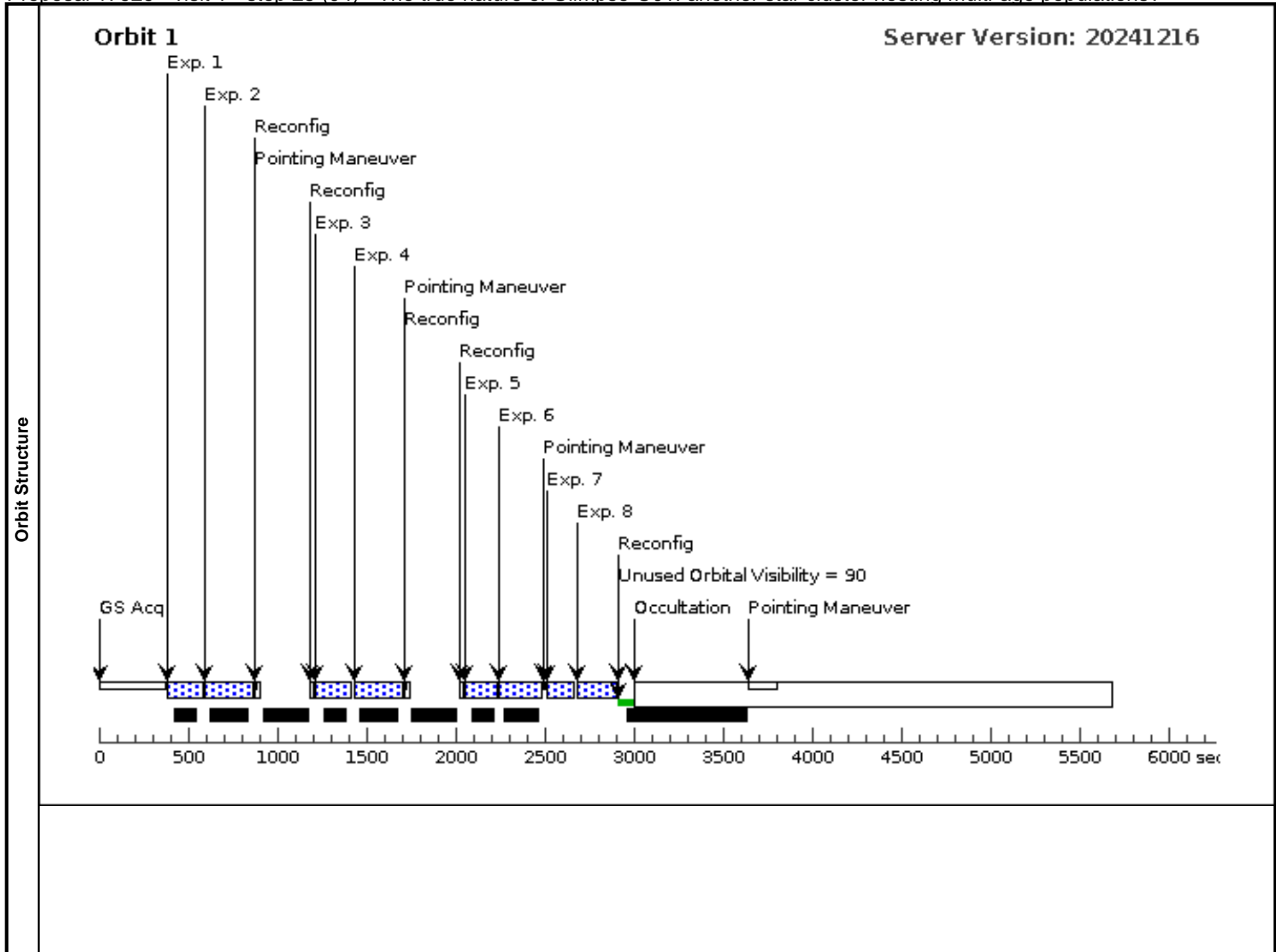
Proposal 17929 - visit 1 - step 25 (04) - The true nature of Glimpse-C01: another star cluster hosting multi-age populations?

Thu Jan 30 14:00:30 GMT 2025

Visit	Proposal 17929, visit 1 - step 25 (04) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: (none)					
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures	
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.034 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(9), (10)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	GLIMPSE-C01	RA: 18 48 49.7000 (282.2070833d) Dec: -01 29 50.00 (-1.49722d) Equinox: J2000	Epoch of Position: 2000	V=20	Reference Frame: ICRS
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER]					

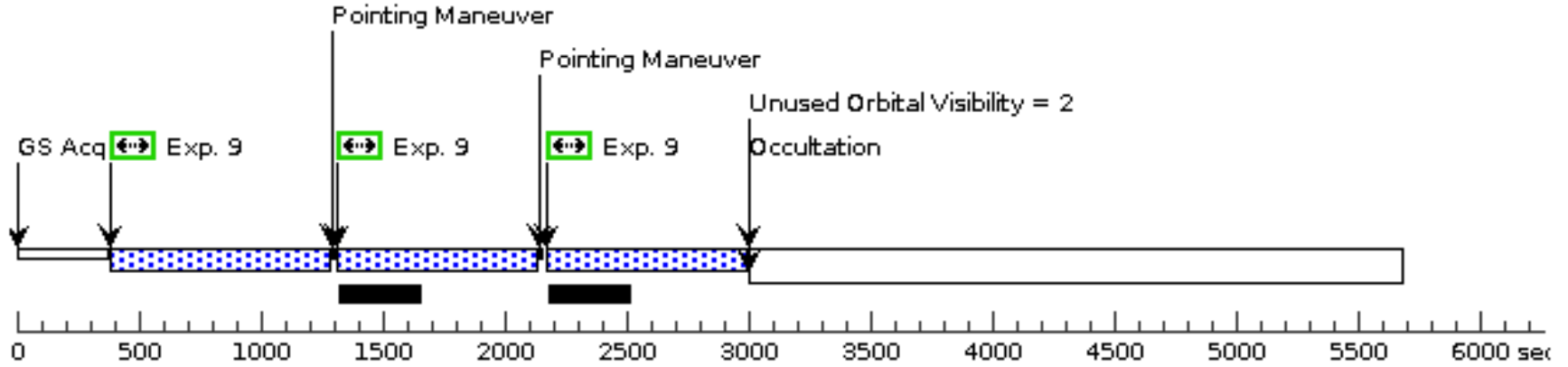
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Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F160W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP2 5; NSAMP=11			174.232801 Secs (174.233 Secs) [==>]	[1]
	2	F110W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP2 5; NSAMP=14			249.234346 Secs (249.234 Secs) [==>]	[1]
	3	F160W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP2 5; NSAMP=11	POS TARG 1,1		174.232801 Secs (174.233 Secs) [==>]	[1]
	4	F110W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP2 5; NSAMP=14	POS TARG 1,1		249.234346 Secs (249.234 Secs) [==>]	[1]
	5	F160W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP2 5; NSAMP=10	POS TARG 2,2		149.232286 Secs (149.232 Secs) [==>]	[1]
	6	F110W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP2 5; NSAMP=13	POS TARG 2,2		224.233831 Secs (224.234 Secs) [==>]	[1]
	7	F160W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP2 5; NSAMP=9	POS TARG 3,3		124.231771 Secs (124.232 Secs) [==>]	[1]
	8	F110W	(1) GLIMPSE-C01	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP2 5; NSAMP=12	POS TARG 3,3		199.233316 Secs (199.233 Secs) [==>]	[1]
	9		(1) GLIMPSE-C01	ACS/WFC, ACCUM, WFC-FIX	F814W			Pattern 1, Exps 9-9 in visit 1 - step 25 (04) (1)	693 Secs (2079 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[2]
10		(1) GLIMPSE-C01	ACS/WFC, ACCUM, WFC-FIX	F814W			Pattern 1, Exps 10-10 in visit 1 - step 25 (04) (1)	712 Secs (2136 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[3]	



Orbit 2

Server Version: 20241216



Orbit 3

Server Version: 20241216

