14215 - The pristine globular cluster population of the primordial relic galaxy NGC1277

Cycle: 23, 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-1277	ACS/WFC	2	07-Jul-2015 21:18:21.0	yes

2 Total Orbits Used

ABSTRACT

Galaxy mass assembly is driven dually by in-situ star formation and mergers, though which modes dominate in galaxies of different mass and at different epochs is poorly understood. These bimodal processes are thought to be mirrored in the formation mechanisms for ancient red and blue globular clusters (GC) present in massive galaxies. Whereas the red GCs are theorized to form in situ together with the core of the massive galaxy, the blue subpopulation is expected to have an external accreted origin. This scenario, however, continues presently
untested. The proposed observations (2 orbits in the g and z filters using the ACS camera) will provide a direct test of this accretion hypothesis by characterizing the GC population of a massive galaxy that has survived untouched since its early assembly at z>2: NGC1277. If the accretion

scenario is correct, the GC color distribution of NGC1277 will be unimodal (having only red GCs). This result would provide direct constraints on the early accretion and assembly of massive galaxies in the early universe.

OBSERVING DESCRIPTION

Filter choices and photometric depth:

To conduct our observations, we are asking for one orbit each in the ACS F475W (g475) and F850LP (z850) bands to image NGC1277 and its GC system.

Based on its declination, NGC~1277 is visible for 57 minutes in each orbit - with overheads the total integration time on source is ~2400s. The ACS ETC suggests that with one orbit, we will reach the GC luminosity function turnover magnitude of r~26.3 with S/N~10 - allowing us to obtain the necessary number of GCs, and with sufficient photometric precision to characterize the color distribution.

Visit

Proposal 14215, Visit 01 Wed Jul 08 01:18:23 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 215D TO 240 D

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX	Coordinate Frame=POS-TARG		(1), (2)
	Purpose=DITHER	Pattern Orientation=20.67		
	Number Of Points=4	Angle Between Sides=69.05		
	Point Spacing=0.265	Center Pattern=false		
	Line Spacing=0.187			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC-1277	RA: 03 19 53.5605 (49.9731688d)		V=13+/-0.1	Reference Frame: SIMBAD
		Dec: +41 34 49.53 (41.58043d)			
		Equinox: J2000			

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

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) NGC-1277	ACS/WFC, ACCUM, WFC	F475W			Pattern 1, Exps 1-1 in Visit 01 (1)	500 Secs (2280 Secs)	
								[==>570.0 Secs (Pattern 1)]	***[1]***
								[==>570.0 Secs (Pattern 2)]	
								[==>570.0 Secs (Pattern 3)]	
								[==>570.0 Secs (Pattern 4)]	
2		(1) NGC-1277	ACS/WFC, ACCUM, WFC	F850LP			Pattern 1, Exps 2-2 in Visit 01 (1)	500 Secs (2432 Secs)	
								[==>608.0 Secs (Pattern 1)]	***[2]***
								[==>608.0 Secs (Pattern 2)]	
								[==>608.0 Secs (Pattern 3)]	
								[==>608.0 Secs (Pattern 4)]	

Orbit Structure