



13808 - Westerlund 2, top to bottom: how massive star clusters form.

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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>
01	(1) ESO-127-18	ACS/WFC	1	18-Jul-2014 21:10:56.0	yes

1 Total Orbits Used

ABSTRACT

Massive stellar clusters are the main indicators of star formation activity in the distant universe, still their origin and evolution is only partially understood.

We have demonstrated that combining deep high resolution optical and IR photometry is a powerful method to investigate the initial phases of massive stellar clusters. We are now proposing to obtain deep, high resolution ACS and WFC3 observations designed to individually resolve and measure stars in Westerlund 2 (Wd2), one of the youngest and most massive clusters in the Milky Way, from the upper mass cut-off down to the

hydrogen-burning limit.

Wd2 is quite unique, because it is close (8kpc), young ($<2\text{Myr}$), massive ($>10^4\text{ Mo}$) and not well studied. Yet, it is perfectly suitable to investigate how it formed, since neither stellar evolution nor cluster dynamics have had enough time to significantly affect its initial conditions. We propose to determine its mass function, which will well approximate its IMF, establish whether primordial mass segregation is present, characterise the population of pre-Main Sequence stars that have been found by Spitzer, and - as a added bonus - take a high resolution view of the surroundings of WR20a, a very massive eclipsing WR binary that might have been ejected from the cluster center. Second epoch observations in two years will allow us to accurately identify the Wd2 cluster members, and will establish the presence of additional walkaway stars, in addition possibly to WR20a. Because high resolution, high dynamic range, and PSF stability - necessary for the astrometric part - are absolute requirements to complete this project, this study can only be done with HST.

OBSERVING DESCRIPTION

This is the secon epoch of a proper motion proposal. We are planning to repeat the observations acquried in CY 20 in the filter F814W. The goal is to remove the contamination from the galactic field.

We ask to repeat the observations with exactly the same orientation used for the first epoch to reduce the uncertainties on the geometric distorion.

We ask to execute the observations after August 2015, to ensure the longest baseline possible

Proposal 13808 - Visit 01 - Westerlund 2, top to bottom: how massive star clusters form.

Visit	Proposal 13808, Visit 01, implementation										Sat Jul 19 01:10:57 GMT 2014
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: ACS/WFC										
	Special Requirements: ORIENT 186.532D TO 186.532 D; AFTER 01-AUG-2015:00:00:00										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	ESO-127-18	RA: 10 24 5.5000 (156.0229167d) Dec: -57 45 49.00 (-57.76361d) Equinox: J2000					V=10.5		Reference Frame: ICRS	
	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		(1) ESO-127-18	ACS/WFC, ACCUM, WFC	F814W		POS TARG -30,-30		3 Secs (3 Secs)		
									[==>]		[1]
	2		(1) ESO-127-18	ACS/WFC, ACCUM, WFC	F814W		POS TARG -30,-30		350 Secs (350 Secs)		
									[==>]		[1]
	3		(1) ESO-127-18	ACS/WFC, ACCUM, WFC	F814W		POS TARG -15,-15		350 Secs (350 Secs)		
									[==>]		[1]
	4		(1) ESO-127-18	ACS/WFC, ACCUM, WFC	F814W		POS TARG -7,-7		350 Secs (350 Secs)		
									[==>]		[1]
	5		(1) ESO-127-18	ACS/WFC, ACCUM, WFC	F814W		POS TARG 0,0		350 Secs (350 Secs)		
								[==>]		[1]	
6		(1) ESO-127-18	ACS/WFC, ACCUM, WFC	F814W		POS TARG 15,15		350 Secs (350 Secs)			
								[==>]		[1]	

