



18058 - The chemical composition of pristine gas through first-population stars in NGC 121

Cycle: 33, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

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Dr. Anna Fabiola Marino (CoI) (ESA Member)	INAF - Osservatorio Astronomico di Padova

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) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:19.0	yes
02	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:19.0	yes
03	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:20.0	yes

<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) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:20.0	yes
05	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:20.0	yes
06	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:21.0	yes
07	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:21.0	yes
08	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:21.0	yes
09	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:21.0	yes
10	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:22.0	yes
11	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:22.0	yes
12	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:22.0	yes
13	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:23.0	yes
14	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:23.0	yes
15	(1) NGC-121	WFC3/UVIS	1	14-Aug-2025 13:01:23.0	yes

15 Total Orbits Used

ABSTRACT

We propose to uncover, for the first time, the original chemical composition of the gas that formed an ancient globular cluster (GC) in the Small Magellanic Cloud (SMC). Our target is NGC 121, the only SMC cluster old enough to trace the properties of primordial star-forming gas. By combining archival and new HST/UVIS WFC3 F275W images, we will analyze stars in this cluster to reconstruct the conditions present in the early Universe.

Our focus is on first-population (1P) stars, which preserve the chemical signature of the proto-cluster cloud. In Milky Way GCs, the 1P sequence often shows unexpected features, such as internal metallicity variations up to ~ 0.3 dex. These findings challenge the long-standing view that 1P stars are chemically homogeneous, suggesting instead that the star-forming gas was either inhomogeneous or later altered by stellar feedback. However, such studies remain limited to Galactic environments.

NGC 121 provides a unique opportunity to investigate whether these internal chemical spreads are a universal property of globular clusters or depend on the host galaxy environment. By studying this SMC cluster, we will gain insight into early chemical enrichment processes in low-mass galaxies and explore the broader connection between star cluster formation and galactic evolution.

OBSERVING DESCRIPTION

This proposal aims to determine the chemical composition of the primordial gas from which the ancient globular cluster NGC 121, in the Small Magellanic Cloud, formed. To achieve this goal, we will obtain new observations of NGC121 with the WFC3/UVIS camera using the F275W filter. These data will complement existing exposures in the F336W, F438W, and F814W filters obtained under programs GO-13435 and GO-10396, which target overlapping fields centered on NGC 121.

By combining the new F275W observations with the archival datasets, we will construct the multi-band photometry necessary to accurately probe the chemical composition of the early gas clouds from which globular cluster stars formed in the early Universe.

To allow flexibility in the scheduling of HST orbits, our observation plan consists of 15 separate visits, each using 1 orbit. Each visit will include two F275W exposures of 1297 s, enabling us to achieve a signal-to-noise ratio of ~ 100 at the base of the red giant branch, sufficient to robustly characterize the chemical properties of the cluster's stellar populations.

All exposures will be dithered to optimize PSF sampling, cosmic ray rejection, and astrometric precision. To mitigate CTE degradation, exposures will be flashed according to current STScI recommendations.

Proposal 18058 - NGC121 (01) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (01), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG -4,+4	Pattern 1, Exps 1-1 in NGC121 (01) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 6000. Key events are marked with arrows: GS Acq at 0s, Exp. 1 (green box) at approximately 400s, Pointing Maneuver at approximately 1700s, Exp. 1 (green box) at approximately 1800s, and Occultation at approximately 3100s. A blue checkered bar indicates the active observation period from approximately 400s to 3100s. A black bar below the occultation event indicates a period of 'Unused Orbital Visibility = 0' from approximately 3100s to 3900s. The text 'Server Version: 20250624' is displayed in the top right corner.</p>									

Proposal 18058 - NGC121 (02) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (02), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC 121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG 0,+4	Pattern 1, Exps 1-1 in NGC121 (02) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1									

Proposal 18058 - NGC121 (03) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (03), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG +4,+4	Pattern 1, Exps 1-1 in NGC121 (03) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 6000. Key events are marked with arrows: GS Acq at 0s, Exp. 1 (green box with double arrows) at approximately 400s, Pointing Maneuver and Overhead at approximately 1700s, Exp. 1 (green box with double arrows) at approximately 1800s, Occultation and Overhead at approximately 3100s, and Unused Orbital Visibility = 0 from approximately 3200s to 5700s. A blue checkered bar indicates the active observation period from approximately 400s to 3100s.</p>									

Proposal 18058 - NGC121 (04) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (04), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG -4,0	Pattern 1, Exps 1-1 in NGC121 (04) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 6000. Key events are marked with arrows: GS Acq at 0s, Exp. 1 (green box with double arrows) at approximately 400s, Pointing Maneuver and Overhead at approximately 1700s, Exp. 1 (green box with double arrows) at approximately 1800s, Occultation and Unused Orbital Visibility = 0 at approximately 3100s, and another Overhead at approximately 3200s. A blue checkered bar indicates the active observation period from approximately 400s to 3100s. A solid black bar is shown below the checkered bar from approximately 3100s to 3900s.</p>									

Proposal 18058 - NGC121 (05) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

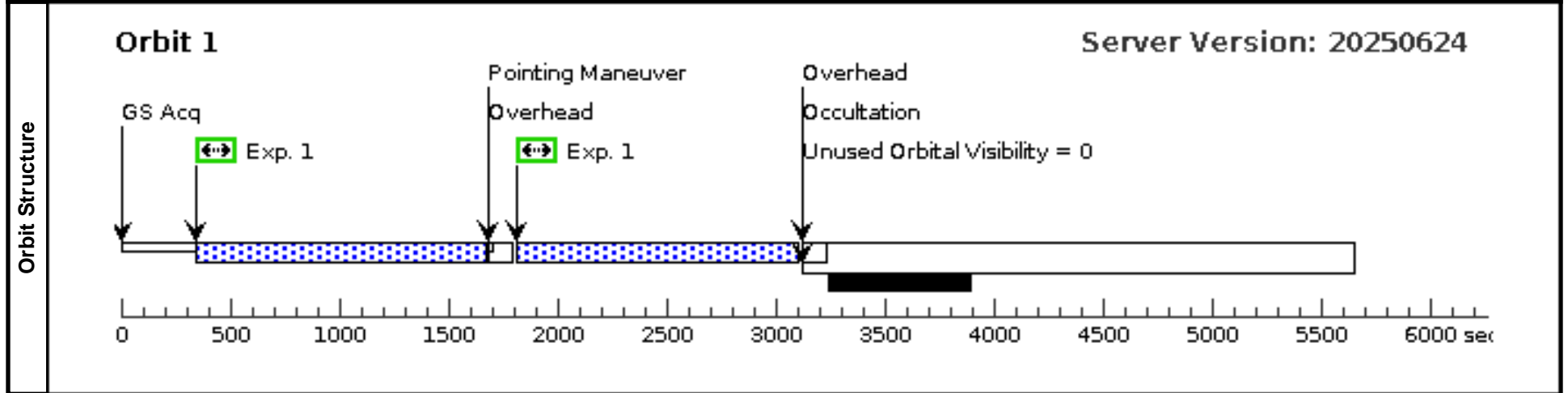
Visit	Proposal 18058, NGC121 (05), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
 Category=EXT-CLUSTER
 Description=[GLOBULAR CLUSTER]*

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG 0,0	Pattern 1, Exps 1-1 in NGC121 (05) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 18058 - NGC121 (06) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

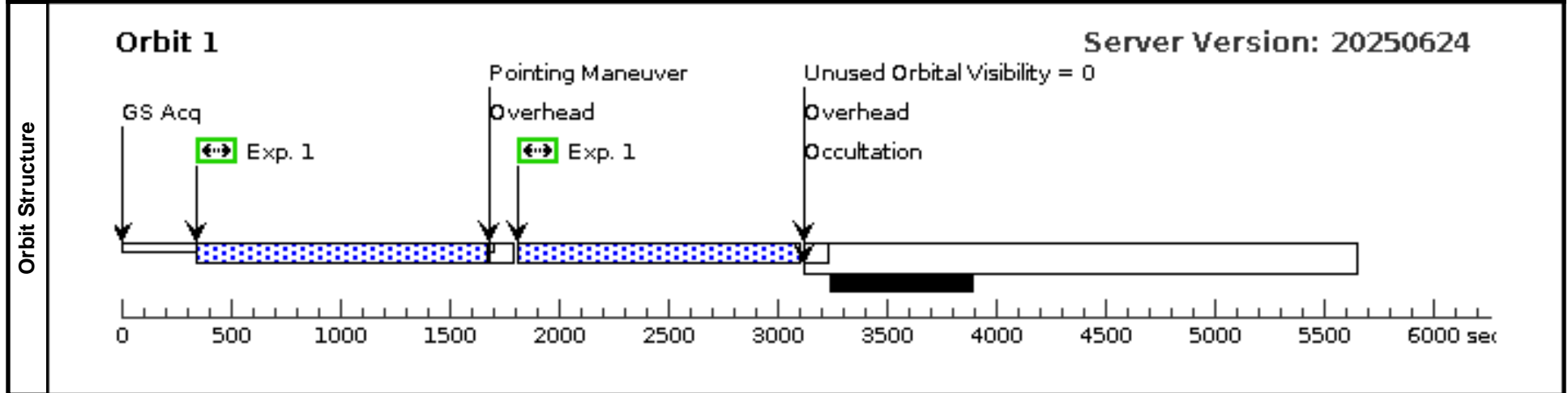
Visit	Proposal 18058, NGC121 (06), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
 Category=EXT-CLUSTER
 Description=[GLOBULAR CLUSTER]

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG +4,0	Pattern 1, Exps 1-1 in NGC121 (06) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 18058 - NGC121 (07) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (07), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG -4,-4	Pattern 1, Exps 1-1 in NGC121 (07) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure over a 6000-second period. It shows the timing of various events: GS Acq at 0s, the start of the first exposure (Exp. 1) at approximately 400s, a period of overhead and pointing maneuver at 1700s, the start of the second exposure (Exp. 1) at approximately 1800s, the start of occultation and unused orbital visibility at 3100s, and a final overhead period at 3200s. A blue checkered bar highlights the active observation period from 400s to 3100s.</p>									

Proposal 18058 - NGC121 (08) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (08), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG 0,-4	Pattern 1, Exps 1-1 in NGC121 (08) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 6000. Key events are marked with arrows: GS Acq at 0s, Exp. 1 (green box with double arrows) at approximately 400s, Pointing Maneuver at approximately 1700s, another Exp. 1 at approximately 1800s, and Occultation starting at approximately 3100s. Overhead periods are indicated above the timeline. A blue checkered bar represents the observation window, and a black bar represents the occultation period. The text 'Unused Orbital Visibility = 0' is shown above the occultation period.</p>									

Proposal 18058 - NGC121 (09) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

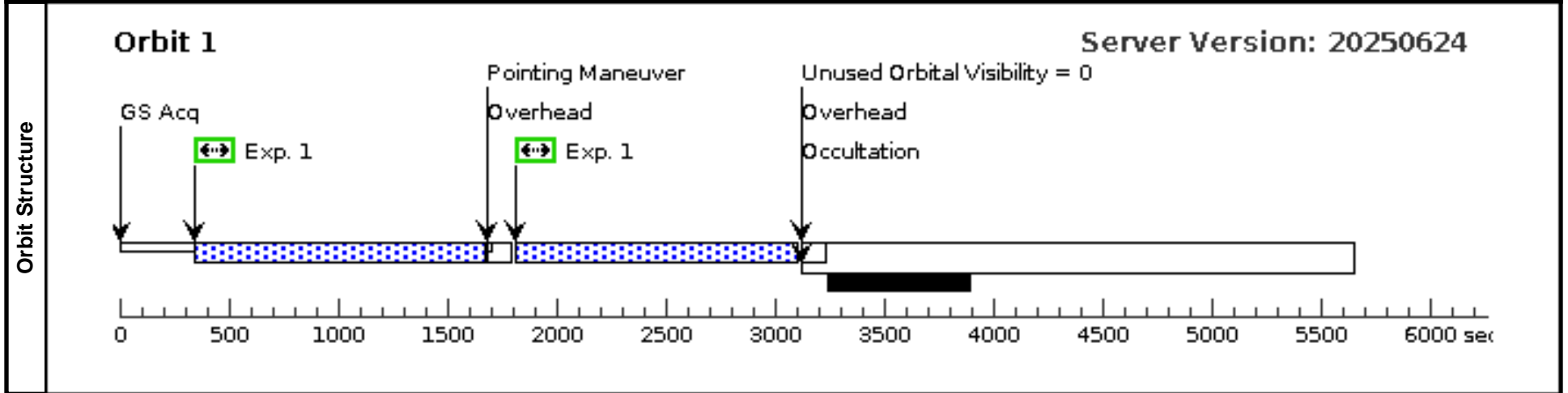
Visit	Proposal 18058, NGC121 (09), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
 Category=EXT-CLUSTER
 Description=[GLOBULAR CLUSTER]

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG +4,-4	Pattern 1, Exps 1-1 in NGC121 (09) (1)	1297 Secs (2594 Secs)	[=>(Pattern 1)] [=>(Pattern 2)]



Proposal 18058 - NGC121 (10) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (10), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG 0,+2	Pattern 1, Exps 1-1 in NGC121 (10) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									

Proposal 18058 - NGC121 (11) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (11), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG -2,+1	Pattern 1, Exps 1-1 in NGC121 (11) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1, showing a timeline from 0 to 6000 seconds. Key events include GS Acq at 0s, Exp. 1 at ~400s, Overhead and Pointing Maneuver at ~1700s, Exp. 1 at ~1800s, Occultation at ~3100s, and another Overhead at ~3200s. A shaded region from ~3100s to ~3900s is labeled 'Unused Orbital Visibility = 0'.</p>									

Proposal 18058 - NGC121 (12) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (12), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG +2,+1	Pattern 1, Exps 1-1 in NGC121 (12) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 6000. Key events are marked with arrows: GS Acq at 0s, Exp. 1 (green box with double arrows) at approximately 400s, Overhead and Pointing Maneuver at approximately 1700s, another Exp. 1 at approximately 1800s, Overhead and Occultation at approximately 3100s, and Unused Orbital Visibility = 0 from approximately 3100s to 5700s. A blue checkered bar indicates the active observation period from approximately 400s to 3100s.</p>									

Proposal 18058 - NGC121 (13) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (13), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
	Patterns	# (1)	Primary Pattern Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false	Secondary Pattern	Exposures (1)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG -2,-2	Pattern 1, Exps 1-1 in NGC121 (13) (1)	1297 Secs (2594 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20250624 </div> <p>The diagram illustrates the orbit structure over a 6000-second period. It shows the timing of various events: GS Acq at 0s, the start of the first exposure (Exp. 1) at approximately 400s, a pointing maneuver and overhead at 1700s, the start of the second exposure (Exp. 1) at approximately 1800s, occultation and overhead at 3100s, and a period of unused orbital visibility from 3100s to 5700s. A blue checkered bar highlights the active observation period from 400s to 3100s.</p>									

Proposal 18058 - NGC121 (14) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (14), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern		Secondary Pattern	Exposures					
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG +2,-2	Pattern 1, Exps 1-1 in NGC121 (14) (1)	1297 Secs (2594 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	Orbit 1 Server Version: 20250624									
	<p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 6000. Key events are marked with arrows: GS Acq at 0s, Exp. 1 (green box) at approximately 400s, Pointing Maneuver at approximately 1700s, Exp. 1 (green box) at approximately 1800s, and Occultation at approximately 3100s. A blue checkered bar indicates the active observation period from approximately 400s to 3100s. A black bar below the occultation event indicates a period of 'Unused Orbital Visibility = 0' from approximately 3100s to 3900s. The text 'Server Version: 20250624' is displayed in the top right corner.</p>									

Proposal 18058 - NGC121 (15) - The chemical composition of pristine gas through first-population stars in NGC 121

Thu Aug 14 17:01:24 GMT 2025

Visit	Proposal 18058, NGC121 (15), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
	Patterns	# (1)	Primary Pattern Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=10 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=270 Angle Between Sides= Center Pattern=false	Secondary Pattern	Exposures (1)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 10.00 (-71.53611d) Equinox: J2000	Epoch of Position: 2000	V=11.24	Reference Frame: SIMBAD				
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=EXT-CLUSTER Description=[GLOBULAR CLUSTER]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC121	(1) NGC-121	WFC3/UVIS, ACCUM, UVIS2	F275W	FLASH=20	POS TARG +2,+2	Pattern 1, Exps 1-1 in NGC121 (15) (1)	1297 Secs (2594 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> <div> <p>Orbit 1</p> </div> <div> <p>Server Version: 20250624</p> </div> </div> <p>Timeline labels: GS Acq, Exp. 1, Pointing Maneuver, Overhead, Exp. 1, Occultation, Overhead, Unused Orbital Visibility = 0.</p> <p>X-axis: 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000 sec</p>									