



14593 - Constraining the Origin of Multiple Populations in Globular Clusters

Cycle: 24, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Nate Bastian (PI) (ESA Member) (Contact)	Liverpool John Moores University	n.j.bastian@ljmu.ac.uk
Dr. Marina Rejkuba (CoI) (ESA Member)	European Southern Observatory - Germany	mrejkuba@eso.org
Dr. Michael Hilker (CoI) (ESA Member)	European Southern Observatory - Germany	mhilker@eso.org
Dr. Ben Davies (CoI) (ESA Member)	Liverpool John Moores University	b.davies@ljmu.ac.uk
Mr. Ivan Cabrera-Ziri (CoI) (ESA Member)	Liverpool John Moores University	i.cabreraziricastro@2013.ljmu.ac.uk
Ms. Katie Hollyhead (CoI) (ESA Member)	Liverpool John Moores University	k.hollyhead@2013.ljmu.ac.uk

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-34	WFC3/UVIS	1	29-Jul-2016 13:47:11.0	yes
02	(2) NGC-4038	WFC3/UVIS	1	29-Jul-2016 13:47:12.0	yes
03	(3) NGC-7252	WFC3/UVIS	1	29-Jul-2016 13:47:12.0	yes

3 Total Orbits Used

ABSTRACT

Ancient Globular Clusters (GCs), once thought to be the quintessential single stellar population, are now known to host multiple populations, with varying metal (and presumably helium) content between stars. Many scenarios have been put forward to explain the presence of the multiple populations, several of which rely on multiple generations of stars, with the first generation chemically enriching further generations. Testing these scenarios is difficult as nearby young clusters, that can be resolved into their constituent stars, do not show age/abundance spreads. It has been

suggested that this is the case because the young clusters are not massive enough ($>5 \times 10^5 M_{\text{sun}}$) to hold onto their stellar ejecta, and hence follow a different evolutionary path than GCs. We propose UV imaging of a sample of massive ($>10^6 M_{\text{sun}}$) young (50-500 Myr) clusters, in order to combine them with our ground based medium resolution high S/N VLT/X-shooter spectroscopy (and existing HST U-band and optical imaging), to confirm or refute age spreads within them. We will be able to place limits of >10 -to-1, first-to-second generation mass ratios, which will directly test popular globular cluster formation models.

OBSERVING DESCRIPTION

This programme will provide UV imaging in the F275W filter with WFC3 of three ongoing/recent galactic mergers, NGC 34, NGC 4038 (the Antennae), and NGC 7252. It is designed to compliment previous WFC3 and ACS imaging of these galaxies in the optical.

Proposal 14593 - NGC 34 (01) - Constraining the Origin of Multiple Populations in Globular Clusters

Fri Jul 29 17:47:13 GMT 2016

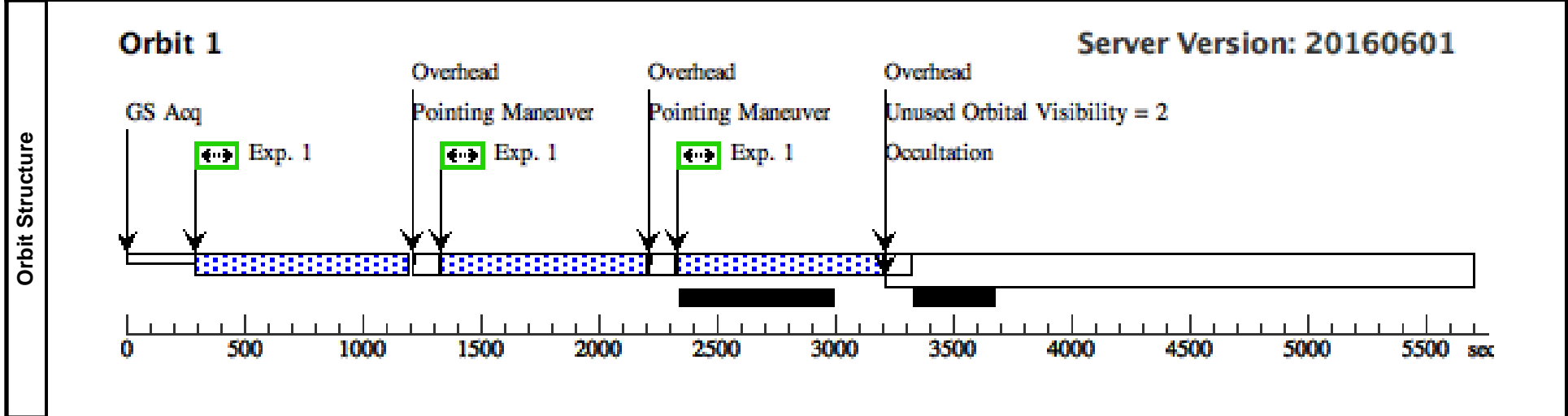
Visit	Proposal 14593, NGC 34 (01) Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 67D TO 71 D
	(Exposure 1 (Pattern 1, Exps 1-1 in NGC 34 (01))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Diagnosics			

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC-34	RA: 00 11 8.4000 (2.7850000d) Dec: -12 06 18.30 (-12.10508d) Equinox: J2000		V=13.52	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) NGC-34	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	CR-SPLIT=NO; FLASH=8.0		Pattern 1, Exps 1-1 in NGC 34 (01) (1)	869 Secs (2607 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 14593 - NGC 4038 (02) - Constraining the Origin of Multiple Populations in Globular Clusters

Fri Jul 29 17:47:13 GMT 2016

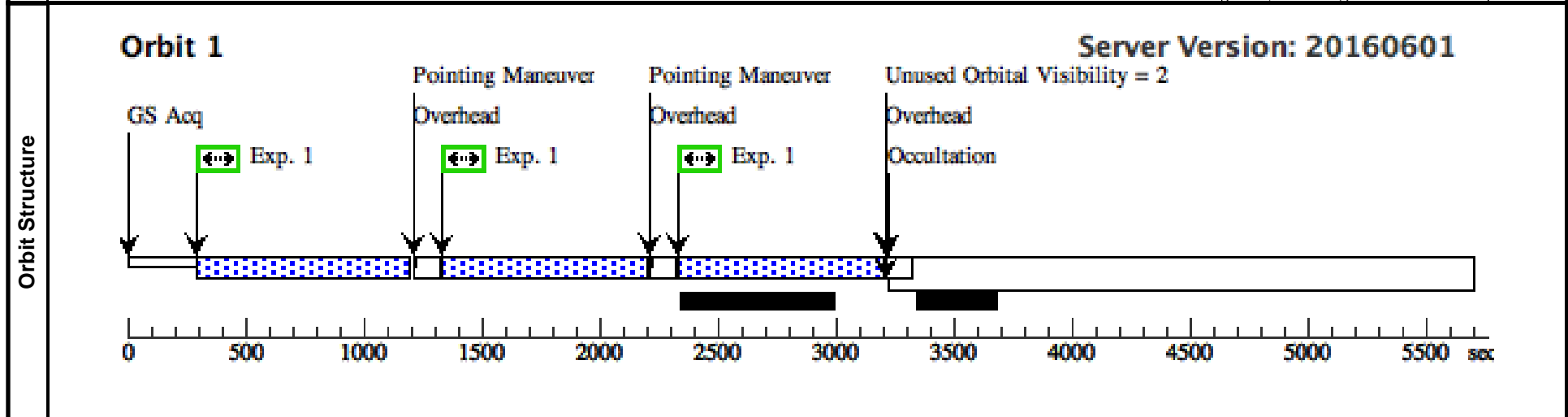
Visit	Proposal 14593, NGC 4038 (02) Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 136D TO 140 D
	(Exposure 1 (Pattern 1, Exps 1-1 in NGC 4038 (02))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Diagnosics	(Exposure 1 (Pattern 1, Exps 1-1 in NGC 4038 (02))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser
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#	Primary Pattern	Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	NGC-4038	RA: 12 01 54.0000 (180.4750000d) Dec: -18 52 40.00 (-18.87778d) Equinox: J2000		V=11.2	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) NGC-4038	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	CR-SPLIT=NO; FLASH=8.0		Pattern 1, Exps 1-1 in NGC 4038 (02) (1)	870 Secs (2610 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 14593 - NGC 7252 (03) - Constraining the Origin of Multiple Populations in Globular Clusters

Fri Jul 29 17:47:13 GMT 2016

Visit	Proposal 14593, NGC 7252 (03) Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 55D TO 60 D
	(Exposure 1 (Pattern 1, Exps 1-1 in NGC 7252 (03))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Diagnosics	(Exposure 1 (Pattern 1, Exps 1-1 in NGC 7252 (03))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

#	Primary Pattern	Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	NGC-7252	RA: 22 20 43.9500 (335.1831250d) Dec: -24 40 39.50 (-24.67764d) Equinox: J2000		V=12.06	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) NGC-7252	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	CR-SPLIT=NO; FLASH=8.0	GS ACQ SCENARI O BASE1B3	Pattern 1, Exps 1-1 in NGC 7252 (03) (1)	871 Secs (2613 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]

