



18487 - Follow-up of New, Relaxed Cool-Core Clusters

Cycle: 34, 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) ACT-CLJ0728.5+1407	WFC3/UVIS	2	16-Oct-2026 10:00:14.0	yes

2 Total Orbits Used

ABSTRACT

We propose observations of 4 massive, relaxed, cool-core galaxy clusters at redshifts 0.35-0.62, selected through a new effort to identify such systems in archival and snapshot data. The new data will enhance cluster cosmology with new, precise measurements of the gas-mass fraction at the redshifts where dark energy is dominant and specifically where DESI data suggest a departure from the cosmological constant model. They will also

constrain the gas thermodynamics, enrichment, and total mass profiles, key to evolutionary studies of cool cores and cluster astrophysics. We expect these targets to be the vanguard of a an expanded sample of highly relaxed clusters, ultimately double the current sample's size, enabling a new generation of studies of cosmology, feedback and other astrophysics.

OBSERVING DESCRIPTION

We propose imaging of the center of 1 galaxy cluster at redshift 0.35 in the F475W and F814W filters using WFC3/UV.

The field of view will reach ~ 400 kpc ($\sim 0.75 r_{2500}$), easily covering the central region of radius $< 30''$ where strong lensing is expected.

The HST exposure time calculator indicates that, for an elliptical galaxy spectral template (model 2) with 1" radius source regions and standard background levels, we will reach limiting magnitudes (S/N=5) of 25 and 27 in F475W and F814W, respectively, with 1 orbit in each filter.

This depth enables firm identifications of the red sequence, and will provide comparable sensitivity to other clusters with archival data in the our sample.

Proposal 18487 - Visit 01 - Follow-up of New, Relaxed Cool-Core Clusters

Visit	Proposal 18487, Visit 01										Fri Oct 16 14:00:14 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/UVIS											
	Special Requirements: (none)											
Patterns	#	Primary Pattern					Secondary Pattern				Exposures	
	(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=			Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false						(1-2)	
Fixed Targets	#	Name		Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	ACT-CLJ0728.5+1407		RA: 07 28 35.3280 (112.1472000d) Dec: +14 07 42.24 (14.12840d) Equinox: J2000				V=18.5		Reference Frame: ICRS		
	Comments: Category=CLUSTER OF GALAXIES Description=[BCM, RICH CLUSTER]											
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	F475W	(1) ACT-CLJ0728.5+1407	WFC3/UVIS, ACCUM, UVIS		F475W			Pattern 1, Exps 1-2 in Visit 01 (1)	1140 Secs (2428 Secs)		
										[>=>1219.0 Secs (Pattern 1)]		[1]
										[>=>1209.0 Secs (Pattern 2)]		[2]
	2	F814W	(1) ACT-CLJ0728.5+1407	WFC3/UVIS, ACCUM, UVIS		F814W			Pattern 1, Exps 1-2 in Visit 01 (1)	1140 Secs (2428 Secs)		
										[>=>1219.0 Secs (Pattern 1)]		[1]
									[>=>1209.0 Secs (Pattern 2)]		[2]	

