



## 17607 - A new gas-rich local dwarf galaxy identified with machine learning

Cycle: 31, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Michael Gordon Jones (PI) (Contact)</b>	<b>University of Arizona</b>
Dr. Ananthan Karunakaran (CoI) (CSA Member)	University of Toronto
Prof. David J. Sand (CoI)	University of Arizona
Richard Donnerstein (CoI)	University of Arizona
Prof. Dennis Zaritsky (CoI)	University of Arizona
Dr. Kristine Spekkens (CoI) (CSA Member)	Queen's University
Dr. Paul Bennet (CoI)	Space Telescope Science Institute
Dr. Denija Crnojevic (CoI)	University of Tampa
Dr. Burcin Mutlu-Pakdil (CoI)	Dartmouth College
Dr. Catherine Fielder (CoI)	University of Arizona

### 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) SMDG1339-3201	ACS/WFC	1	13-Nov-2024 07:00:18.0	yes

1 Total Orbits Used

### ABSTRACT

We request 3.5h of VLA C-configuration time in order to confirm that a recent HI detection at 500km/s (from GBT) in the direction of a newly identified dwarf galaxy, is localized to that object. In addition, we request 1 orbit of HST in order to measure an accurate tip-of-the-red-giant-branch distance to this galaxy, laying the foundation for a robust study of its nature. This object was detected in public DECaLS images using a combination

Proposal 17607 (STScI Edit Number: 1, Created: Wednesday, November 13, 2024, 7:00:19AM Eastern Standard Time) - Overview of an automated search algorithm, a convolutional neural network classifier, and finally, human inspection. Its appearance is reminiscent of Leo P and low-mass dwarfs in the SHIELD sample. It is also semi-resolved in the DECaLS images, suggesting that it is within several Mpc. The nearest large galaxy is NGC5253 (407km/s) and we suspect that this object may be a Leo P analog in another nearby (3.55 Mpc) Milky Way-like system. This object is one of the first we are following up from our novel search and we hope this will act as a proof of concept, demonstrating the viability of this approach for identifying undiscovered Local Volume dwarfs, and will result in further follow-up of additional candidates.

## **OBSERVING DESCRIPTION**

These observations target a newly identified candidate extremely low mass, star-forming galaxy. Our primary goal is to resolve its stellar population, to understand its recent star formation history and measure a tip of the red giant branch distance estimate. We follow a standard strategy of approximately 1000 s integrations in F606W and F814W with ACS/WFC and parallel observations in the same filters in WFC3/UVIS. The target is less than 30 arcsec across and has therefore been centered in a single ACS chip and we use only a 2-point line dither and do not fill the chip gap. We have attempted to pack the orbit, making the exposures as long as possible, while permitting all the required buffer dumps. We do not require any orient constraints.

Proposal 17607 - Visit 01 - A new gas-rich local dwarf galaxy identified with machine learning

Wed Nov 13 12:00:19 GMT 2024

<b>Visit</b>	<b>Proposal 17607, Visit 01, implementation</b>		
	<b>Diagnostic Status: Warning</b>		
	Scientific Instruments: ACS/WFC		
	Special Requirements: ORIENT 333.5D TO 353 D		

<b>Diagnostics</b>	(Visit 01) Warning (Orbit Planner): PATTERN POSITION OUTSIDE APERTURE		
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<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false		(1-2)

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	SMDG1339-3201	RA: 13 38 57.6000 (204.7400000d) Dec: -32 01 4.44 (-32.01790d) Equinox: J2000		V=18.5	Reference Frame: ICRS
<i>Comments:</i>						
<i>Category=GALAXY</i>						
<i>Description=[AMORPHOUS IRREGULAR]</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SMDG1339-3201	ACS/WFC, ACCUM, WFC1	F606W		POS TARG -65.232 8008652219,-120.52 75435281317	Pattern 1, Exps 1-2 in Visit 01 (1)	450 Secs (916 Secs)	
									[=>458.0 Secs (Pattern 1)]	[1]
									[=>458.0 Secs (Pattern 2)]	
	2		(1) SMDG1339-3201	ACS/WFC, ACCUM, WFC1	F814W		POS TARG -65.232 8008652219,-120.52 75435281317	Pattern 1, Exps 1-2 in Visit 01 (1)	450 Secs (916 Secs)	
								[=>458.0 Secs (Pattern 1)]	[1]	
								[=>458.0 Secs (Pattern 2)]		

