



14890 - Solving the enigma of Fast Radio Burst 121102

Cycle: 24, Proposal Category: GO

(Availability Mode: SUPPORTED)

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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) FRB-121102	WFC3/IR WFC3/UVIS	3	19-Dec-2016 21:03:54.0	yes

3 Total Orbits Used

ABSTRACT

FRB 121102 is the only known repeating source in the class of mysterious phenomena known as Fast Radio Bursts (FRBs). Through our very recent VLA campaign, we have a direct sub-arcsecond localization of FRB 121102, the first for any FRB. At the location of the burst, VLA and EVN observations show a potentially variable radio point source and archival Keck imaging shows a faint ($R = 24.5$ mag), possibly extended object. This is an unprecedented opportunity to learn about the yet unknown origins of FRBs, their distance scales, and host properties. We are requesting a two and a half orbit HST/WFC3 imaging observation that will enable us to discriminate the host type (a redshifted spiral or elliptical galaxy or an underluminous AGN) and the location of the burst within the host (nuclear or offset), with critically different implications for the underlying source class. While we are pursuing follow-up multi-wavelength imaging and ground-based spectroscopy, no other facility, ground-based or otherwise, can provide the host morphology information that we can get with HST imaging.

OBSERVING DESCRIPTION

The aim of this observation is to study the spatial structure in a dwarf galaxy hosting FRB 121102.

Proposal 14890 - Visit (01) - Solving the enigma of Fast Radio Burst 121102

Tue Dec 20 02:03:56 GMT 2016

Visit	Proposal 14890, Visit (01) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none) Comments: WFC3/IR (1 orbit) + WFC3/UVIS (2 orbits)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1-2)				
	(4)	Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=2.414 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=false	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	(3-4)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	FRB-121102	RA: 05 31 59.0400 (82.9960000d) Dec: +33 08 54.40 (33.14844d) Equinox: J2000		V=25	Reference Frame: SIMBAD				
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	WFC3/IR F 160W	(1) FRB-121102	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=11; SAMP-SEQ=STEP5 0			Pattern 1, Exps 1-2 in Visit (01) (1)	299.232481 Secs (1196.93 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]
2	WFC3/IR F 110W	(1) FRB-121102	WFC3/IR, MULTIACCUM, IR	F110W	SAMP-SEQ=STEP5 0; NSAMP=14			Pattern 1, Exps 1-2 in Visit (01) (1)	449.233834 Secs (1796.935 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1] [2]
3	WFC3/UVIS/F763M	(1) FRB-121102	WFC3/UVIS, ACCUM, UVIS	F763M	FLASH=7			Pattern 4, Exps 3-4 in Visit (01) (4)	470 Secs (1940 Secs) [=>497.0 Secs (Pattern 1,1)] [=>497.0 Secs (Pattern 1,2)] [=>473.0 Secs (Pattern 2,1)] [=>473.0 Secs (Pattern 2,2)]	[2] [3]
4	WFC3/UVIS/F845M	(1) FRB-121102	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=8			Pattern 4, Exps 3-4 in Visit (01) (4)	480 Secs (2560 Secs) [=>480.0 Secs (Pattern 1,1)] [=>480.0 Secs (Pattern 1,2)] [=>800.0 Secs (Pattern 2,1)] [=>800.0 Secs (Pattern 2,2)]	[2] [3]



