



11832 - The Structure and Physics of the Youngest Radio Galaxies

Cycle: 17, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Eric S. Perlman (PI)	Florida Institute of Technology	eperlman@fit.edu
Dr. John T. Stocke (CoI)	University of Colorado at Boulder	stocke@casa.colorado.edu
Dr. Jeremiah K. Darling (CoI)	University of Colorado at Boulder	darling@ociw.edu

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-5793	WFC3/IR WFC3/UVIS	2	24-Oct-2008 21:00:59.0	yes

2 Total Orbits Used

ABSTRACT

We propose to obtain X-ray images and spectra of two of the nearest and X-ray brightest compact symmetric objects. These objects are radio sources which have begun ejecting radio plasma within the last nsim 10000 years. The purpose of these observations is to discover their X-ray structure, measure their X-ray spectra and test the Wilson-Colbert hypothesis regarding the formation of radio-loud AGN. CSOs are ideal targets for this test because they are very small and very young. By targeting the very nearest objects we assure ourselves of the highest possible physical resolution. We are particularly looking for binary black holes (possibly found for one of our objects already) and/or nascent NLRs.

OBSERVING DESCRIPTION

We are obtaining HST images in three bands of the galaxy NGC 5793. We will obtain observations in three bands with HST: F475W and F775W in the optical, using the WFC3 UVIS channel, and F160W in the near-IR, using the WFC3 IR channel. This strategy closely parallels that used in our Cycle 7-N observations of other CSOs, including 4C 31.04, NGC 3894 and 1943+70. The F475W and F775W filters replace the F450W and F702W filters used in our Cycle 7-N program as neither of those is available in WFC3 or ACS. Observing times have been calculated to obtain roughly equal sensitivity in all three bands (H=25.1, i=23.2 and V=23.6 mag/arcsec² respectively).

The HST data will shed light on such issues as galactic structure, star formation, optical jets, dust features, tidal tails. When viewed in combination with the Chandra and archival radio observations, this will allow us to disentangle how the radio plasma impacts the properties of the gas it flows through as well as the galaxy as a whole. We will also probe the reverse side of the equation -- that is how the galaxy type and other galaxy features affect the evolution of the radio source and the surrounding X-ray atmosphere. Finally for these sources we will probe the deepest inner regions, where the radio source is in the process of taking shape. For NGC 5793 the existing Chandra snapshot shows a double nucleus which we will explore in depth with these HST and deeper Chandra observations. This may be related to the process triggering the ejection of the radio plasma.

REAL TIME JUSTIFICATION

These observations can be scheduled as flexibly as necessary. We do not have any special requirements as far as roll angle or orbital visibilities; the default parameters will do fine. Also there are no requirements as far as scheduling times.

Proposal 11832 - Visit 01 - The Structure and Physics of the Youngest Radio Galaxies

Sat Oct 25 01:01:05 GMT 2008

Visit	Proposal 11832, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=34.34 Angle Between Sides= Center Pattern=false		(1)				
	(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.391 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.248 Angle Between Sides= Center Pattern=false		(2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-5793	RA: 14 59 24.7000 (224.8529167d) Dec: -16 41 36.00 (-16.69333d) Equinox: J2000		V=15.0	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) NGC-5793	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=14; SAMP-SEQ=SPAR S100		Pattern 1-1 (1)	[=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2		(1) NGC-5793	WFC3/UVIS, ACCUM, UVIS-FIX	F475W	CR-SPLIT=NO		Pattern 2-3 (2)	800 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[2]
	3		(1) NGC-5793	WFC3/UVIS, ACCUM, UVIS-FIX	F775W	CR-SPLIT=NO		Pattern 2-3 (2)	360 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[2]

