



12117 - Determining the Nature of an Exceptional Optical Transient

Cycle: 17, Proposal Category: GO/DD

(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) CSS100217	WFC3/UVIS	1	12-May-2010 21:05:21.0	yes

1 Total Orbits Used

ABSTRACT

During the course of the Catalina Real-time Transient Survey (CRTS) we have discovered an exceptionally luminous optical transient. The source of this event appears to be either the most luminous supernova ever discovered, or the first clear optical detection of the tidal disruption of a star by a massive black hole.

In spite of numerous ground and space-based observations the exact nature of the event remains unclear. High spatial resolution observations with HST WFC3 are critical to solving this mystery.

OBSERVING DESCRIPTION

We will use HST WFC3-UVIS channel subarray observations with F390W, F555W & F763M to image the target seven times with each filter during one orbit. Using HST WFC3 exposure calculator, along with our May 5th optical spectrum as input, we find that $S/N > 200$ observations can be achieved with F390W, F555W & F763M in 45, 35, and 75 seconds, respectively.

Our observations will consist of seven exposures in each filter in a custom built pattern designed specifically to reconstruct the image with the best possible resolution will also mitigate the impact of hot pixels and cosmic rays. These images will be taken using F390W, F555W, and F763M. F390W will highlight the location of the hot blue host-AGN component. F555W will trace the continuum component and observations with F763M will highlight the location of the strongest (red-shifted) H_{alpha} emission (which lies at the center of this filter's transmission), without also including the significant continuum component of a broader filter.

We will use 1kx1k pixel subarrays which will allow us to stack the images thus greatly decrease the readout overheads with the buffer dump occurring after occultation but with the orbit. This array size gives us a 40" field of view which contains the entire galaxy target plus a nearby star.

The visit planner suggests such observation can be scheduled throughout May and Jun. May dates are preferred since the target is a fading transient source.

Proposal 12117 - Visit 01 - Determining the Nature of an Exceptional Optical Transient

Visit	Proposal 12117, Visit 01, implementation	Thu May 13 01:05:29 GMT 2010
	Diagnostic Status: Error	
	Scientific Instruments: WFC3/UVIS	
	Special Requirements: PCS MODE FINE; BEFORE 10-JUL-2010:00:00:00	

Proposal 12117 - Visit 01 - Determining the Nature of an Exceptional Optical Transient

[illegible]

Proposal 12117 - Visit 01 - Determining the Nature of an Exceptional Optical Transient

(Exposure 19 (Visit 01)) Error (Form): Illegal selection: UVIS2-M1K1C-SUB. (Exposure 20 (Visit 01)) Error (Form): Illegal selection: UVIS2-M1K1C-SUB. (Exposure 21 (Visit 01)) Error (Form): Illegal selection: UVIS2-M1K1C-SUB.					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	CSS100217	RA: 10 29 12.5800 (157.3024167d) Dec: +40 42 19.70 (40.70547d) Equinox: J2000	Redshift: 0.147	V=16.5+/-0.5
Reference Frame: ICRS					

Proposal 12117 - Visit 01 - Determining the Nature of an Exceptional Optical Transient

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.000,0.000; GS ACQ SCENARI O BASE1B3		45 Secs [==>]	[1]
	2		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.24847 0,0.140904		45 Secs [==>]	[1]
	3		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.49694 9,0.281800		45 Secs [==>]	[1]
	4		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.73978 6,0.422335		45 Secs [==>]	[1]
	5		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.12429 2,0.506064		45 Secs [==>]	[1]
	6		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.37275 6,0.646968		45 Secs [==>]	[1]
	7		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F390W	CR-SPLIT=NO	POS TARG 0.62122 9,0.787864		45 Secs [==>]	[1]
	8		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 1		35 Secs [==>]	[1]
	9		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 2		35 Secs [==>]	[1]
	10		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 3		35 Secs [==>]	[1]
	11		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 4		35 Secs [==>]	[1]
	12		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 5		35 Secs [==>]	[1]
	13		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 6		35 Secs [==>]	[1]
	14		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F555W	CR-SPLIT=NO	SAME POS AS 7		35 Secs [==>]	[1]
	15		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 1		75 Secs [==>]	[1]
	16		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 2		75 Secs [==>]	[1]
	17		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 3		75 Secs [==>]	[1]
	18		(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 4		75 Secs [==>]	[1]

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	19	(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 5	75 Secs	
							[==>]	[1]
	20	(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 6	75 Secs	
							[==>]	[1]
	21	(1) CSS100217	WFC3/UVIS, ACCUM, UVIS2-M1K1C-SUB	F763M	CR-SPLIT=NO	SAME POS AS 7	75 Secs	
							[==>]	[1]

