



14901 - The UV behaviour of GRB 161219B/SN2016jca

Cycle: 24, 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) GRB161219B	WFC3/UVIS	1	12-Jan-2017 21:04:12.0	yes

1 Total Orbits Used

ABSTRACT

The connection between long duration gamma-ray bursts and the stripped-envelope supernova is now secure, however, central questions remain about the nature of the supernovae and the power sources that drive them. Progress in these areas can be made through in-depth observations of nearby GRBs, in which the supernova light is sufficiently bright for detailed studies. However, such events are extremely rare, with only a handful of classical long-duration GRBs being found at $z < 0.2$. Here we request observations of the recent GRB 161219B, and its supernova SN 2016jca. Utilising the unique ultraviolet capabilities of HST we will map the UV spectrum and its evolution with time. At a minimum, this will provide a route to tracking the afterglow and decomposing afterglow and supernova and host contributions -- diagnostics that ground-based observations alone struggle to achieve. However, our sensitive UV observations will also probe the UV properties of a GRB-SN for the first time, providing insight into

the metal content of the progenitor, and crucially into the nature of the central engine, which may power the prompt emission of the burst, and continue to provide energy to event at much later times. Recent observations suggest that in extremum these engines may drive supernovae to exceptional luminosities (the so-called superluminous supernovae) and provide a link between the most powerful explosions in the Universe. Our observations may offer the route to identifying such an engine at work in a lower luminosity supernova, solidifying this link.

OBSERVING DESCRIPTION

We request G280L spectroscopy of the afterglow/supernova associated with GRB 161219B at $z=0.15$. We will obtain a 4-point dither sequence of observations, as well as a short exposure in F390W for astrometric purposes that will also provide a photometric point and a measurement of the host galaxy. To provide a means of cosmic ray rejection we will obtain two short exposures, and to avoid buffer dump issues for the short exposures have placed them immediately before and after the grism observations. Given the position angle of the host galaxy a roll angle low in the available range (15-25 degrees) is ideal.

Proposal 14901 - Visit 01 - The UV behaviour of GRB 161219B/SN2016jca

Fri Jan 13 02:04:13 GMT 2017

Visit	Proposal 14901, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 100%; ORIENT 15D TO 25 D; ON HOLD <i>On Hold Comments: Awaiting Dark GRB position from Chandra</i>		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	GRB161219B	RA: 06 06 51.3700 (91.7140417d) Dec: -26 47 29.70 (-26.79158d) Equinox: J2000		V=22+/-1	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) GRB161219B		WFC3/UVIS, ACCUM, G280-REF	F200LP		POS TARG 0,0		200 Secs (200 Secs)	
									[==>]	[1]
	2	(1) GRB161219B		WFC3/UVIS, ACCUM, UVIS	G280	CR-SPLIT=NO		Pattern 1, Exps 2-2 in Visit 01 (1)	390 Secs (1560 Secs)	
								[==>(Pattern 1)]		
								[==>(Pattern 2)]		
								[==>(Pattern 3)]		
								[==>(Pattern 4)]		
									[1]	
3	(1) GRB161219B		WFC3/UVIS, ACCUM, G280-REF	F200LP			POS TARG 0.099,0.106	200 Secs (200 Secs)		
								[==>]	[1]	

Orbit Structure

