



10928 - Calibrating Cosmological Chronometers: White Dwarf Masses

Cycle: 15, Proposal Category: GO

(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>
11	(1) WD0121-429	FGS	1	17-Aug-2007 21:01:00.0	yes
12	(6) WD2248+293	FGS	1	17-Aug-2007 21:01:04.0	yes
21	(2) WD2007-219	FGS	1	17-Aug-2007 21:01:05.0	yes
22	(7) WD1242-105	FGS	1	17-Aug-2007 21:01:07.0	yes
31	(3) WD2040-392	FGS	1	17-Aug-2007 21:01:08.0	yes
32	(9) WD0311-649	FGS	1	17-Aug-2007 21:01:10.0	yes
41	(4) WD1202-232	FGS	1	17-Aug-2007 21:01:11.0	yes
42	(8) WD1237-230	FGS	1	17-Aug-2007 21:01:13.0	yes

<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>
51	(1) WD0121-429	FGS	1	17-Aug-2007 21:01:14.0	yes
61	(4) WD1202-232	FGS	1	17-Aug-2007 21:01:16.0	yes
92	(9) WD0311-649	FGS	1	17-Aug-2007 21:01:17.0	yes

11 Total Orbits Used

ABSTRACT

We propose to use HST/FGS1R to determine White Dwarf (WD) masses. The unmatched resolving power of HST/FGS1R will be utilized to follow up four selected WD binary pairs. This high precision obtained with HST/FGS1R simply cannot be equaled by any ground based technique. This proposed effort complements that done by CoI Nelan in which a sample of WDs is being observed with HST/FGS1R. This proposal will dramatically increase the number of WDs for which dynamical mass measurements are possible, enabling a better calibration of the WD mass-radius relation, cooling curves, initial to final mass relations, and ultimately giving important clues to the star formation history of our Galaxy and the age of its disk as well as in other galaxies.

(This project is part of Subasavage's PhD thesis work at Georgia State University.)

OBSERVING DESCRIPTION

We will use FGS1r in its high angular resolution TRANSFER mode to observe our targets. Each single-orbit visit will contain two exposures, one with a long scan path, one with a short scan path. This will provide sensitivity for both wide binaries as well as close systems. The wide-band F583W filter will be used to maximize photon throughput.

Proposal 10928 - Visit 11 - Calibrating Cosmological Chronometers: White Dwarf Masses

Visit	Proposal 10928, Visit 11, failed										Sat Aug 18 01:01:20 GMT 2007
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: FGS										
	Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 01-JUL-2006:00:00:00 AND 30-AUG-2006:00:00:00										
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	WD0121-429	RA: 01 24 3.9800 (21.0165833d)	Proper Motion RA: 0.01936s/yr	V=14.83	Reference Frame: ICRS					
			Dec: -42 40 38.50 (-42.67736d)	Proper Motion Dec: 0.5218"/yr	B-V=0.49						
			Equinox: J2000	Epoch of Position: 2000.0							
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/[Actual Dur.]	Orbit	
	1	(1) WD0121-429	FGS, TRANS, 1	F583W	SCANS=5			Sequence 1-2 Non-Int	375.0 Secs		
								t	[==>]	[1]	
	2	(1) WD0121-429	FGS, TRANS, 1	F583W	SCANS=32; STEP-SIZE=0.5			Sequence 1-2 Non-Int	1380.0 Secs		
								t	[==>]	[1]	
Orbit Structure	Orbit 1 Server Version: 20070709 GS Acq Setup Exp. 1 Exp. 2 Home Unused Visibility = 18 Occultation 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec										

Proposal 10928 - Visit 12 - Calibrating Cosmological Chronometers: White Dwarf Masses

Visit	Proposal 10928, Visit 12, completed					Sat Aug 18 01:01:21 GMT 2007				
	Diagnostic Status: Warning									
	Scientific Instruments: FGS									
	Special Requirements: PCS MODE FINE; SCHED 70%									
Diagnostics	(Visit 12) Warning (OP): SHORT FGS SCAN LENGTH MAY SIGNAL PROBLEMS									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(6)	WD2248+293	RA: 22 51 23.0200 (342.8459167d)	Proper Motion RA: 0.00955s/yr	V=15.55+/-0.2	Reference Frame: ICRS				
		Alt Name1: GJ1275	Dec: +29 39 44.40 (29.66233d)	Proper Motion Dec: 0.133"/yr	B = 16.22					
		Alt Name2: LHS529	Equinox: J2000	Epoch of Position: 2000.0						
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(6)	WD2248+293	FGS, TRANS, 1	F583W	SCANS=5		Sequence 1-2 Non-Int	375.0 Secs	
									[==>]	
	2	(6)	WD2248+293	FGS, TRANS, 1	F583W	SCANS=32; STEP-SIZE=0.5	SAME POS AS 1	Sequence 1-2 Non-Int	1335.0 Secs	
[==>]									[1]	
Orbit Structure	Orbit 1 Server Version: 20070709 GS Acq Setup Exp. 1 Exp. 2 Home Occultation Unutilized Visibility = 13 05001000150020002500300035004000450050005500sec									

Visit	Proposal 10928, Visit 21, completed Sat Aug 18 01:01:21 GMT 2007									
	Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 01-JUL-2006:00:00:00 AND 06-AUG-2006:00:00:00									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	WD2007-219	RA: 20 10 17.5100 (302.5729583d) Dec: -21 46 45.60 (-21.77933d) Equinox: J2000	Proper Motion RA: 0.00674s/yr Proper Motion Dec: -0.317"/yr Epoch of Position: 2000.0	V=14.39 B-V=0.2	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) WD2007-219	FGS, TRANS, 1	F583W	SCANS=5;		Sequence 1-2 Non-Int	375.0 Secs	
						STEP-SIZE=1			[==>]	[1]
	2		(2) WD2007-219	FGS, TRANS, 1	F583W	SCANS=32;	SAME POS AS 1	Sequence 1-2 Non-Int	1370.0 Secs	
						STEP-SIZE=0.5			[==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709 The diagram shows a timeline for Orbit 1. The x-axis represents time in seconds from 0 to 6000. Key events are marked with arrows: GS Acq at ~100s, Setup at ~400s, Exp. 1 at ~600s, Exp. 2 at ~1200s, Home at ~3100s, and Occultation at ~3200s. A blue checkered bar indicates the observation period from ~600s to ~3100s. A white bar indicates the period from ~3200s to ~5800s. Text labels indicate 'Unused Visibility = 6' and 'Occultation'.									

Visit	Proposal 10928, Visit 22, scheduling Sat Aug 18 01:01:21 GMT 2007									
	Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(7)	WD1242-105 Alt Name1: PG1242-106	RA: 12 44 52.6600 (191.2194167d) Dec: -10 51 8.90 (-10.85247d) Equinox: J2000	Proper Motion RA: -0.023s/yr Proper Motion Dec: -0.078"/yr Epoch of Position: 2000.0		V=15.0+/-0.2 B = 15.05	Reference Frame: ICRS			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(7) WD1242-105	FGS, TRANS, 1	F583W	SCANS=5; STEP-SIZE=1		Sequence 1-2 Non-Int	375.0 Secs	
									[==>]	[1]
	2		(7) WD1242-105	FGS, TRANS, 1	F583W	SCANS=32; STEP-SIZE=0.5	SAME POS AS 1	Sequence 1-2 Non-Int	1360.0 Secs	
									[==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709									
	GS Acq Setup Exp. 1 Exp. 2 Home Occultation Unused Visibility = 6									

Visit	Proposal 10928, Visit 31, completed Sat Aug 18 01:01:22 GMT 2007									
	Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 15-JUL-2006:00:00:00 AND 16-AUG-2006:00:00:00									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	WD2040-392	RA: 20 43 49.2100 (310.9550417d) Dec: -39 03 18.00 (-39.05500d) Equinox: J2000	Proper Motion RA: -0.000713s/yr Proper Motion Dec: -0.3399"/yr Epoch of Position: 2000.0	V=13.74+/-0.2 B-V=0.11	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(3) WD2040-392	FGS, TRANS, 1	F583W	SCANS=5;		Sequence 1-2 Non-Int	375.0 Secs	
						STEP-SIZE=1			[==>]	[1]
	2		(3) WD2040-392	FGS, TRANS, 1	F583W	SCANS=32;		Sequence 1-2 Non-Int	1380.0 Secs	
						STEP-SIZE=0.5			[==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709									

Proposal 10928 - Visit 32 - Calibrating Cosmological Chronometers: White Dwarf Masses

Visit	Proposal 10928, Visit 32, failed Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%										Sat Aug 18 01:01:22 GMT 2007
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(9)	WD0311-649	RA: 03 12 25.6800 (48.1070000d) Dec: -64 44 10.80 (-64.73633d) Equinox: J2000	Proper Motion RA: -0.00896s/yr Proper Motion Dec: 0.1056"/yr Epoch of Position: 2000.0	V=13.27+/-0.1	Reference Frame: ICRS					
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1		(9) WD0311-649	FGS, TRANS, 1	F583W	SCANS=5;		Sequence 1-2 Non-In	375.0 Secs		
						STEP-SIZE=1		t	[==>]		[1]
	2		(9) WD0311-649	FGS, TRANS, 1	F583W	SCANS=32;		Sequence 1-2 Non-In	1450.0 Secs		
						STEP-SIZE=0.5		t	[==>]		[1]
Orbit Structure	Orbit 1										Server Version: 20070709
	GS Acq Setup Exp. 1 Exp. 2 Home Unused Visibility = 22 Occultation 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec										

Visit	Proposal 10928, Visit 41, failed Sat Aug 18 01:01:23 GMT 2007									
	Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 01-DEC-2006:00:00:00 AND 16-JAN-2007:00:00:00									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	WD1202-232	RA: 12 05 26.6700 (181.3611250d) Dec: -23 33 12.00 (-23.55333d) Equinox: J2000	Proper Motion RA: 0.00454s/yr Proper Motion Dec: 0.2422"/yr Epoch of Position: 2000.0	V=12.8+/-0.2 B-V=0.25	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(4) WD1202-232	FGS, TRANS, 1	F583W	SCANS=5;		Sequence 1-2 Non-Int	375.0 Secs	
						STEP-SIZE=1			[==>]	[1]
	2		(4) WD1202-232	FGS, TRANS, 1	F583W	SCANS=32;	SAME POS AS 1	Sequence 1-2 Non-Int	1370.0 Secs	
						STEP-SIZE=0.5			[==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709 The diagram shows a timeline for Orbit 1. The x-axis represents time in seconds from 0 to 6000. Key events are marked with arrows: GS Acq at ~100s, Setup at ~400s, Exp. 1 at ~600s, Exp. 2 at ~1200s, Home at ~3100s, and Occultation at ~3200s. The exposure periods (Exp. 1 and Exp. 2) are highlighted with a blue and white checkered pattern. A long white bar represents the observation period from ~400s to ~5800s. A label 'Unused Visibility = 6' is placed above the timeline between the Home and Occultation events.									

Proposal 10928 - Visit 42 - Calibrating Cosmological Chronometers: White Dwarf Masses

Visit	Proposal 10928, Visit 42, scheduling Sat Aug 18 01:01:23 GMT 2007									
	Diagnostic Status: Warning Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%									
Diagnostics	(Visit 42) Warning (OP): SHORT FGS SCAN LENGTH MAY SIGNAL PROBLEMS									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(8)	WD1237-230 Alt Name1: LHS339	RA: 12 40 24.1500 (190.1006250d) Dec: -23 17 43.80 (-23.29550d) Equinox: J2000	Proper Motion RA: -0.056s/yr Proper Motion Dec: -0.802"/yr Epoch of Position: 2000.0	V=15.5+/-0.3 B = 16.5	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(8) WD1237-230	FGS, TRANS, 1	F583W	SCANS=5; STEP-SIZE=1			Sequence 1-2 Non-Int	375.0 Secs [==>]	[1]
	2	(8) WD1237-230	FGS, TRANS, 1	F583W	SCANS=32; STEP-SIZE=0.5		SAME POS AS 1	Sequence 1-2 Non-Int	1340.0 Secs [==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709									

Proposal 10928 - Visit 51 - Calibrating Cosmological Chronometers: White Dwarf Masses

Visit	Proposal 10928, Visit 51, completed										Sat Aug 18 01:01:24 GMT 2007
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: FGS										
	Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 01-JUL-2006:00:00:00 AND 30-AUG-2006:00:00:00										
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous			
	(1)	WD0121-429	RA: 01 24 3.9800 (21.0165833d) Dec: -42 40 38.50 (-42.67736d) Equinox: J2000	Proper Motion RA: 0.01936s/yr Proper Motion Dec: 0.5218"/yr Epoch of Position: 2000.0		V=14.83 B-V=0.49		Reference Frame: ICRS			
	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/[Actual Dur.]	Orbit	
	1		(1) WD0121-429	FGS, TRANS, 1	F583W	SCANS=5		Sequence 1-2 Non-Int	375.0 Secs		
									[==>]	[1]	
	2		(1) WD0121-429	FGS, TRANS, 1	F583W	SCANS=32; STEP-SIZE=0.5		Sequence 1-2 Non-Int	1380.0 Secs		
									[==>]	[1]	
Orbit Structure	Orbit 1 Server Version: 20070709 GS Acq Setup Exp. 1 Exp. 2 Home Occultation Unused Visibility = 18										

Visit	Proposal 10928, Visit 61, completed Sat Aug 18 01:01:24 GMT 2007									
	Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 01-DEC-2006:00:00:00 AND 16-JAN-2007:00:00:00									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	WD1202-232	RA: 12 05 26.6700 (181.3611250d) Dec: -23 33 12.00 (-23.55333d) Equinox: J2000	Proper Motion RA: 0.00454s/yr Proper Motion Dec: 0.2422"/yr Epoch of Position: 2000.0	V=12.8+/-0.2 B-V=0.25	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(4) WD1202-232	FGS, TRANS, 1	F583W	SCANS=5;		Sequence 1-2 Non-Int	375.0 Secs	
						STEP-SIZE=1			[==>]	[1]
	2		(4) WD1202-232	FGS, TRANS, 1	F583W	SCANS=32;	SAME POS AS 1	Sequence 1-2 Non-Int	1370.0 Secs	
						STEP-SIZE=0.5			[==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709									

Visit	Proposal 10928, Visit 92 Sat Aug 18 01:01:24 GMT 2007									
	Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70% <i>Comments: Repeat copy of failed visit 32.</i>									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(9)	WD0311-649	RA: 03 12 25.6800 (48.1070000d) Dec: -64 44 10.80 (-64.73633d) Equinox: J2000	Proper Motion RA: -0.00896s/yr Proper Motion Dec: 0.1056"/yr Epoch of Position: 2000.0		V=13.27+/-0.1	Reference Frame: ICRS			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(9) WD0311-649	FGS, TRANS, 1	F583W	SCANS=5;		Sequence 1-2 Non-In	375.0 Secs	
						STEP-SIZE=1		t	[=>]	[1]
	2		(9) WD0311-649	FGS, TRANS, 1	F583W	SCANS=32;		Sequence 1-2 Non-In	1450.0 Secs	
						STEP-SIZE=0.5		t	[=>]	[1]
Orbit Structure	Orbit 1 Server Version: 20070709									