



14200 - Revealing the host galaxy of a strong Milky Way-type 2175 Angstrom absorber at $z = 2.12$

Cycle: 23, Proposal Category: GO
(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Ms. Jingzhe Ma (PI) (Contact)	University of Florida	jingzhema@astro.ufl.edu
Prof. Jian Ge (CoI)	University of Florida	jge@astro.ufl.edu
Dr. Britt Lundgren (CoI)	University of Wisconsin - Madison	lundgren@astro.wisc.edu
Dr. Jason X. Prochaska (CoI)	University of California - Santa Cruz	xavier@ucolick.org

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) J1211+0833	WFC3/IR	1	12-Jan-2016 21:01:39.0	yes
02	(1) J1211+0833	WFC3/IR	1	12-Jan-2016 21:01:40.0	yes
03	(1) J1211+0833	WFC3/IR	1	12-Jan-2016 21:01:41.0	yes

3 Total Orbits Used

ABSTRACT

We propose WFC3/IR G141 grism and F140W direct imaging observations (3 orbits) of a strong Milky Way-type 2175 Angstrom absorbing galaxy at $z = 2.12$ in the quasar spectrum towards QSO J1211+0833 from the Sloan Digital Sky Survey (SDSS). We conducted follow up observations with the Echelle Spectrograph and Imager (ESI) onboard the Keck-II telescope and the Ultraviolet and Visual Echelle Spectrograph (UVES) on the VLT. Given the simultaneous presence of C I, CO, and the 2175 Angstrom bump, combined with the high metallicity, high dust depletion level and overall low ionization state of the gas, J1211+0833 supports the scenario that the presence of the bump requires an evolved stellar population. We speculate

that the host of the J1211+0833 2175 Angstrom bump is likely to be an evolved and chemically-enriched disk galaxy. The proposed observations will enable us to, for the first time, study the properties (morphology, impact parameter, star formation rate, stellar mass) of the host galaxy of a 2175 Angstrom absorber beyond the local Universe, which our existing observational data cannot provide. This population may be used as unique tracers of chemical enrichment and star-forming galaxies at high-redshift.

OBSERVING DESCRIPTION

We aim to obtain two-dimensional grism spectra with the WFC3/G141 grism and direct imaging at F140W for wavelength calibration. We will be able to confirm the host galaxy of the absorber using the H-beta and O[III] emission lines.

We schedule 3 visits, one visit per orbit. In each orbit/visit, 2 dithered exposures in WFC3/G141 and corresponding direct images at the same position will be taken in the order of direct imaging-> grism->offset->direct imaging->grism.

We use POS-TARG offsets to enable rejection of hot/bad pixels and to improve sampling of the PSF.

The pattern is:

POS-TARG: (0, 0) (1.355, 0.424) pixels: (0, 0) (10.0, 3.5)

This is a larger version of the standard WFC3-IR-DITHER-BOX-MIN pattern, which has only 1-2 pixel offsets between pointings. As some bad pixels come in clumps we prefer a slightly larger pattern. No attempt is made to dither over the "dead spot", as large dithers introduce large differential distortion

We place no orientation requirements on the first visit to the field. We require the roll angle (i.e. ORIENT) for the second and third visits differ from that of the previous visit by 20 and 160 degrees. The purpose of using different roll angles is to improve our ability to account for contamination by overlapping spectra.

Proposal 14200 - first visit (01) - Revealing the host galaxy of a strong Milky Way-type 2175 Angstrom absorber at z = 2.12

Wed Jan 13 02:01:42 GMT 2016

Visit	Proposal 14200, first visit (01), scheduling Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: ORIENT 248D TO 251 D									
	(first visit (01)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE (first visit (01)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	J1211+0833	RA: 12 11 43.4200 (182.9309167d) Dec: +08 33 49.71 (8.56381d) Equinox: J2000	Redshift: 2.1166	V=19.5+/-0.1	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	imaging for grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=SPARS 50; NSAMP=5	POS TARG 0.0,0.0		202.934095 Secs (202.934 Secs)	[1]
	2	grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS 100; NSAMP=12	SAME POS AS 1		1102.935844 Secs (1102.936 Secs)	[1]
	3	imaging for grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=SPARS 50; NSAMP=6	POS TARG 1.355,0.424		252.934546 Secs (252.935 Secs)	[1]
	4	grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS 100; NSAMP=12	SAME POS AS 3		1102.935844 Secs (1102.936 Secs)	[1]
Orbit Structure	<p>Orbit 1 Server Version: 20150609</p> <p>Unused Orbital Visibility = 43</p>									
	<p>Timeline labels: GS Acq, Exp. 1, Exp. 2, Pointing Maneuver, Exp. 3, Exp. 4, Reconfig, Occultation.</p> <p>X-axis: 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500 sec</p>									

Proposal 14200 - second visit (02) - Revealing the host galaxy of a strong Milky Way-type 2175 Angstrom absorber at z = 2.12

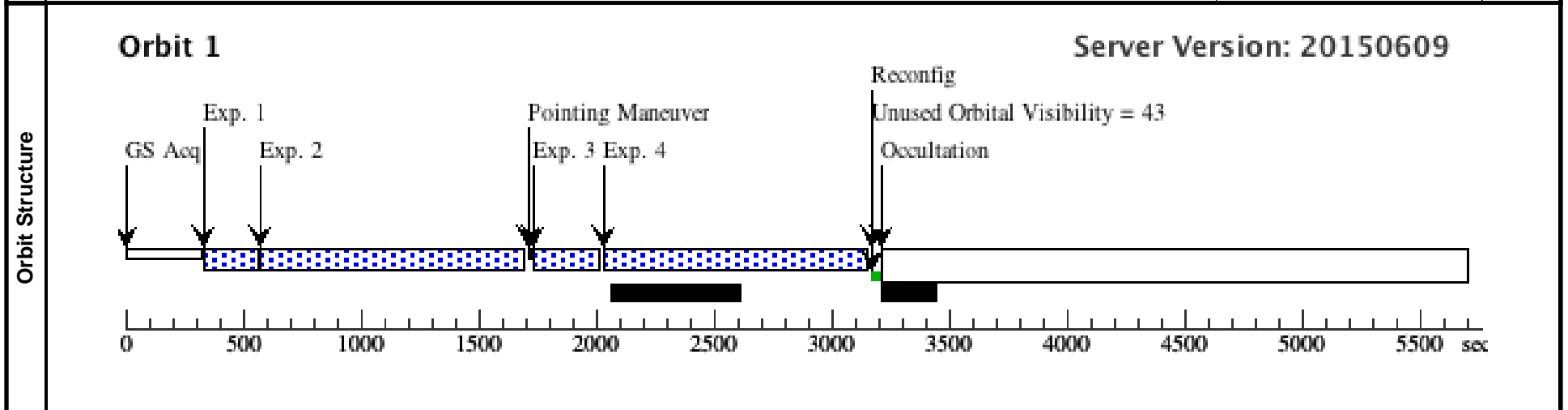
Wed Jan 13 02:01:42 GMT 2016

Visit	Proposal 14200, second visit (02), completed Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: (none)
	(second visit (02)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE (second visit (02)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE

Diagnostics	(second visit (02)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE (second visit (02)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE
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Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>J1211+0833</td> <td>RA: 12 11 43.4200 (182.9309167d) Dec: +08 33 49.71 (8.56381d) Equinox: J2000</td> <td>Redshift: 2.1166</td> <td>V=19.5+/-0.1</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	J1211+0833	RA: 12 11 43.4200 (182.9309167d) Dec: +08 33 49.71 (8.56381d) Equinox: J2000	Redshift: 2.1166	V=19.5+/-0.1	Reference Frame: ICRS
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		1	imaing for g rism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=SPARS 50; NSAMP=5	POS TARG 0.0,0.0		202.934095 Secs (202.934 Secs) [==>]
	2	grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS 100; NSAMP=12	SAME POS AS 1		1102.935844 Secs (1102.936 Secs) [==>]	[1]
	3	imaging for grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=SPARS 50; NSAMP=6	POS TARG 1.355,0. 424		252.934546 Secs (252.935 Secs) [==>]	[1]
	4	grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS 100; NSAMP=12	SAME POS AS 3		1102.935844 Secs (1102.936 Secs) [==>]	[1]



Proposal 14200 - third visit (03) - Revealing the host galaxy of a strong Milky Way-type 2175 Angstrom absorber at z = 2.12

Wed Jan 13 02:01:42 GMT 2016

Visit	Proposal 14200, third visit (03), completed Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: ORIENT 20D TO 160D FROM 02
	(third visit (03)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE (third visit (03)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE

Diagnosics	(third visit (03)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE
	(third visit (03)) Warning (Orbit Planner): SAME POS MAY NOT BE APPROPRIATE

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	J1211+0833	RA: 12 11 43.4200 (182.9309167d) Dec: +08 33 49.71 (8.56381d) Equinox: J2000	Redshift: 2.1166	V=19.5+/-0.1	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	1	imaing for g rism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=SPARS 50; NSAMP=5	POS TARG 0.0,0.0		202.934095 Secs (202.934 Secs)
[==>]										[1]
2	2	grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS 100; NSAMP=12	SAME POS AS 1		1102.935844 Secs (1102.936 Secs)	
									[==>]	[1]
3	3	imaging for grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=SPARS 50; NSAMP=6	POS TARG 1.355,0. 424		252.934546 Secs (252.935 Secs)	
									[==>]	[1]
4	4	grism	(1) J1211+0833	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS 100; NSAMP=12	SAME POS AS 3		1102.935844 Secs (1102.936 Secs)	
									[==>]	[1]

