



18175 - Chasing Binary Black Hole Merger candidate AT2025smm

Cycle: 32, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Mr. Xander James Hall (PI) (Contact)	Carnegie Mellon University
Dr. Antonella Palmese (CoI)	Carnegie Mellon University
Prof. Barry Mckernan (CoI)	City University of New York Borough of Manhattan Comm Coll
Prof. Matthew J. Graham (CoI)	California Institute of Technology
Brendan O'Connor (CoI)	Carnegie Mellon University
Dr. Lei Hu (CoI)	Carnegie Mellon University
Dr. Rosalba Perna (CoI)	State University of New York at Stony Brook
Igor Andreoni (CoI)	University of North Carolina at Chapel Hill
Malte Busmann (CoI) (ESA Member)	Ludwig Maximilian Universitat of Munich
Dr. Daniel Gruen (CoI)	Stanford University

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) AT2025SMM	WFC3/UVIS	1	16-Sep-2025 10:00:24.0	yes
02	(1) AT2025SMM	WFC3/UVIS	1	16-Sep-2025 10:00:25.0	yes
03	(1) AT2025SMM	WFC3/UVIS	1	16-Sep-2025 10:00:26.0	yes

3 Total Orbits Used

ABSTRACT

Proposal 18175 (STScI Edit Number: 0, Created: Tuesday, September 16, 2025, 9:00:27AM Eastern Standard Time) - Overview

We propose three single-orbit HST WFC3/UVIS observations to test whether AT2025smm is an EM counterpart to the BBH event S250727dc. Swift/UVOT found a blue transient 4 hours after the trigger that faded in less than 6 hours, with later non-detections, motivating rapid UV imaging. Only HST can establish whether the transient is nuclear by resolving and registering it relative to the host nucleus. Each visit uses F336W and F606W to ~ 27 mag (5 sigma) to measure UV color and evolution, separate host and transient light, and discriminate UV-breakout vs shock-cooling scenarios. The first visit should occur by Sep 21, followed by Oct-Nov and mid-Dec windows.

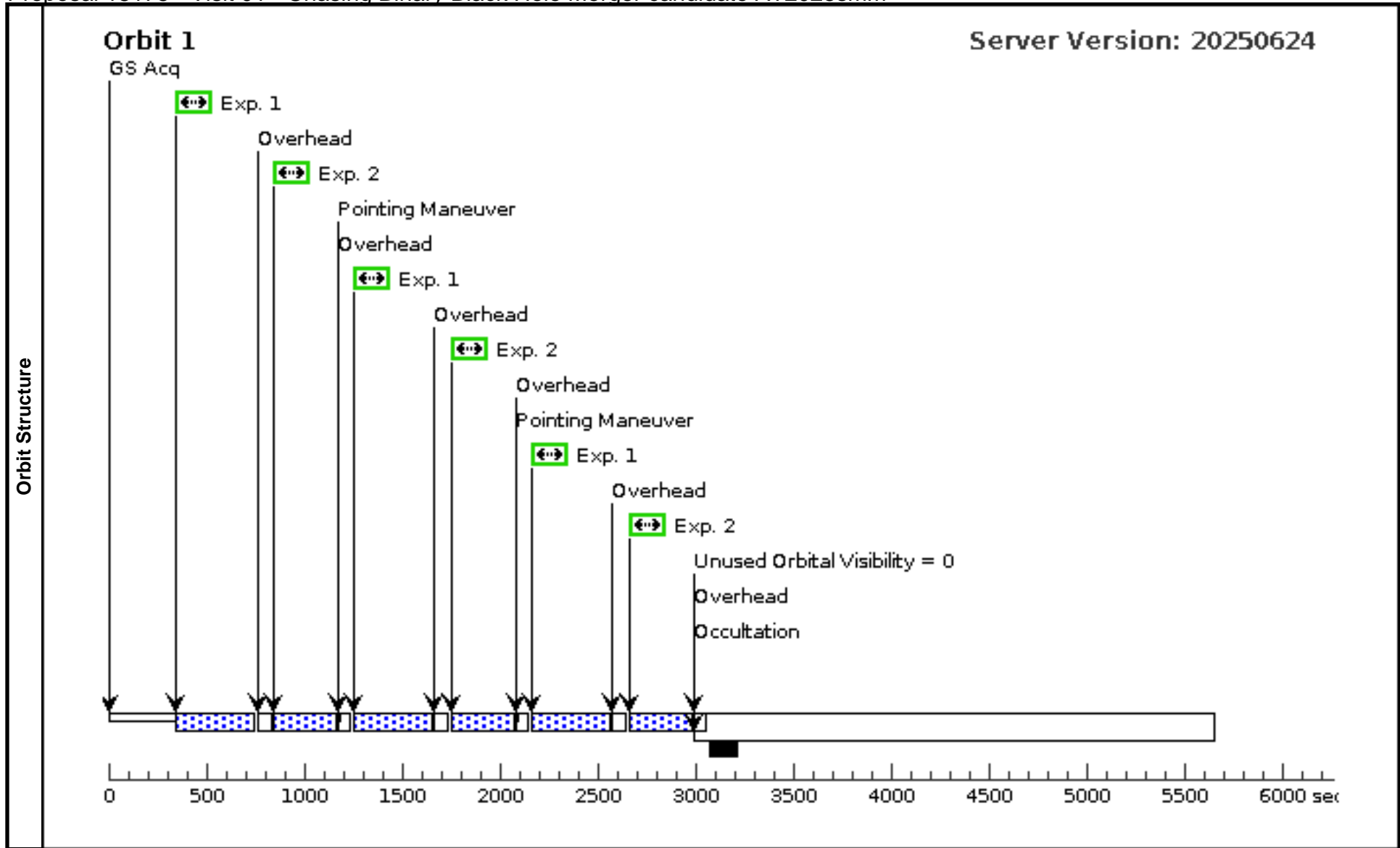
OBSERVING DESCRIPTION

We will obtain multi-filter observations with WFC3/UVIS of AT2025smm in the F336W and F606W. A first observation should occur in August-September, ideally by the end of August. Upon confirmation of a transient, the second observation will occur between October and November, the final observation can occur in December.

Proposal 18175 - Visit 01 - Chasing Binary Black Hole Merger candidate AT2025smm

Tue Sep 16 14:00:27 GMT 2025

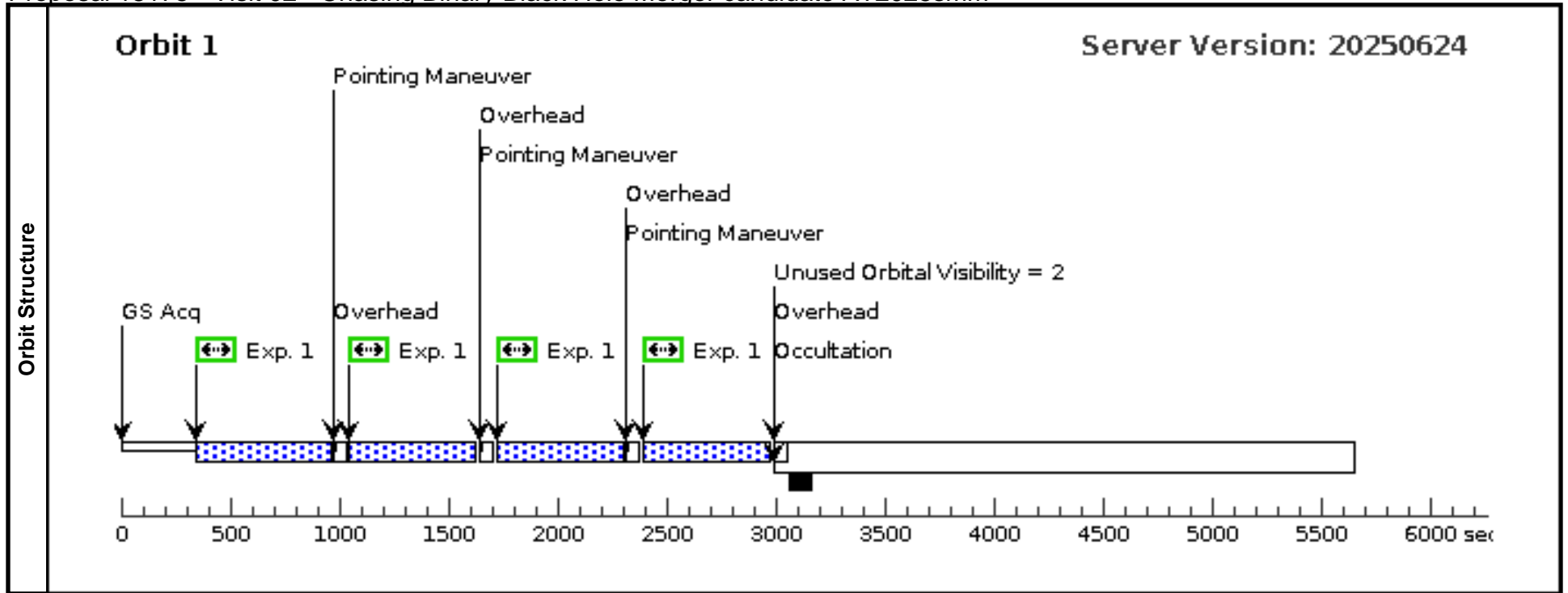
Visit	Proposal 18175, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 11-AUG-2025:00:00:00 AND 23-SEP-2025:00:00:00 Comments: Visit that ideally occurs before the end of August, at the latest by September 23rd.									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	AT2025SMM	RA: 06 29 54.2900 (97.4762083d) Dec: -37 13 55.56 (-37.23210d) Equinox: J2000		V=26.5+/-0.2	Reference Frame: ICRS				
	Comments: Category=UNIDENTIFIED Description=[JET, SHOCK FRONT] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) AT2025SMM	(1) AT2025SMM	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F336W	FLASH=19; CR-SPLIT=NO		Pattern 1, Exps 1-2 in Visit 01 (1)	374 Secs (1122 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
2	(1) AT2025SMM	(1) AT2025SMM	(1) AT2025SMM	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F606W	FLASH=6; CR-SPLIT=NO		Pattern 1, Exps 1-2 in Visit 01 (1)	300 Secs (900 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 18175 - Visit 02 - Chasing Binary Black Hole Merger candidate AT2025smm

Tue Sep 16 14:00:27 GMT 2025

Visit	Proposal 18175, Visit 02 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 01; BETWEEN 05-OCT-2025:00:00:00 AND 11-NOV-2025:00:00:00 Comments: <i>October 5th to November 11th Visit</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(2)		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			(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	AT2025SMM	RA: 06 29 54.2900 (97.4762083d) Dec: -37 13 55.56 (-37.23210d) Equinox: J2000				V=26.5+/-0.2	Reference Frame: ICRS			
Comments: Category=UNIDENTIFIED Description=[JET, SHOCK FRONT] Extended=NO											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	(1) AT2025SMM	(1) AT2025SMM	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F606W			Pattern 2, Exps 1-1 in Visit 02 (2)	586 Secs (2344 Secs)		[1]
									[=>(Pattern 1)]		
									[=>(Pattern 2)]		
									[=>(Pattern 3)]		
									[=>(Pattern 4)]		



Proposal 18175 - Visit 03 - Chasing Binary Black Hole Merger candidate AT2025smm

Tue Sep 16 14:00:27 GMT 2025

Visit	Proposal 18175, Visit 03 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 02; BETWEEN 07-DEC-2025:00:00:00 AND 20-DEC-2025:00:00:00 Comments: December 7th to December 20th										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(2)		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			(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	AT2025SMM	RA: 06 29 54.2900 (97.4762083d) Dec: -37 13 55.56 (-37.23210d) Equinox: J2000				V=26.5+/-0.2		Reference Frame: ICRS		
Comments: Category=UNIDENTIFIED Description=[JET, SHOCK FRONT] Extended=NO											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	(1) AT2025SMM	(1) AT2025SMM	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F606W			Pattern 2, Exps 1-1 in Visit 03 (2)	586 Secs (2344 Secs)		[1]
									[=>(Pattern 1)]		
									[=>(Pattern 2)]		
									[=>(Pattern 3)]		
									[=>(Pattern 4)]		

