



11164 - Characterizing the Accreting Protoplanet Embedded in the Protoplanetary Disk

Cycle: 5, Proposal Category: GO

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Jun Hashimoto (PI)	National Astronomical Observatory of Japan (NAOJ)
Dr. Yuhiko Aoyama (CoI)	Sun Yat-Sen University
Dr. Gabriel-Dominique Marleau (CoI) (ESA Member)	University of Bern
Dr. Taichi Uyama (CoI)	Astrobiology Center
Dr. Yasuhiro Hasegawa (CoI) (US Admin CoI)	Jet Propulsion Laboratory
Dr. Nagayoshi Ohashi (CoI)	Academia Sinica, Institute of Astronomy and Astrophysics
Dr. Michihiro Takami (CoI)	Academia Sinica, Institute of Astronomy and Astrophysics

OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Observation Folder				
	1		NIRSpec IFU Spectroscopy	(1) IRAS-19205-0746

ABSTRACT

The planetary growth rate, specifically the mass accretion rate, is a key parameter in planet formation, as it ultimately determines a planet's final mass. Traditionally, accretion rates have been estimated using hydrogen emission lines based on the accretion flow model, originally developed for stars. However, Aoyama et al. recently proposed the accretion shock model as an alternative mechanism for hydrogen line emission. For planetary-mass objects, the shock model predicts accretion rates up to an order of magnitude higher than the flow model, making it crucial to determine which mechanism dominates.

JWST Proposal 11164 (Created: Friday, March 13, 2026, 4:02:21PM Eastern Standard Time) - Overview

We propose a joint JWST-HST observing program of the protoplanet WISPIT 2 b to distinguish between the two models using hydrogen line ratios. For the first time, this study will enable more accurate estimates of accretion rates in accreting planets embedded within protoplanetary disks. Our pilot observations pave the way for applying these models to characterize future discoveries with JWST and the ELTs.

OBSERVING DESCRIPTION

This is a joint JWST-HST observing program. The primary observatory is JWST. We request contemporaneous JWST and HST observations. According to the visit planner of JWST and HST, our target can be simultaneously observed with JWST and HST from April to May in 2027.

We request to use NIRSpec IFU with the G140M/F100LP setting. The parameters in detector setup is as follows: Subarray of full, Readout pattern of NRSIRS2RAPID, Groups per integration of 6, Integrations per exposure of 18, Total Dithers of 4. Total exposure time in ETC is Total exposure time is 02:02:33 (7352.80 s). We also request 4-point-nod to mitigate cosmic rays and to subtract backgrounds. WATA target acquisition is employed.

Proposal 11164 - Targets - Characterizing the Accreting Protoplanet Embedded in the Protoplinary Disk

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	IRAS-19205-0746	RA: 19 23 17.0332 (290.8209717d) Dec: -07 40 55.08 (-7.68197d) Equinox: J2000	Proper Motion RA: 6.308 mas/yr Proper Motion Dec: -27.137999904880417 mas/yr Parallax: 0.0074649" Epoch of Position: 2000	
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>				
	<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i>				
	<i>Category=Star</i>				
	<i>Description=[Exoplanet Systems, Exoplanets]</i>				
	<i>Extended=NO</i>				

Proposal 11164 - Observation 1 - Characterizing the Accreting Protoplanet Embedded in the Protoplantary Disk

Fri Mar 13 21:02:22 GMT 2026

Observation	<p>Proposal 11164, Observation 1</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p>																																		
Diagnostics	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.																																		
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