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## PANORAMIC - A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron

Williams, Christina C.; Oesch, Pascal; Barrufet, Laia; Bezanson, Rachel; Bowler, Rebecca A. A.; Brammer, Gabriel; Dayal, Pratika; Franx, Marijn; Hutter, Anne; Labbe, Ivo

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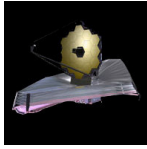
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# 2514 - PANORAMIC -- A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron

Cycle: 1, Proposal Category: GO

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. Christina C Williams (PI)</b>	<b>University of Arizona</b>	<b>ccwilliams@email.arizona.edu</b>
Prof. Pascal Oesch (CoI) (ESA Member) (CoPI) (Contact)	University of Geneva-Department of Astronomy	pascal.oesch@unige.ch
Prof. Ivo Labbe (CoI)	Swinburne University of Technology	ivolabbe@gmail.com
Dr. Katherine E. Whitaker (CoI)	University of Massachusetts - Amherst	kwhitaker@astro.umass.edu
Prof. Marijn Franx (CoI) (ESA Member)	Universiteit Leiden	franx@strw.leidenuniv.nl
Dr. Michael Maseda (CoI) (ESA Member)	Universiteit Leiden	maseda@strw.leidenuniv.nl
Dr. Laia Barrufet (CoI) (ESA Member)	Integral Science Data Center	laia.barrufetdesoto@unige.ch
Dr. Pratika Dayal (CoI) (ESA Member)	Kapteyn Astronomical Institute	dayal@astro.rug.nl
Dr. Graziano Ucci (CoI) (ESA Member)	Kapteyn Astronomical Institute	g.ucci@rug.nl
Dr. Gabriel Brammer (CoI) (ESA Member)	University of Copenhagen, Niels Bohr Institute	gabriel.brammer@nbi.ku.dk
Dr. Rachel Bezanson (CoI)	University of Pittsburgh	rachel.bezanson@pitt.edu
Dr. Rebecca A A Bowler (CoI) (ESA Member)	University of Oxford	rebecca.bowler@physics.ox.ac.uk
Dr. Anne Hutter (CoI) (ESA Member)	Kapteyn Astronomical Institute	a.k.hutter@rug.nl

## OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Observation Folder				
	1	PANO-F115W-F277W	NIRCam Imaging	PARALLEL
	2	PANO-F150W-F356W	NIRCam Imaging	PARALLEL
	3	PANO-F200W-F444W	NIRCam Imaging	PARALLEL

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	4	PANO-F115W-F410M	NIRCam Imaging	PARALLEL

## ABSTRACT

Where HST has characterized the UV universe to  $z=6-7$  and beyond, JWST is designed to take the crucial next step and characterize the UV universe to  $z=12-15$  (a factor of 2 in expansion rate), at only  $\sim 300$  Myr after the Big Bang where we expect the first galaxies to form. Additionally, JWST for the first time allows studies of the restframe optical emission to  $z=10$ , a huge leap from the current  $z=3$  (HST). To fully capitalize on JWST's unparalleled imaging AND spectroscopic capabilities, it is critical, however, to find the most precious intrinsically luminous candidate galaxies early in the mission. Large area imaging is thus needed from day one. Here, we propose to exploit the unique opportunity offered by pure parallel observing to efficiently obtain such a wide-area reference survey over 0.4 sq degrees in 6 NIRCam filters. By probing 7x larger area than any other currently planned (GTO/ERS) program our survey will probe a unique discovery space with unprecedented imaging at 1-5micron. These data overcome two major outstanding limitations in our current extragalactic census using yet-undiscovered populations: (1) the brightest and most distant sources that ended the cosmic Dark Ages at  $z>9$  and (2) red sources at  $3<z<7$  including both dusty and quiescent galaxies. However, our survey is designed to result in an outstanding multi-wavelength legacy dataset for the community enabling a wide range of science based on an estimated 1 million galaxies, from the local universe to the first sources. We will deliver reduced data and high-level catalogs which can be used by the full community for rapid spectroscopic follow-up.

## OBSERVING DESCRIPTION

The PANORAMIC (Parallel wide-Area Nircam Observations to Reveal And Measure the Invisible Cosmos) Survey exploits the opportunity of pure parallel observing with NRICam to obtain an unprecedented wide-area imaging dataset at 1-5micron. Thanks to the simultaneous coverage of short-(SW) and long-wavelength (LW) filters, NIRCam is especially efficient to obtain a versatile multi-wavelength dataset for science at all redshifts.

In order to create the most useful legacy dataset, our request is for parallel slots of at least 1hr science time, with a minimum of 3 possible filter observations, resulting in a 3+3 filter dataset. The observations will be split over the three SW filters F115W, F150W and F200W, and F277W, F356W, and F444W in the LW channel, respectively. Whenever the parallel slot allows it, we will split the exposure times up to obtain the deepest dataset in F115W, for the best-possible photometric redshift estimates. When we are assigned visits of more than 2hrs, we will additionally obtain the medium band filter F410M (LW; paired with increased depth in F115W) that further improve the achieved redshift accuracy.

Proposal 2514 - Observation 1 - PANORAMIC -- A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron

<b>Observation</b>	Proposal 2514, Observation 1: PANO-F115W-F277W <span style="float: right;">Wed Mar 31 01:14:54 GMT 2021</span> Diagnostic Status: No Diagnostics Observing Template: NIRCcam Imaging									
	<b>Template</b>	<b>Module</b>				<b>Subarray</b>				
ALL				FULL						
<b>Spectral Elements</b>	<b>#</b>	<b>Short Filter</b>	<b>Long Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Dithers</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F115W	F277W	DEEP8	6	1	1	1	1159.571	

Proposal 2514 - Observation 2 - PANORAMIC -- A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron

<b>Observation</b>	Proposal 2514, Observation 2: PANO-F150W-F356W <span style="float: right;">Wed Mar 31 01:14:54 GMT 2021</span> Diagnostic Status: No Diagnostics Observing Template: NIRCcam Imaging									
	<b>Template</b>	<b>Module</b>				<b>Subarray</b>				
ALL				FULL						
<b>Spectral Elements</b>	<b>#</b>	<b>Short Filter</b>	<b>Long Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Dithers</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F150W	F356W	DEEP8	6	1	1	1	1159.571	

Proposal 2514 - Observation 3 - PANORAMIC -- A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron

<b>Observation</b>	Proposal 2514, Observation 3: PANO-F200W-F444W <span style="float: right;">Wed Mar 31 01:14:54 GMT 2021</span> Diagnostic Status: No Diagnostics Observing Template: NIRCcam Imaging									
	<b>Template</b>	<b>Module</b>				<b>Subarray</b>				
ALL				FULL						
<b>Spectral Elements</b>	<b>#</b>	<b>Short Filter</b>	<b>Long Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Dithers</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F200W	F444W	DEEP8	6	1	1	1	1159.571	

Proposal 2514 - Observation 4 - PANORAMIC -- A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron

<b>Observation</b>	Proposal 2514, Observation 4: PANO-F115W-F410M <span style="float: right;">Wed Mar 31 01:14:54 GMT 2021</span> Diagnostic Status: No Diagnostics Observing Template: NIRCcam Imaging									
	<b>Template</b>	<b>Module</b>				<b>Subarray</b>				
ALL				FULL						
<b>Spectral Elements</b>	<b>#</b>	<b>Short Filter</b>	<b>Long Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Dithers</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F115W	F410M	DEEP8	6	1	1	1	1159.571	