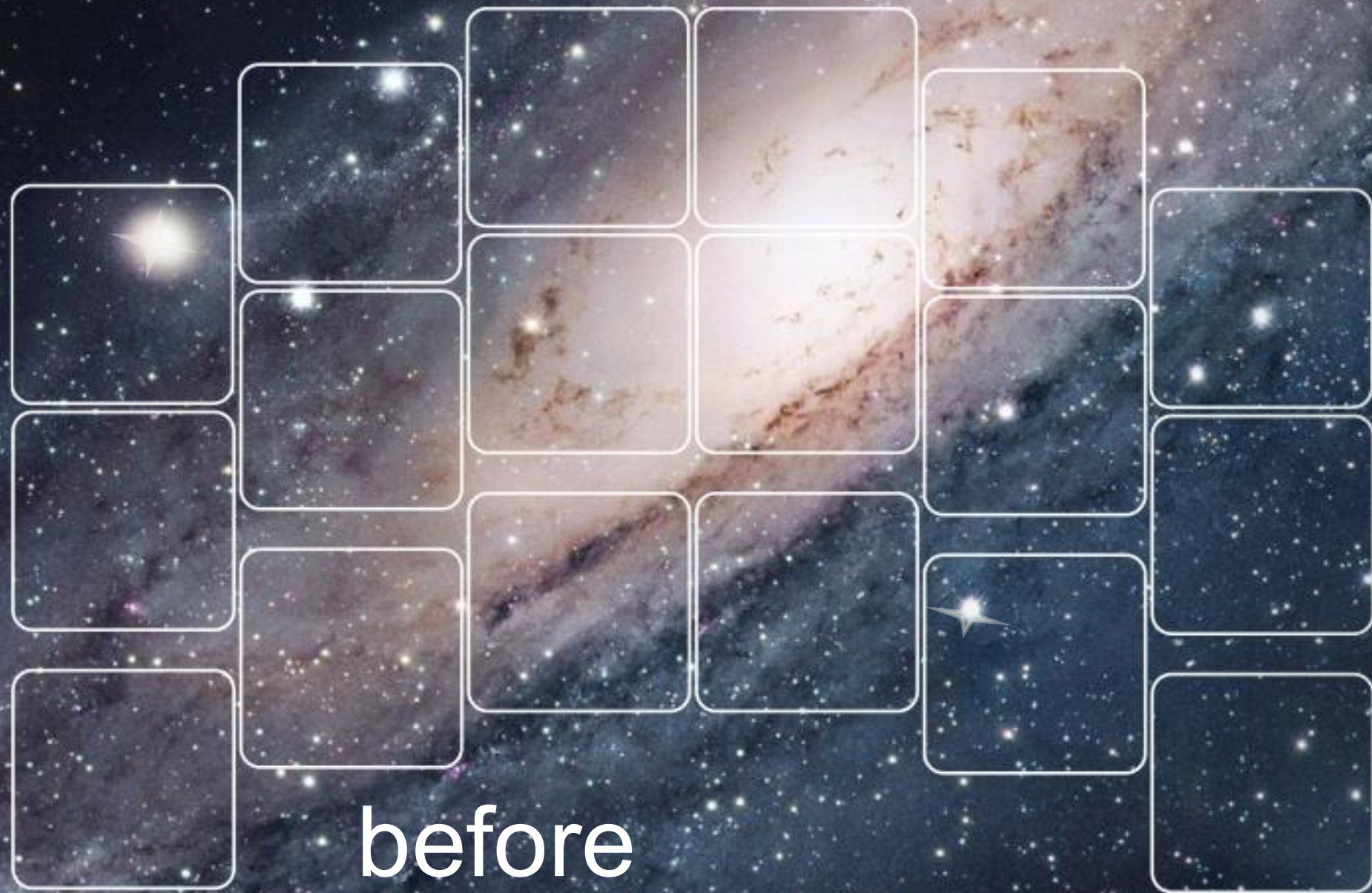




# Testing ROMAN



before

SPACE does

## CCAPP 20<sup>th</sup> Anniversary

June 11, 2026

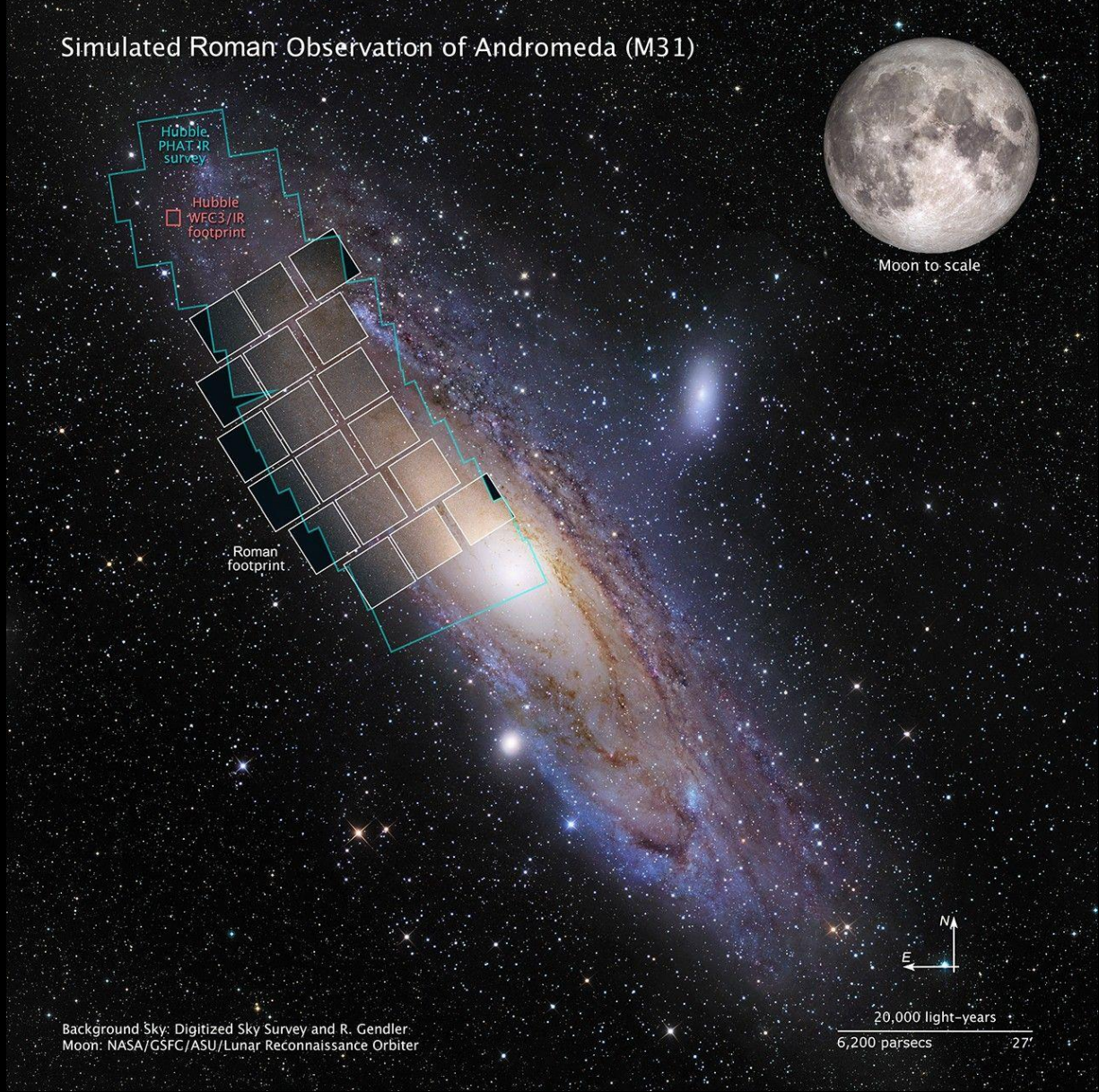
Ami Choi

Research Astrophysicist  
Deputy Wide Field Instrument Scientist  
NASA Goddard Space Flight Center

CCAPP Fellow (2016-2021)

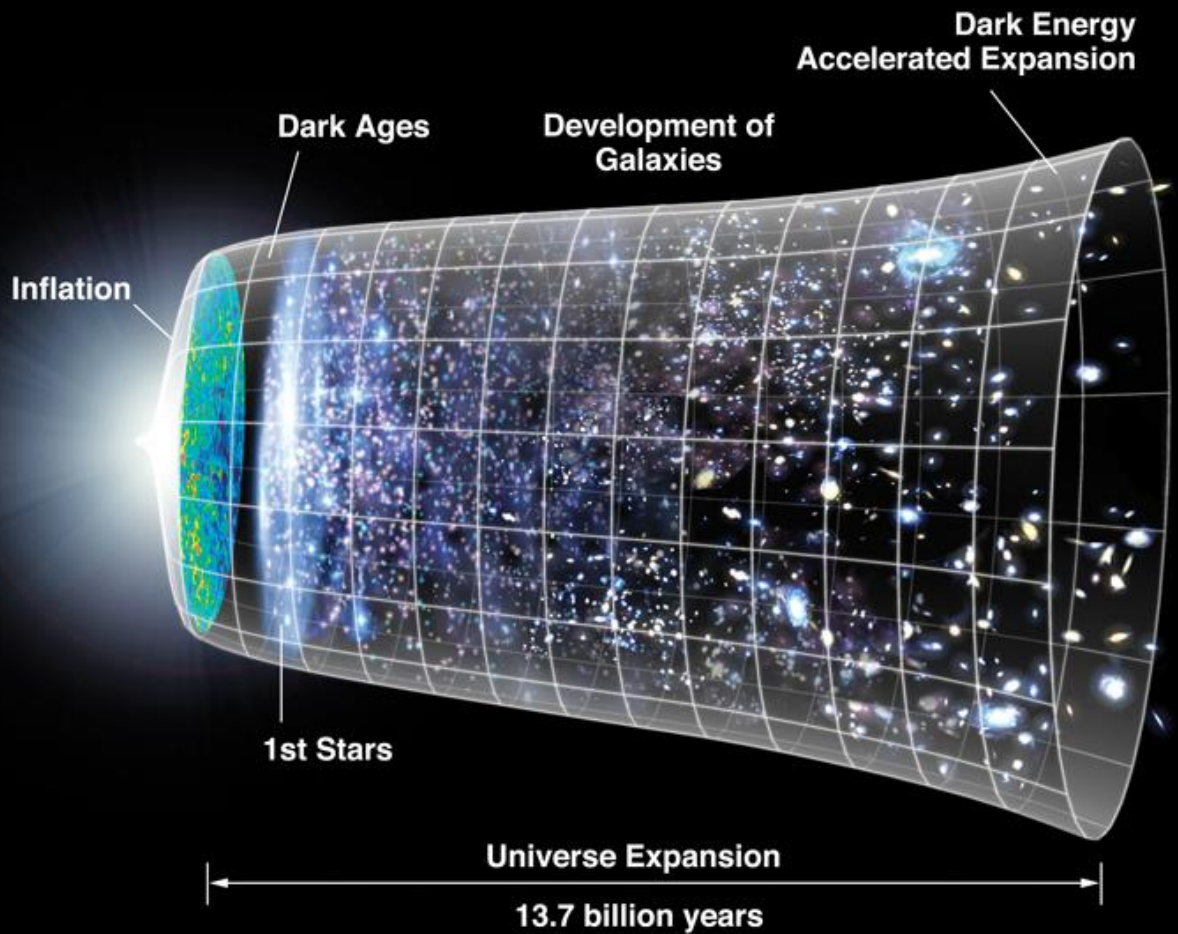


- need:
- near-infrared sensitivity
  - photometric precision
  - point-spread-function stability



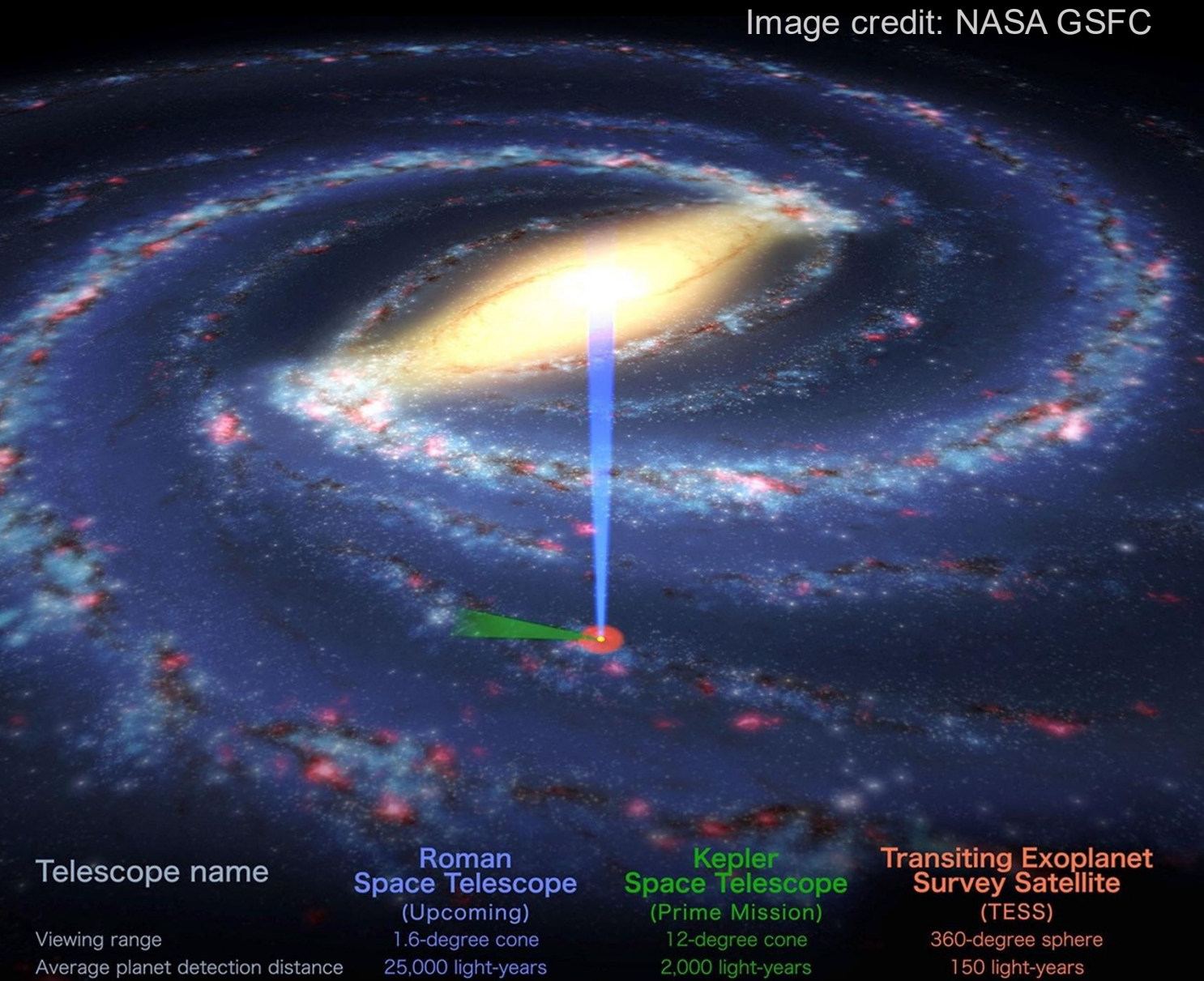
# Infrared Astrophysics

- need:
- observatory agility
  - photometric precision
  - field of regard



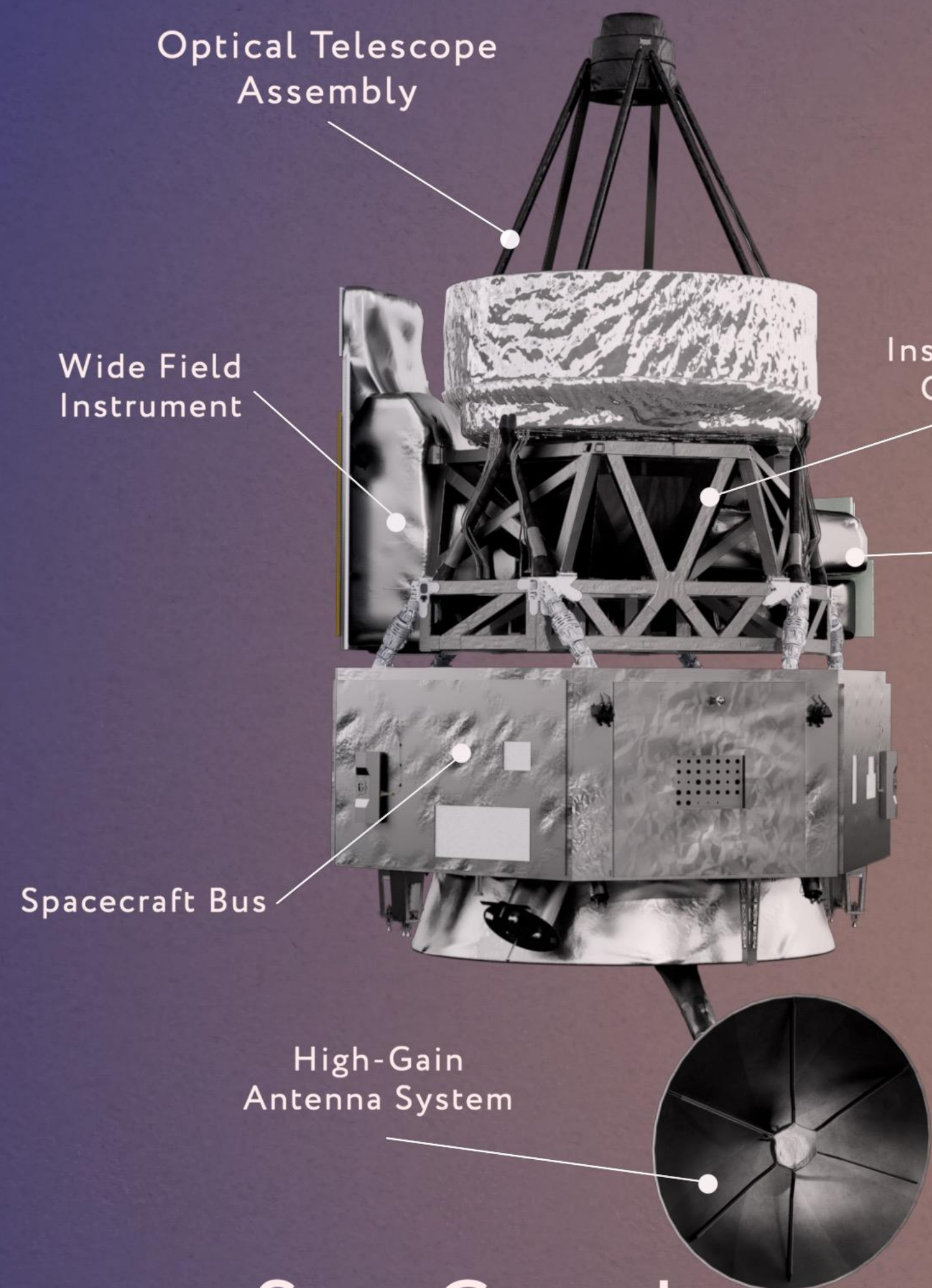
# Cosmology

# Exoplanets

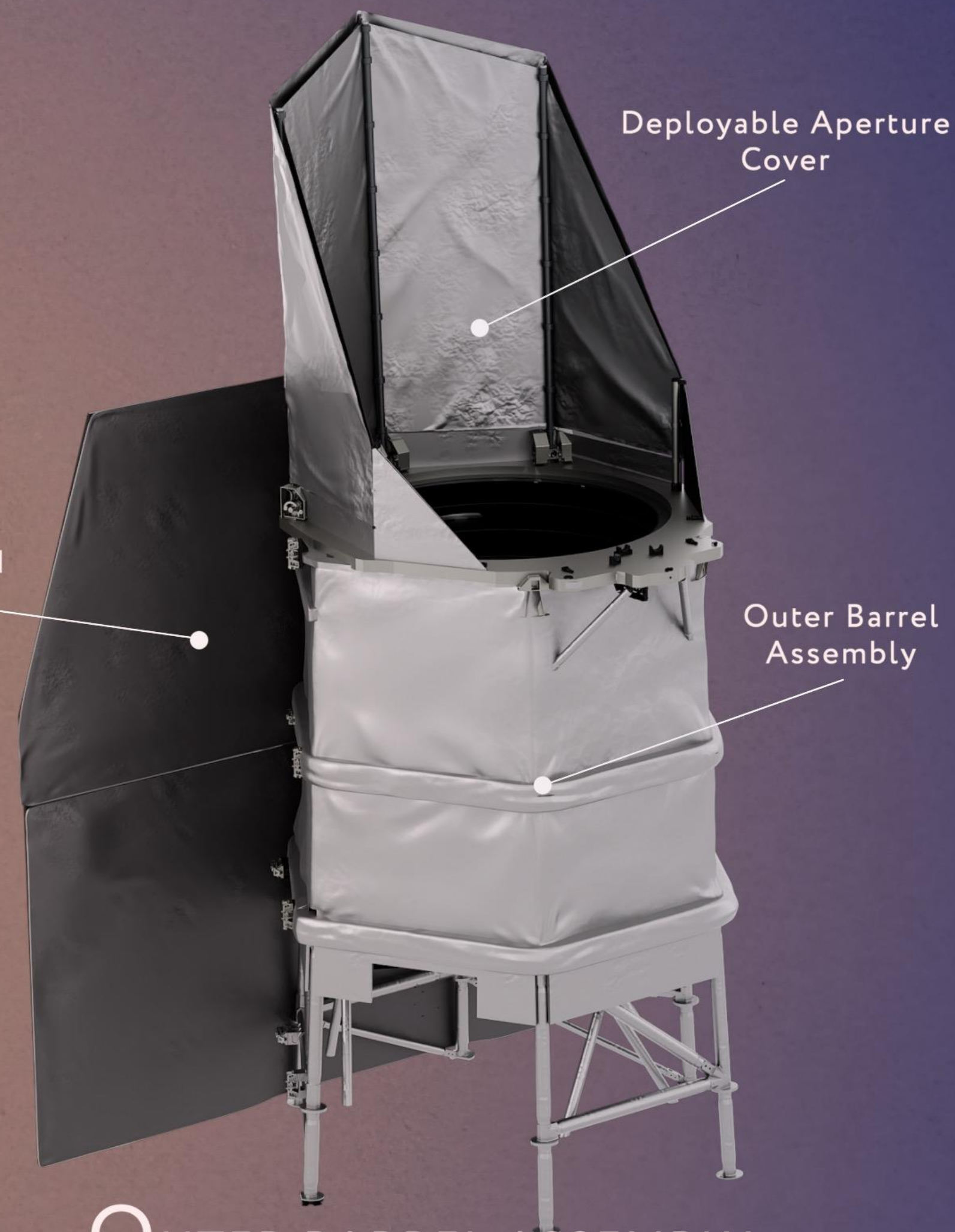




# NANCY GRACE ROMAN SPACE TELESCOPE



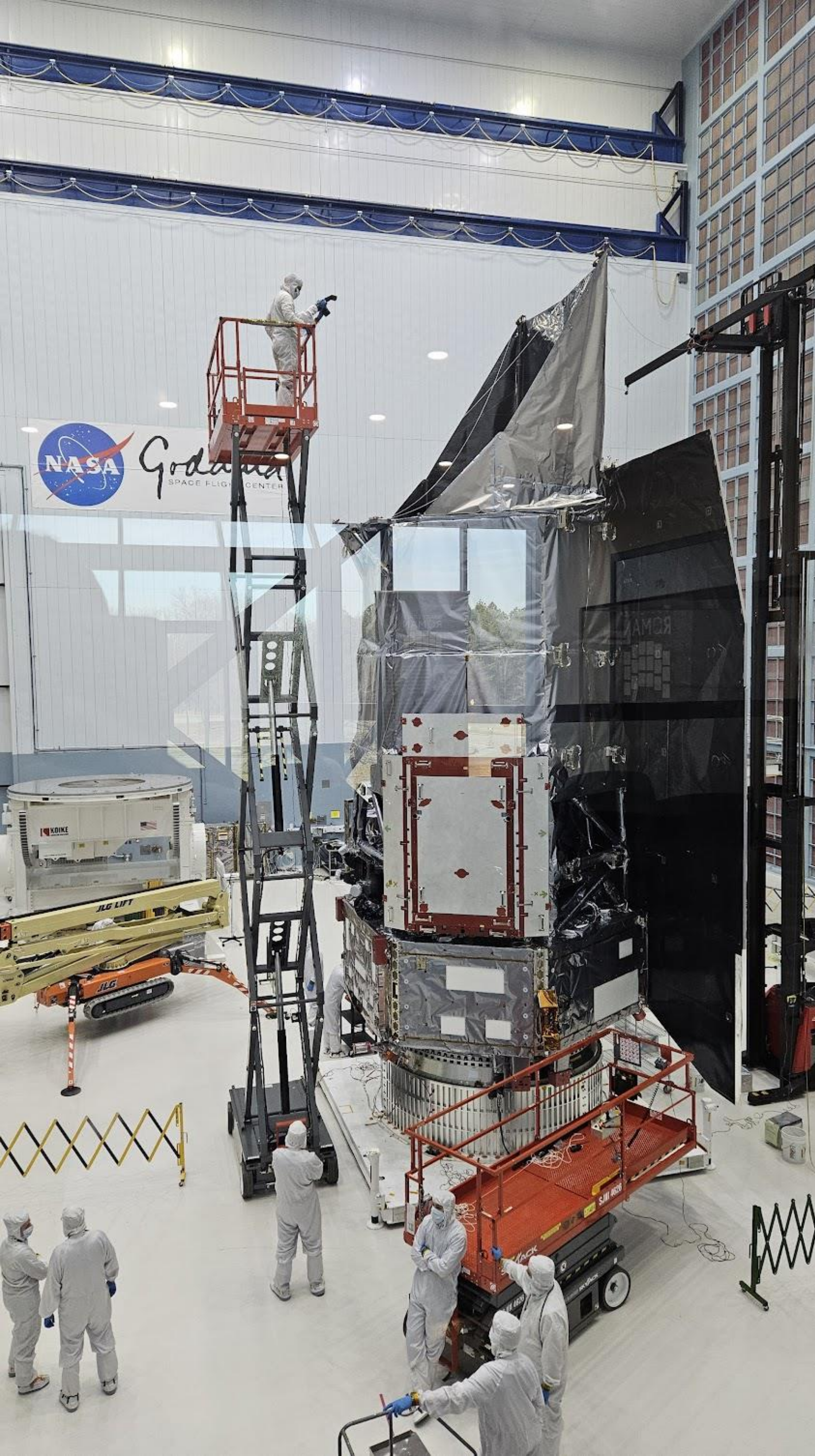
SPACECRAFT INTEGRATED  
PAYLOAD ASSEMBLY



OUTER BARREL ASSEMBLY  
SOLAR ARRAY SUN SHIELD  
DEPLOYABLE APERTURE COVER

Hubble resolution, 100 x  
field of view, efficient  
slew and settle





Dec 2025 – April 2026



Mid-April 2026







Photos from Tyler Groff May 18, 2026



Last Friday



This past Monday



# Integrate and test

Integrate and test

Integrate and test

Integrate and test

Integrate and test

⋮

etc.

Launch readiness:  
August 30, 2026

Shipping to Cape  
Canaveral

Start of  
construction  
~2020

We are here

Wide Field Infrared Survey Telescope (WFIRST) →  
Nancy Grace Roman Space Telescope

90-day commissioning

5-year prime mission

and more

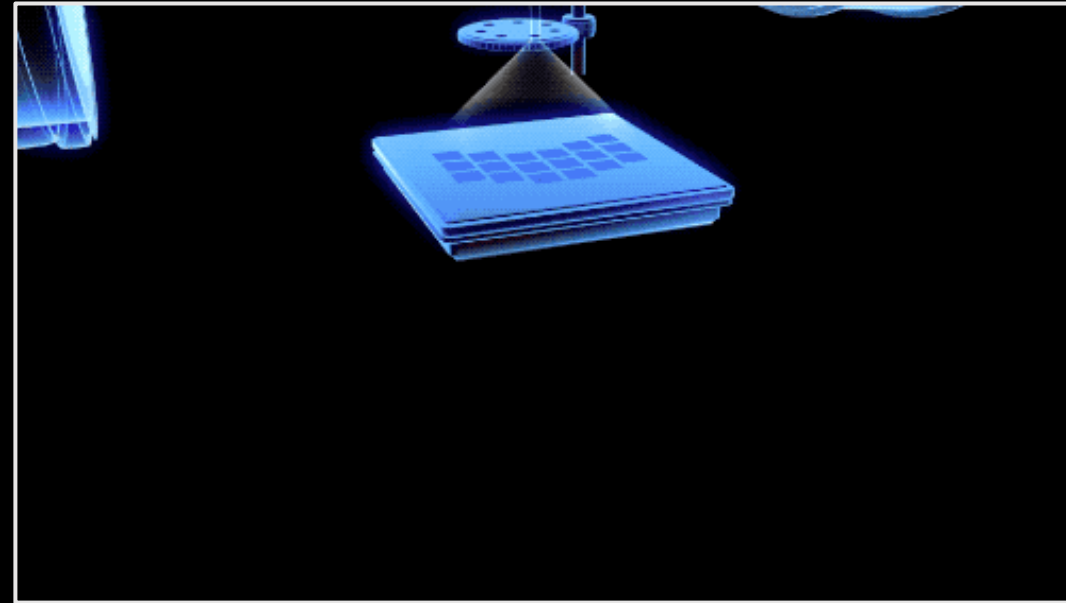
(see Chris's talk)

and more

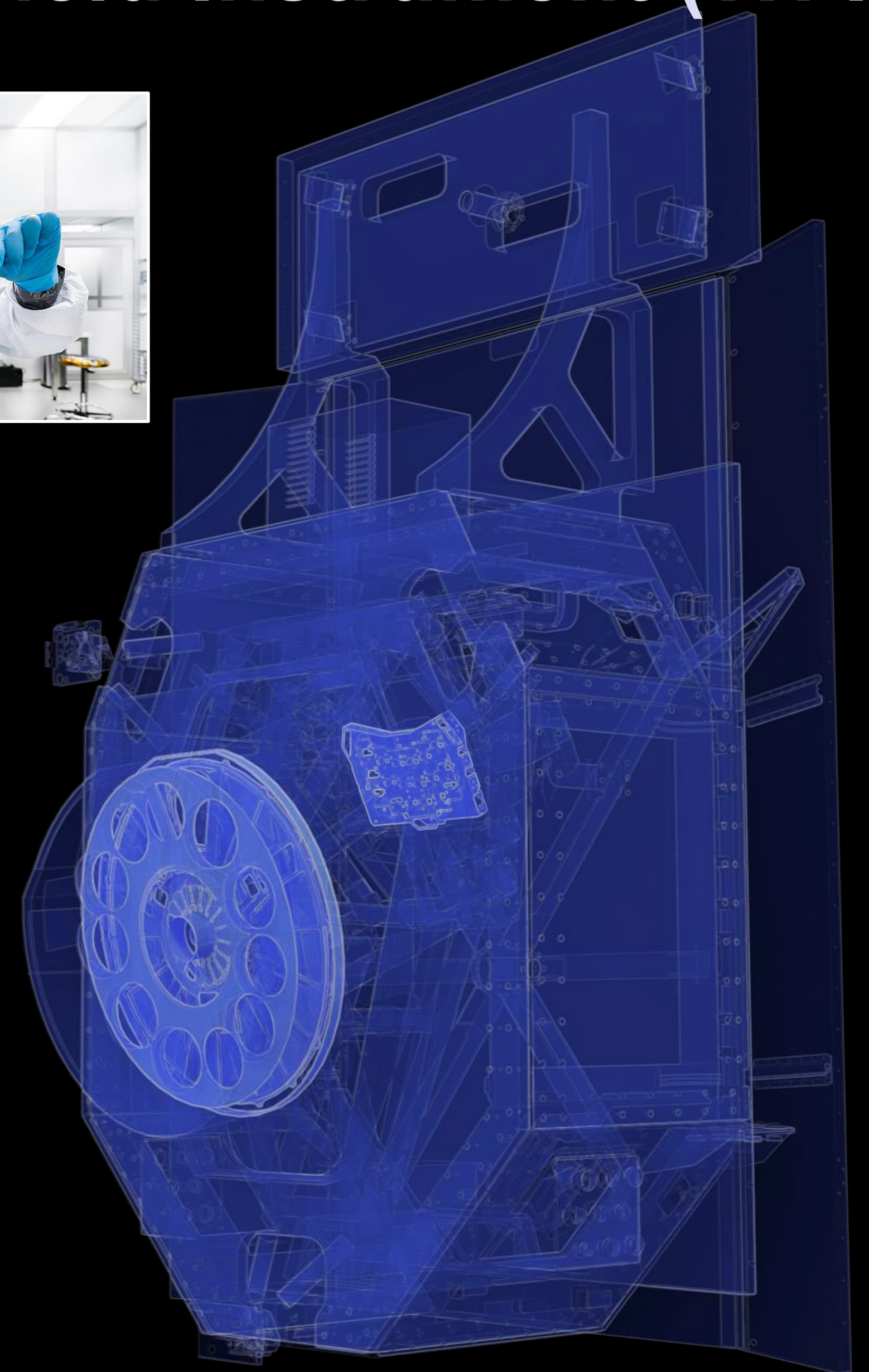
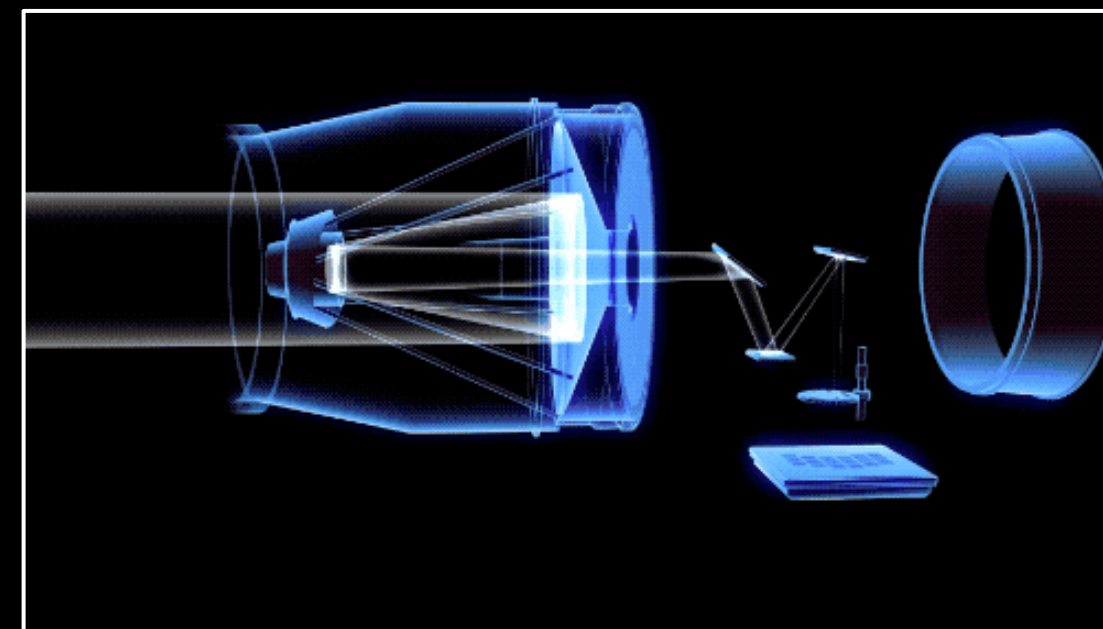


# Wide Field Instrument (WFI)

18 near-infrared detectors

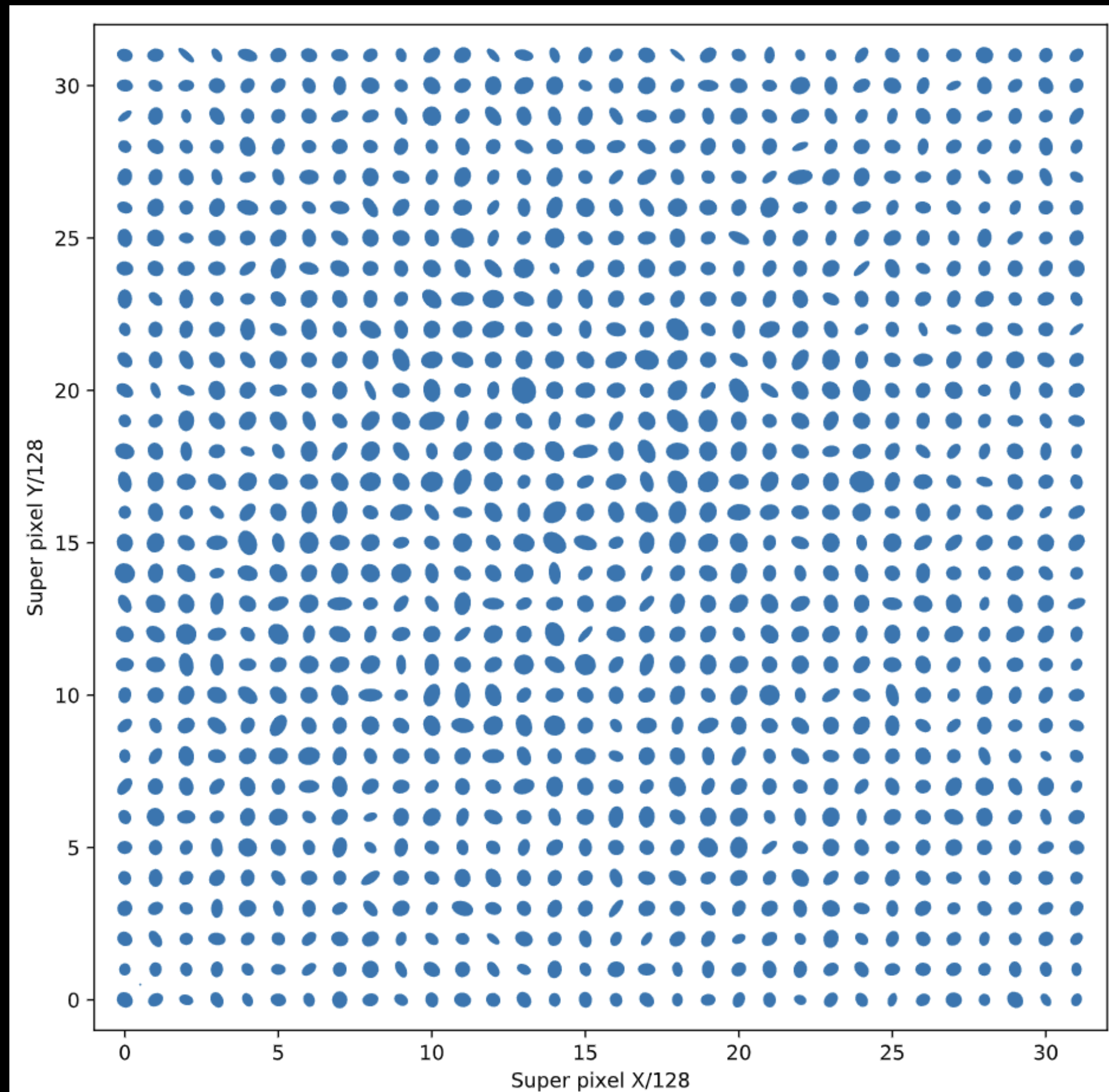


Element wheel with broadband filters and dispersing elements (prism and grism)



(infrared camera)



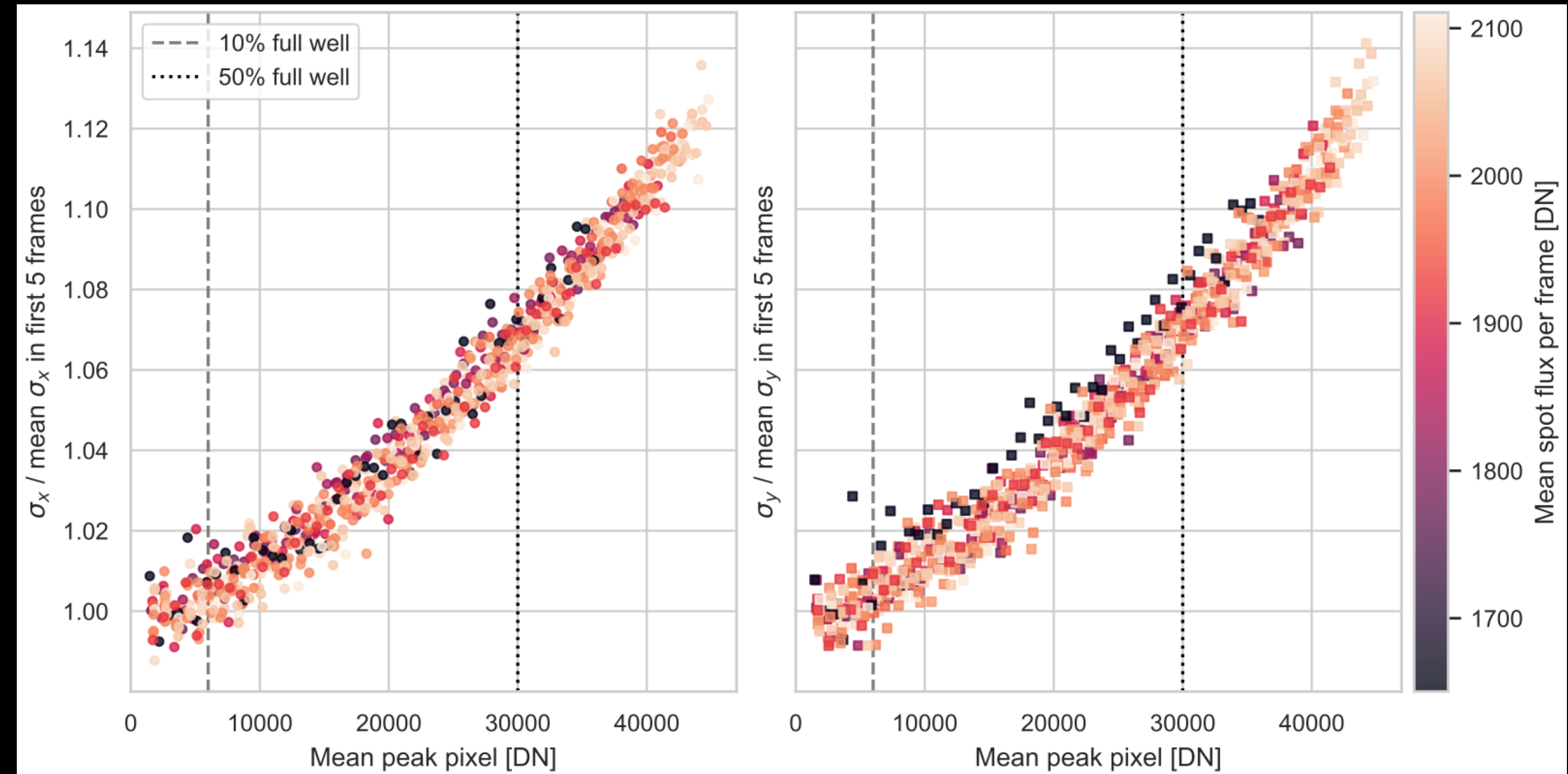


# Visualization of charge diffusion covariance

Givans et al. 2022



Paine et al. in prep



Brighter-fatter effect from ground tests



Euclid launched on  
a Falcon 9 in 2023  
and is at L2

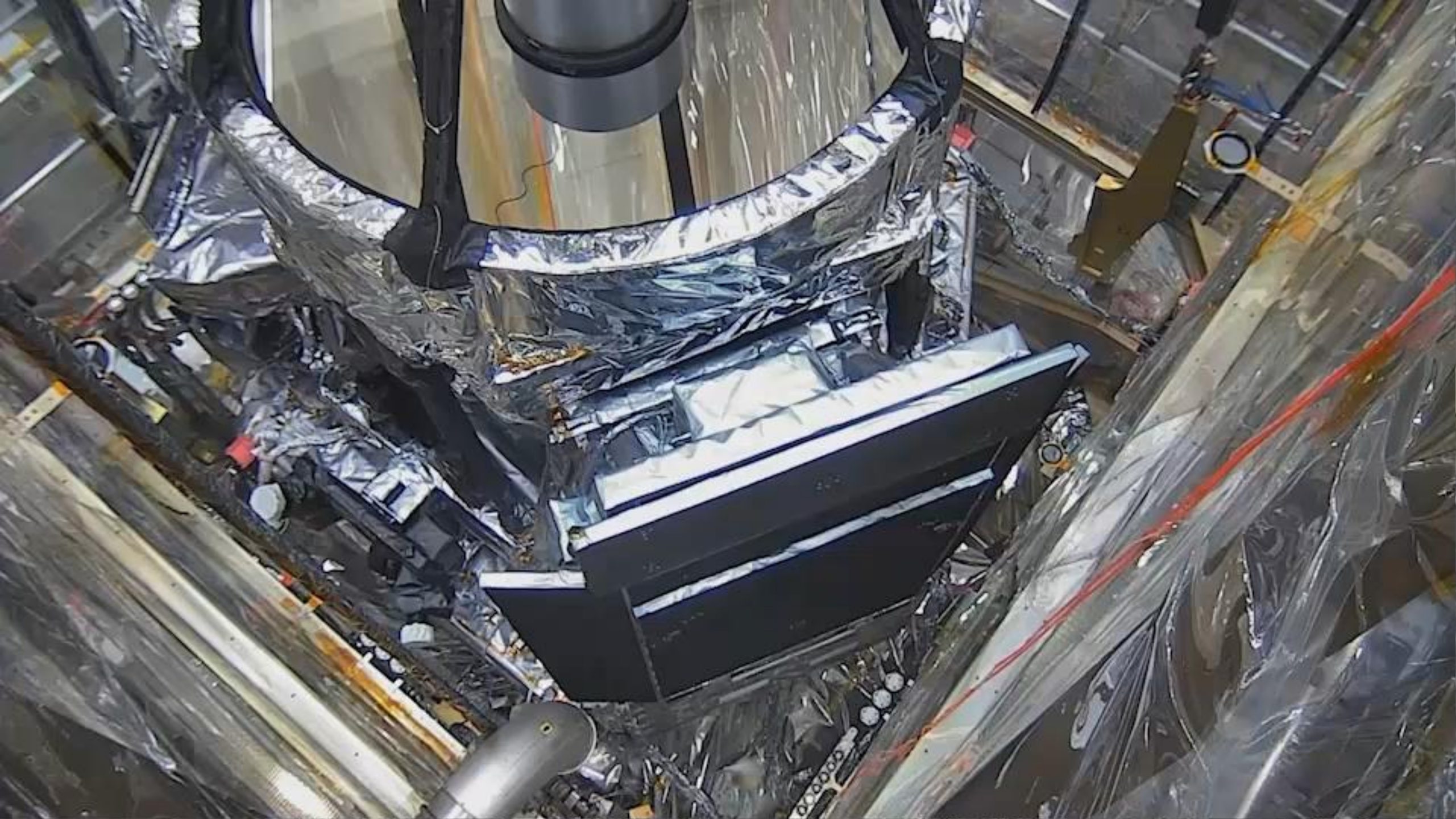
Roman will launch  
on a Falcon Heavy  
on track for  
September 2026  
**August 30**

with that model.











At CCAPP, my research life was  
50% WFIRST and 50% DES  
summarized in two Price Place  
blackboard photos

1. pipeline: COSMOSIS (5 params) / DMAS  
2. Data Sets: BOSS DR12 (Chuang) BAO + RSD  
Plank (2018)  
DMAS ggl + cosmic shear  
Theoretical cov: cosmLike (ready)  
3. Measurement for DMAS ggl  
4. Scale cuts  
Need simulated data vectors including  
- nonlinear galaxy bias ( $b_2, b_3$ ) ← Fastpt  
- Non-locality of  $\chi_1$  (1-halo term) ← DES mock catalogs  
5. Systematic tests  
- nonlinearity  
- Baryonic feedback  
- redshift evolution of galaxy bias, IA  
← Same with DES Y1 analysis

Timestamp 17:13 August 19, 2019

No IPC.

$$\frac{\text{Cov}(S_{ab}(i,j), S_{ab}(i',j'))}{\langle S_{ab}(i,j) \rangle} = \frac{1}{g} \left[ \delta_{i,j,0} \delta_{i',j',0} + \frac{2w}{1+w} P_2(\Delta_i, \Delta_{j'}) \right]$$

with IPC.

$$\frac{1}{g_{\text{std}}} [K_{\text{std}} * K_{\text{std}}](\Delta_i, \Delta_{j'}) = \frac{1}{g} \left[ [K * K](\Delta_i, \Delta_{j'}) + \frac{2w}{1+w} [K * K * P_2](\Delta_i, \Delta_{j'}) \right]$$

$\sum_{\Delta_i, \Delta_{j'}} \frac{1}{g_{\text{std}}} = \frac{1}{g} \cdot \frac{1+3w}{1+w} \Rightarrow \frac{1+3w}{1+w} = \frac{g}{g_{\text{std}}} \leftarrow \text{vis}$

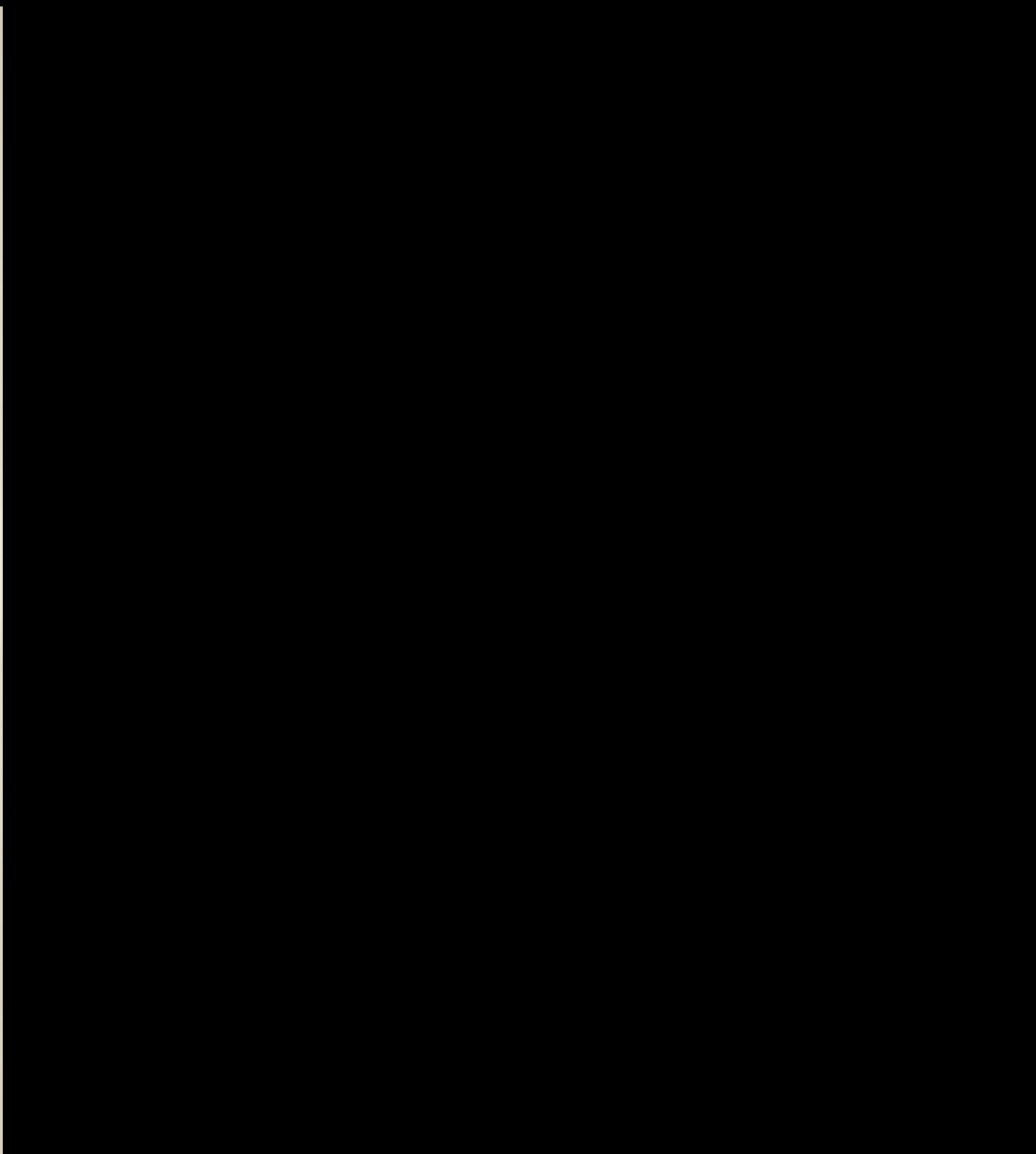
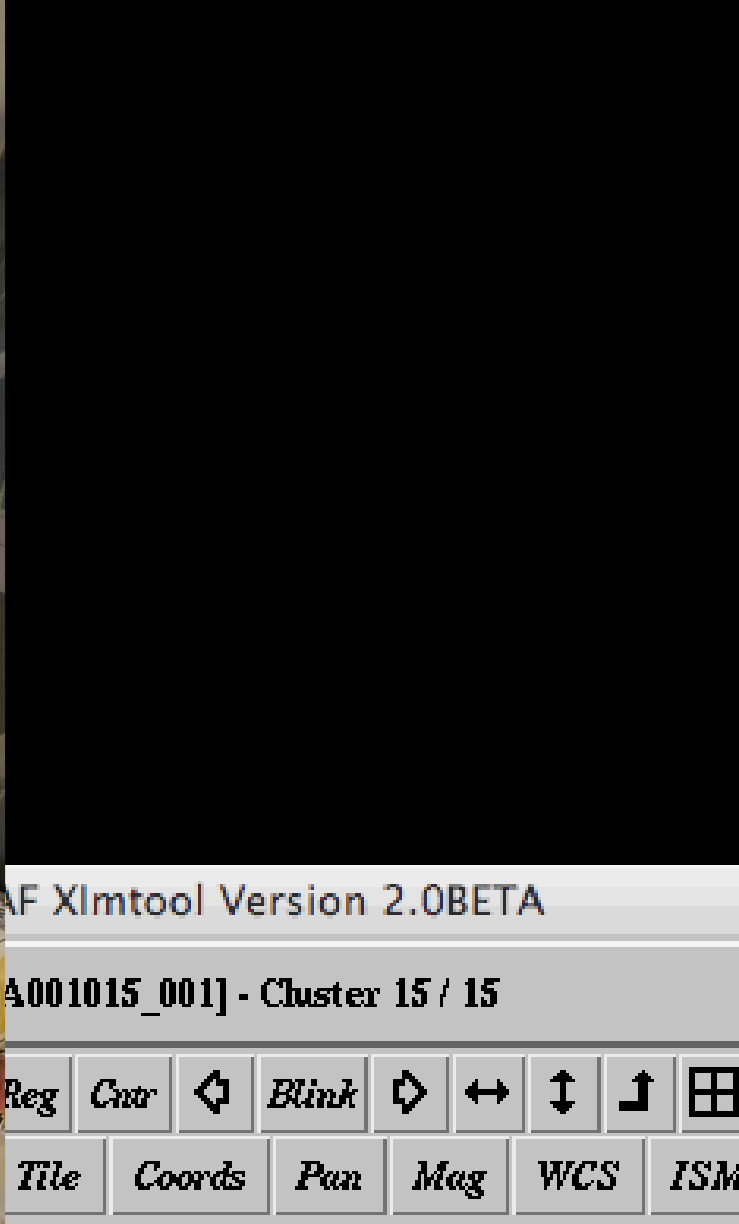
$$\frac{1+3w}{1+w} [K^{-1} * K^{-1} * K_{\text{std}} * K_{\text{std}}](\Delta_i, \Delta_{j'}) = \delta_{\Delta_i,0} \delta_{\Delta_{j'},0} + \frac{2w}{1+w} P_2(\Delta_i, \Delta_{j'}) \Rightarrow p_2(1,0) = \frac{1+3w}{2w} [K^{-1} * K^{-1} * K_{\text{std}} * K_{\text{std}}](1,0)$$

$$\approx \frac{1+3w}{w} (\alpha_H^{\text{std}} - \alpha_H) \leftarrow \text{IR}$$

Many critical steps toward my  
current position at NASA  
Goddard

Timestamp 17:31 August 19, 2019

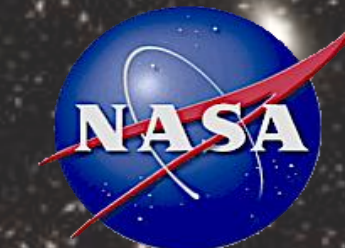








# Roman (the mission formerly known as WFIRST) and you!



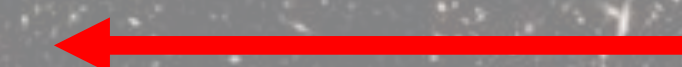
On track for Aug 30, 2026

More information:

General updates:

[https://asd.gsfc.nasa.gov/roman/comm\\_forum/](https://asd.gsfc.nasa.gov/roman/comm_forum/)

Easiest entry point



Roman Science Collaboration:

<https://outerspace.stsci.edu/spaces/RSCPUB/pages/286851875/Roman+Science+Collaboration+RSC+Public+Page+Home>

Technical Working Groups:

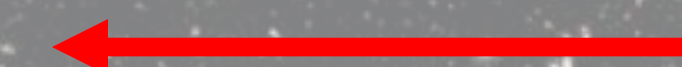
<https://outerspace.stsci.edu/category/wfitechwgs>

Roman Documentation (RDox):

<https://roman-docs.stsci.edu/roman-community-defined-surveys/high-latitude-wide-area-survey> (including information about proposal calls)

Roman Research Nexus:

<https://roman.science.stsci.edu/hub/spawn>

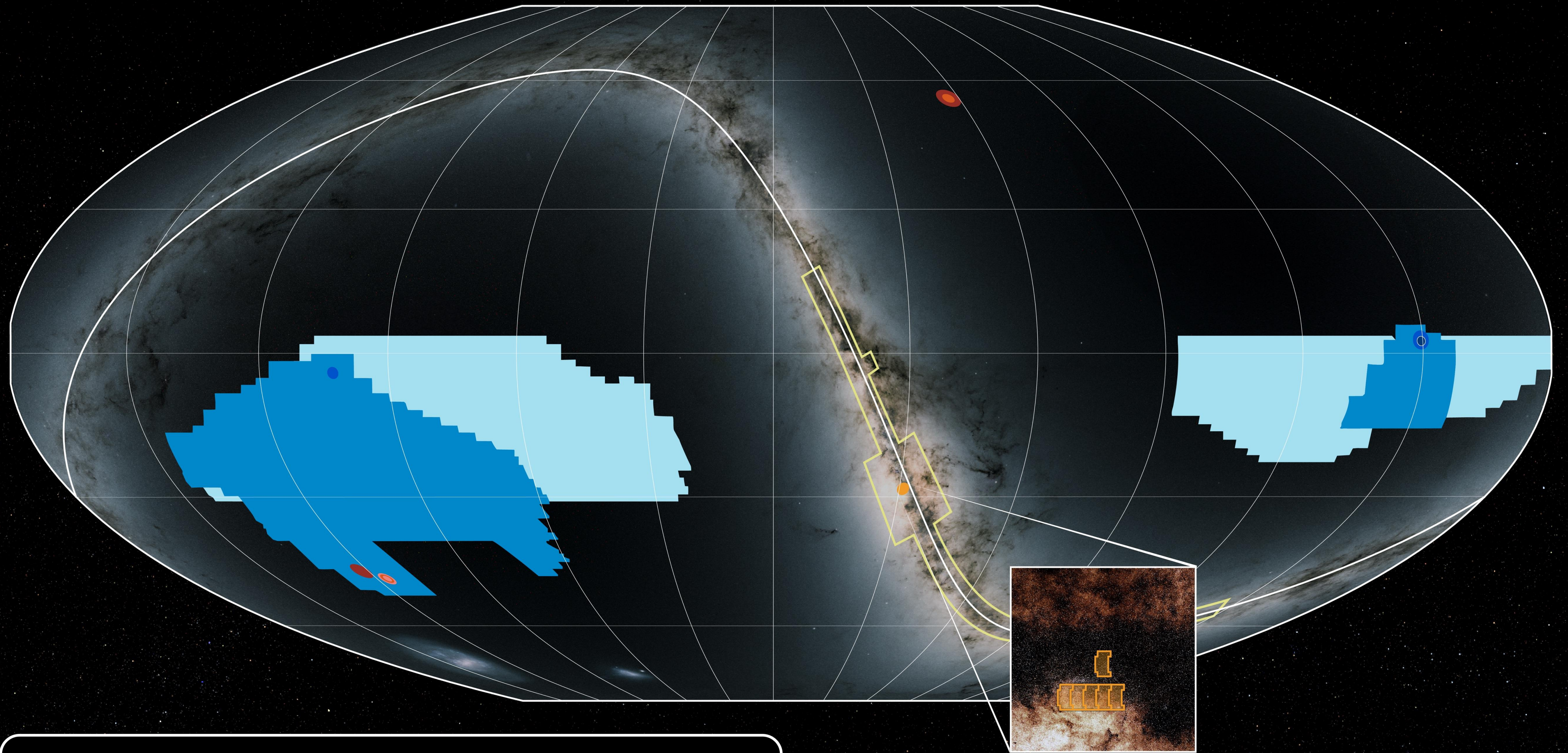


Roman Science Conferences:

<https://conference.ipac.caltech.edu/roman2026/>

<https://nasa.gov/roman/>





- High-Latitude Wide-Area Survey
- High-Latitude Time-Domain Survey
- Galactic Bulge Time-Domain Survey
- Galactic Plane Survey

Image Composition: J. Olmsted, J. Kang, and C. Nieves (STScI). Background sky image: ESA/Gaia/DPAC  
Credit: Javier Sanchez (STScI)