



Schmidt Sciences

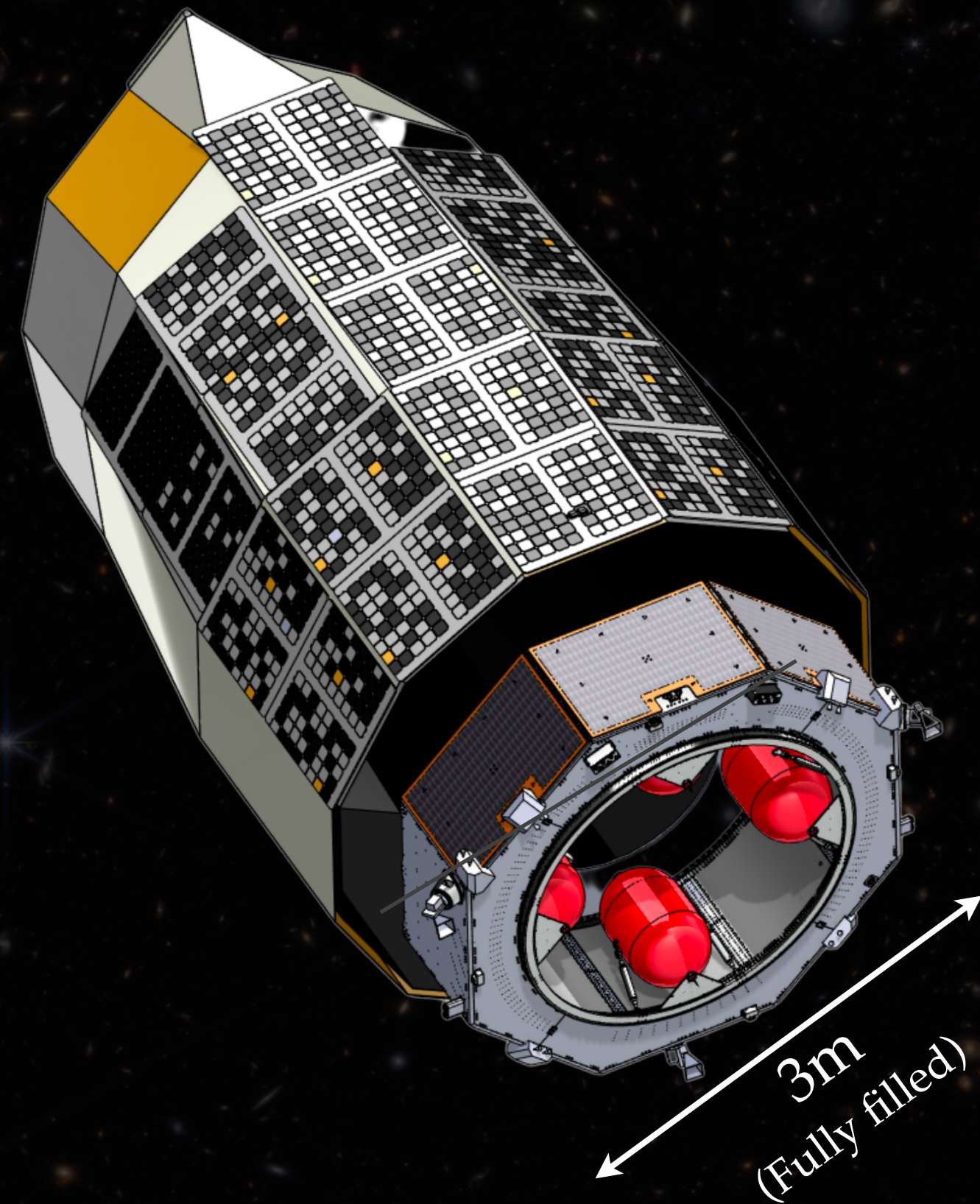
The logo for Schmidt Sciences features a cluster of colorful dots in shades of blue, purple, and teal, arranged in a roughly circular pattern.

The Lazuli Space Observatory and its use for Cosmology

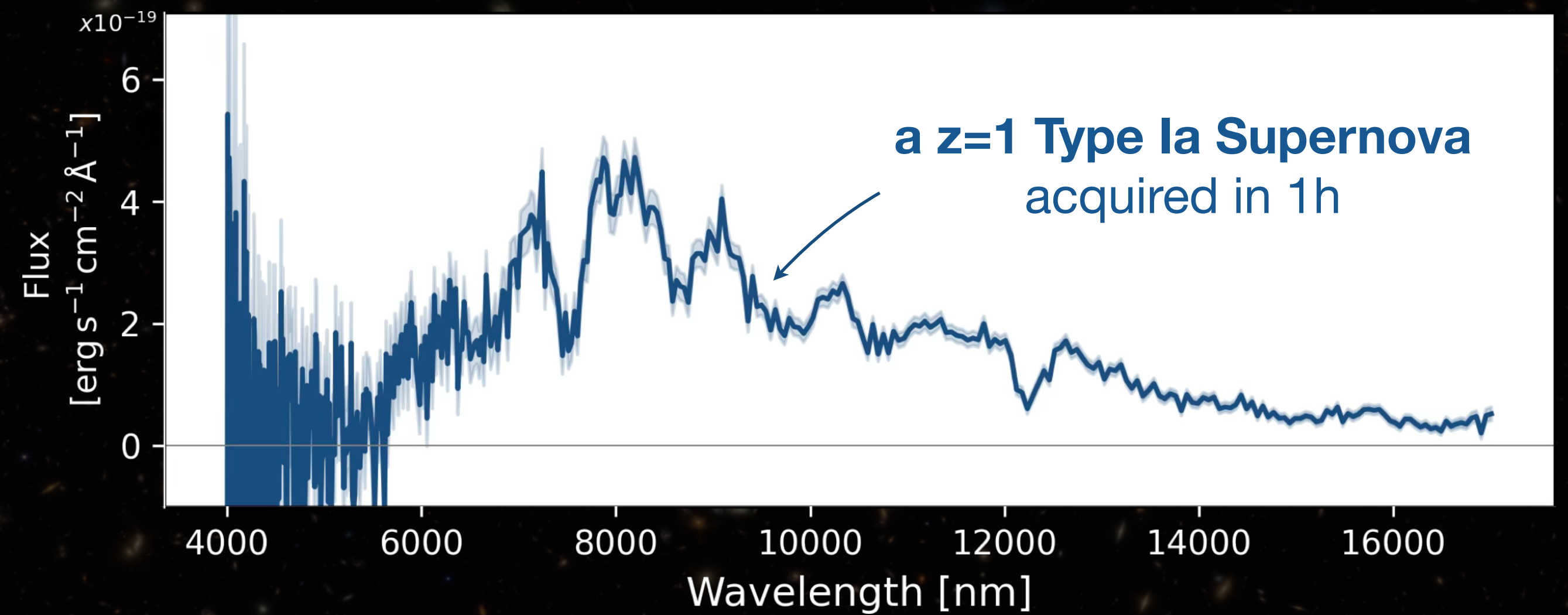
Lazuli

Roy et al. 2026

The largest optical rapid-response telescope in space



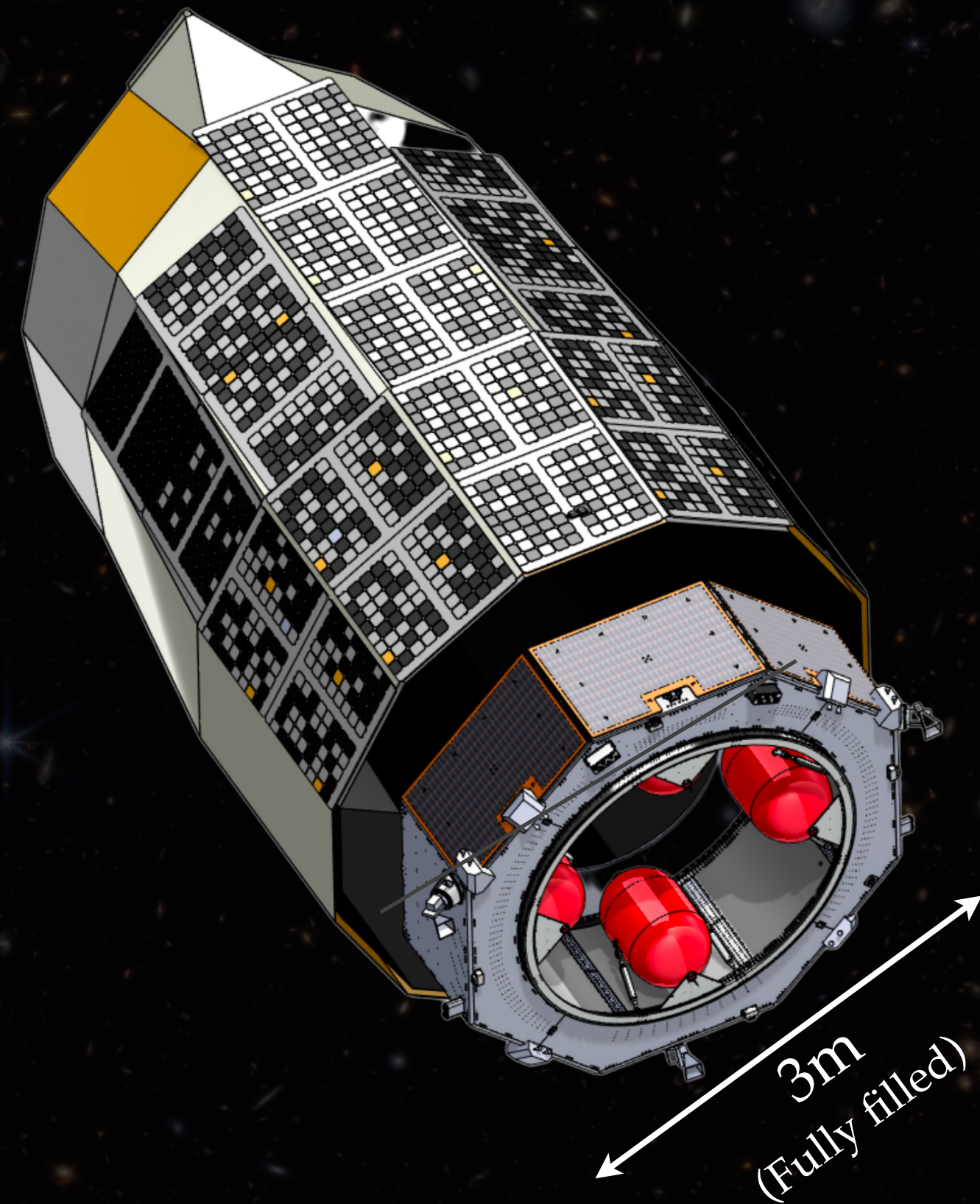
From alert to photon collection in < 4h (90min goal)



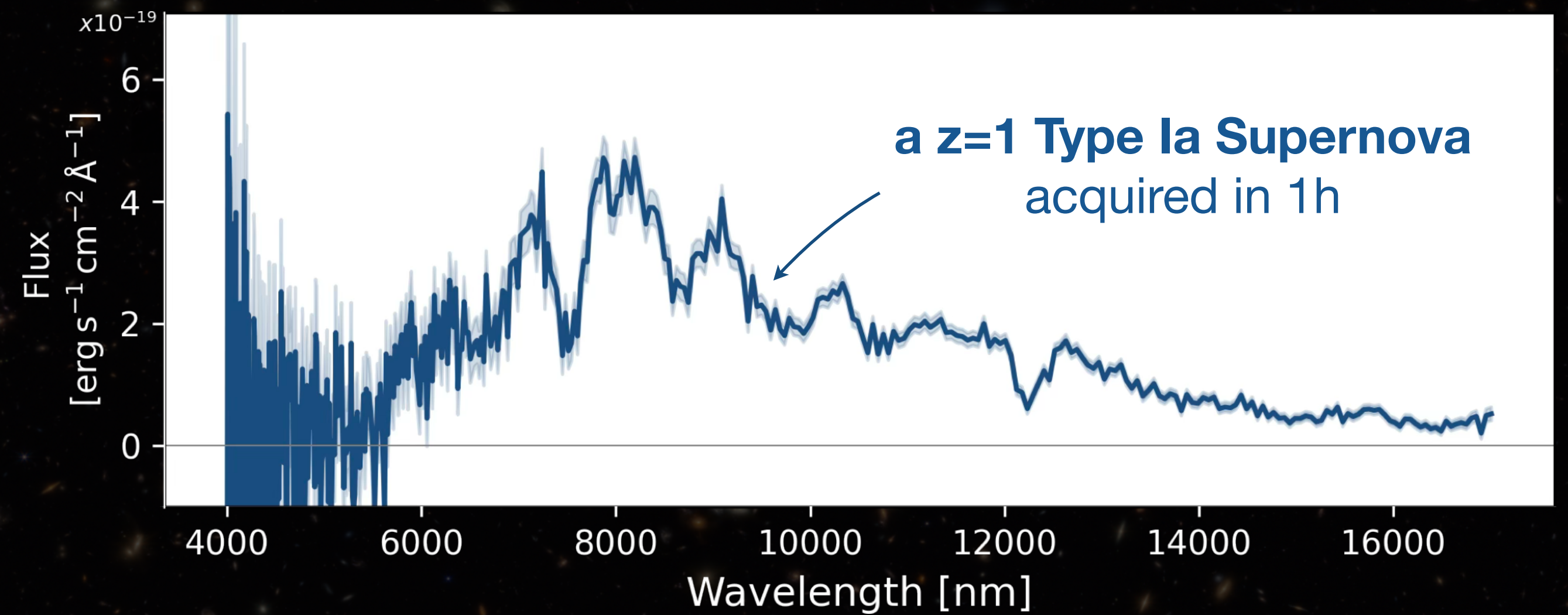
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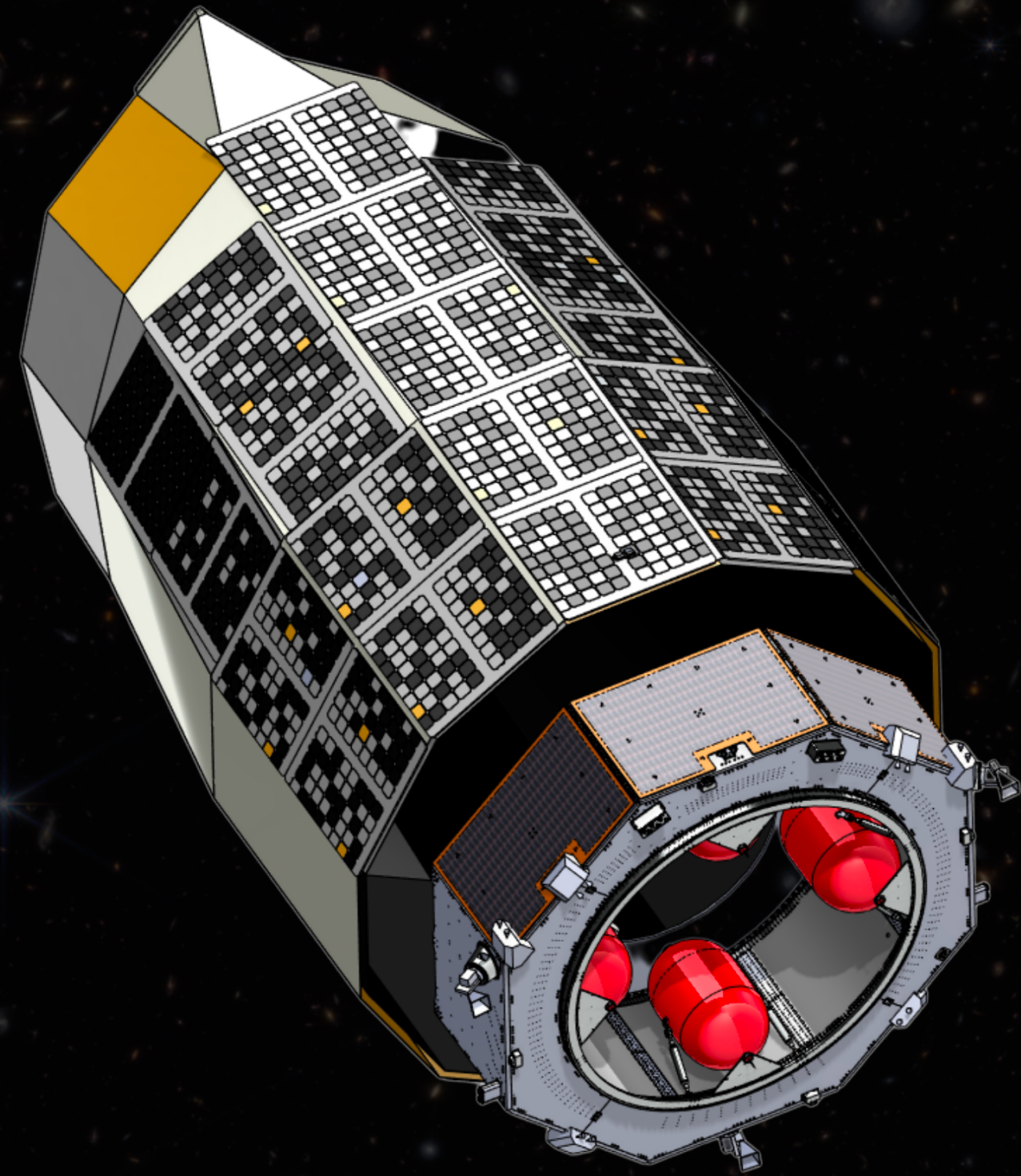


A follow up instrument planned to be lunch in 2028

Lazuli

Roy et al. 2026

The largest optical rapid-response telescope in space




Schmidt Sciences

A privately funded facility
secured funding & defined budget

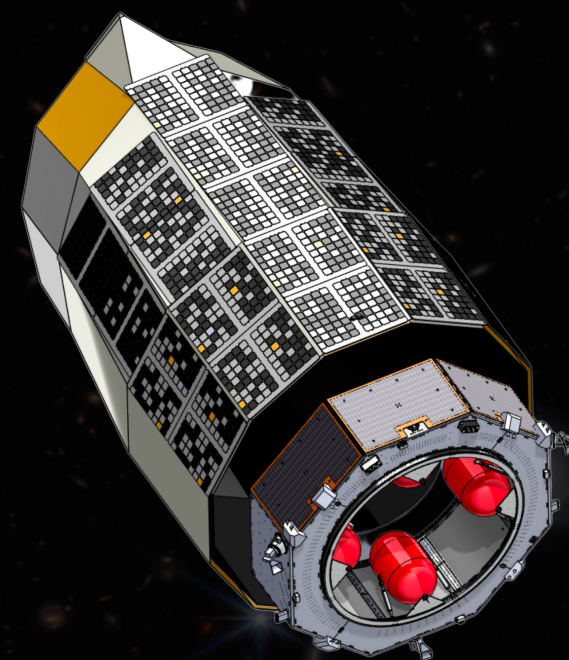
Schmidt Observatory System

compresses development timelines from decades to years.

Risk-tolerant innovations • open data & software • shared infrastructure • pure research facilities

Lazuli

Roy et al. 2026

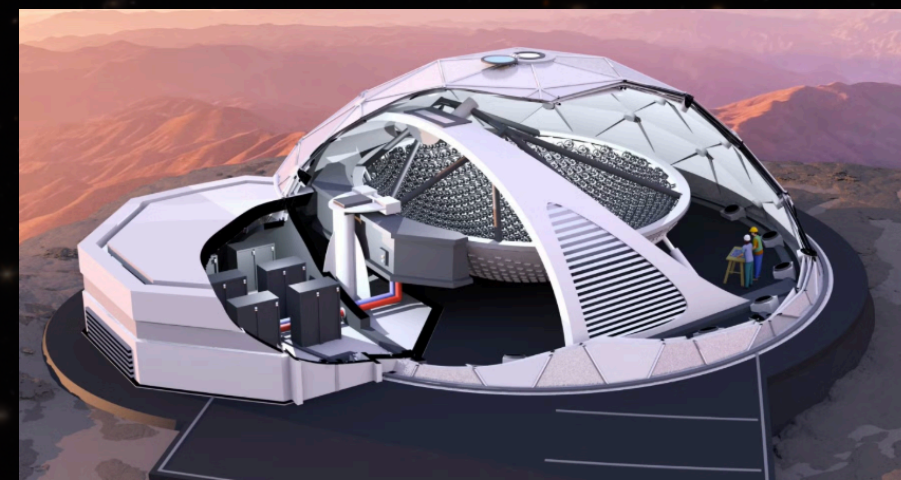


Rapid response Optical-IR
spectro & photometry

—

Argus

Law et al. 2022



8000 deg² at once
1min: 20mag | 1h: 22.3mag

x UNC Chapel Hill

L-Fast

Berkson et al. 2024



Large light-bucket
for spectroscopy

x U. Arizona

DSA

Hallinan et al. 2019



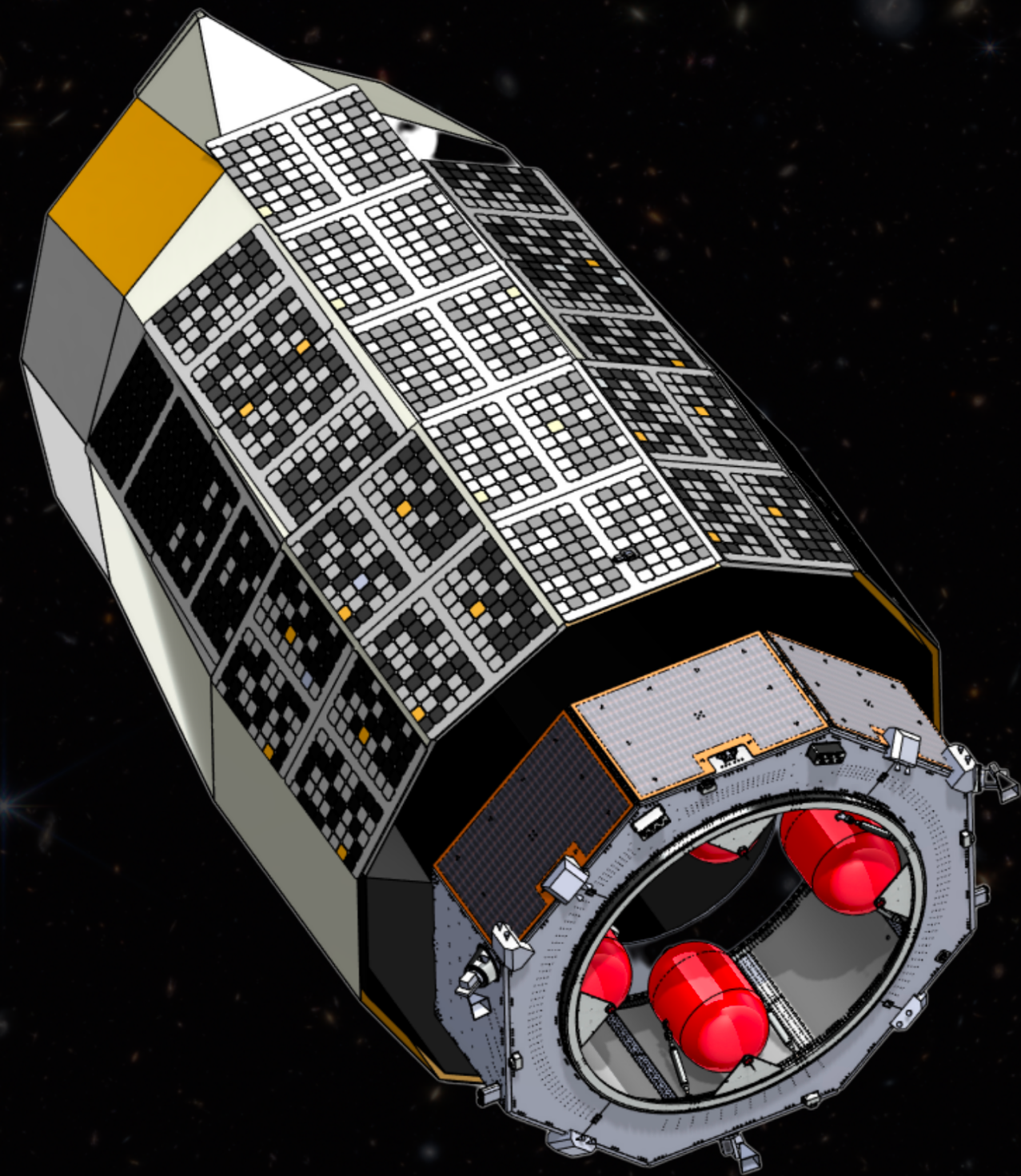
A Radio Survey Camera
3.3" resolution (0.7–2 GHz)

x Caltech

Lazuli

Roy et al. 2026

The largest optical rapid-response telescope in space



2 top level goals

Deploy & operate

A world-class astronomy observatory in Space
with broad access & prompt data release

going from concept to science operations
in just a few years.



← 15 yr →

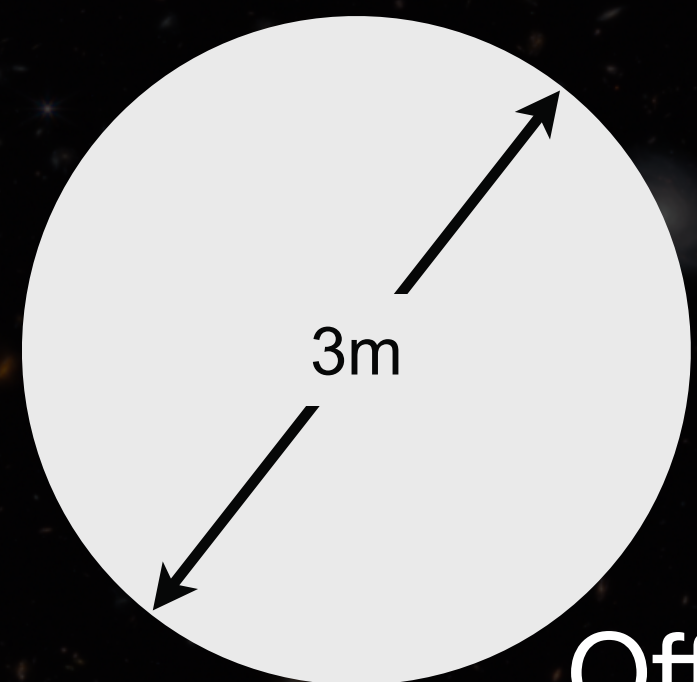
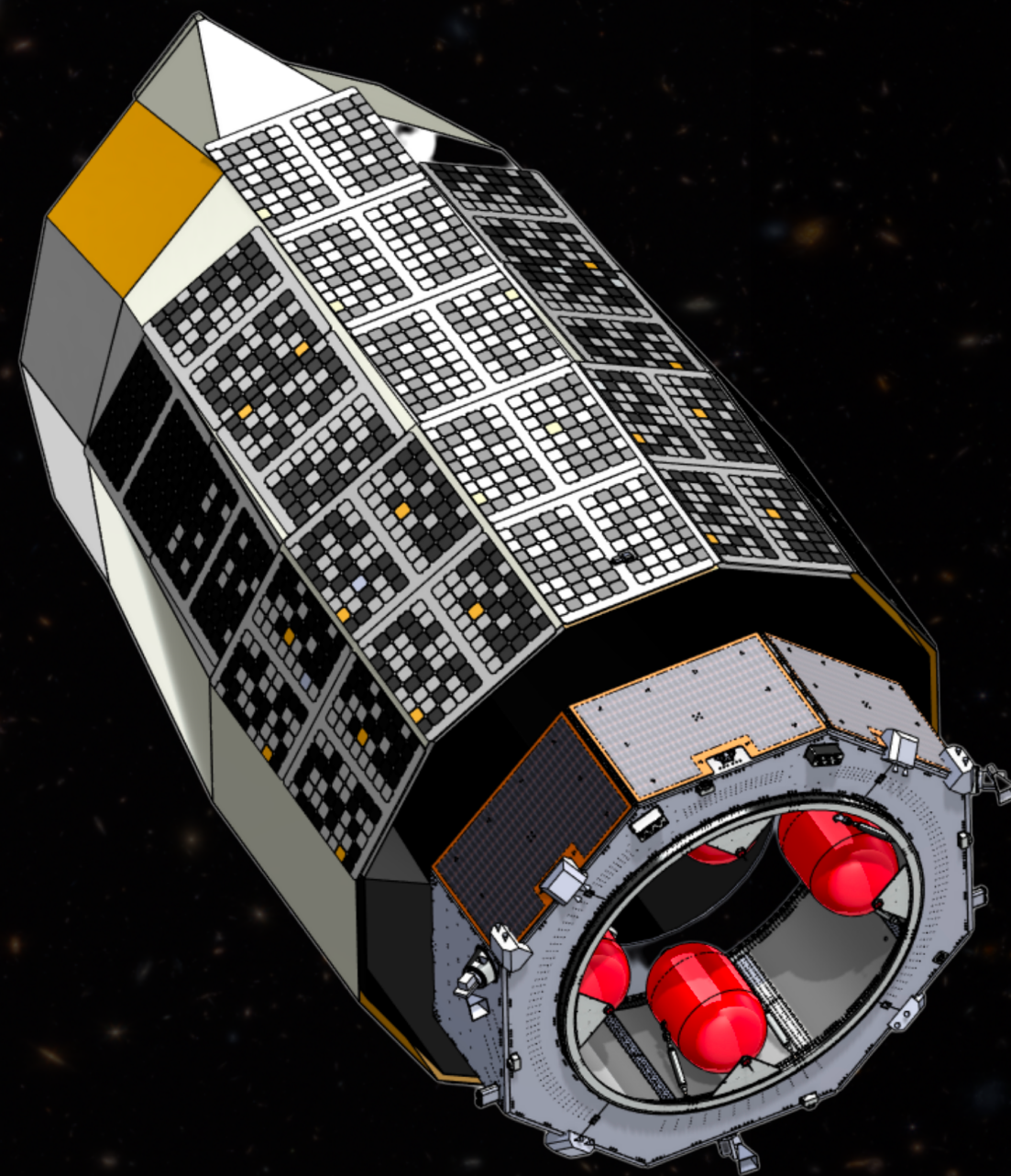


Lazuli
2028

- Mission Concept Review ✓
- System Requirement Review ✓
- Preliminary Design Review ✓
- Critical Design Review Soon
- System Integration Review —

Lazuli

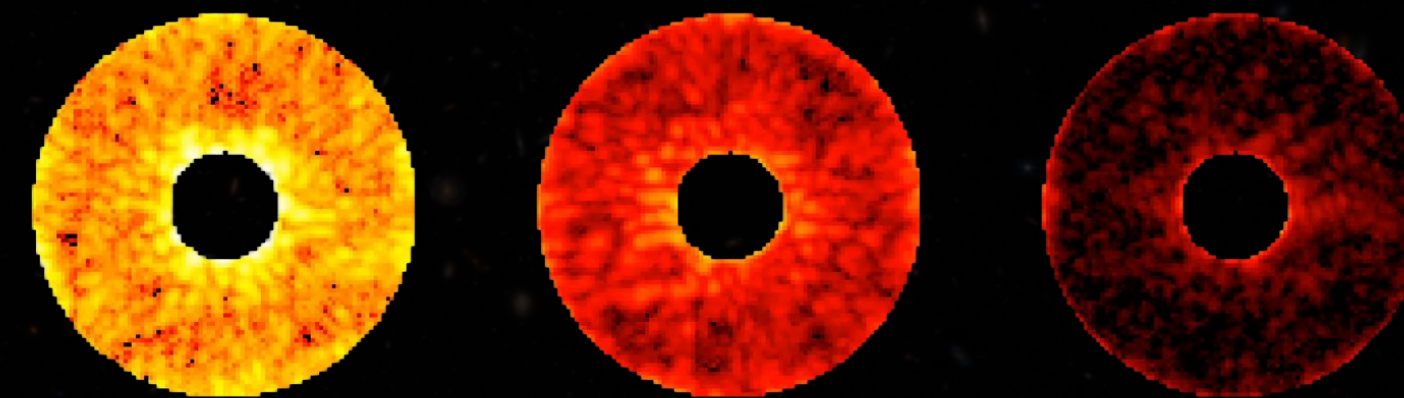
Roy et al. 2026



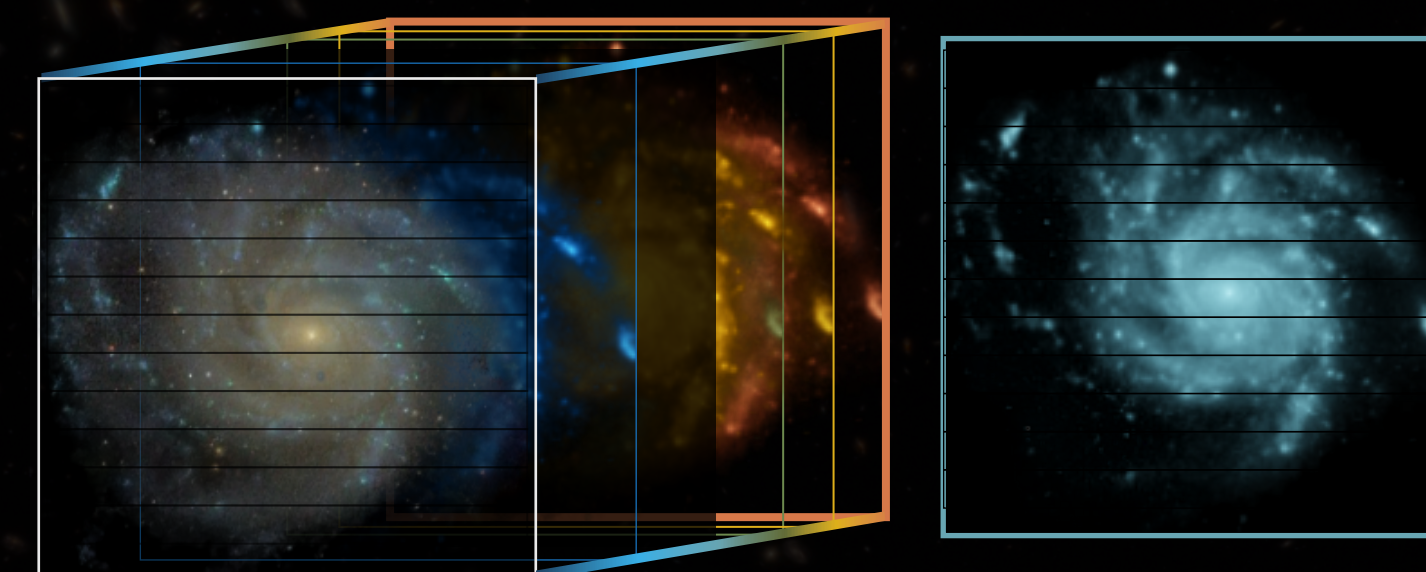
Unobstructed 3m
Off-Axis mirror

From alert to photon collection in <4h

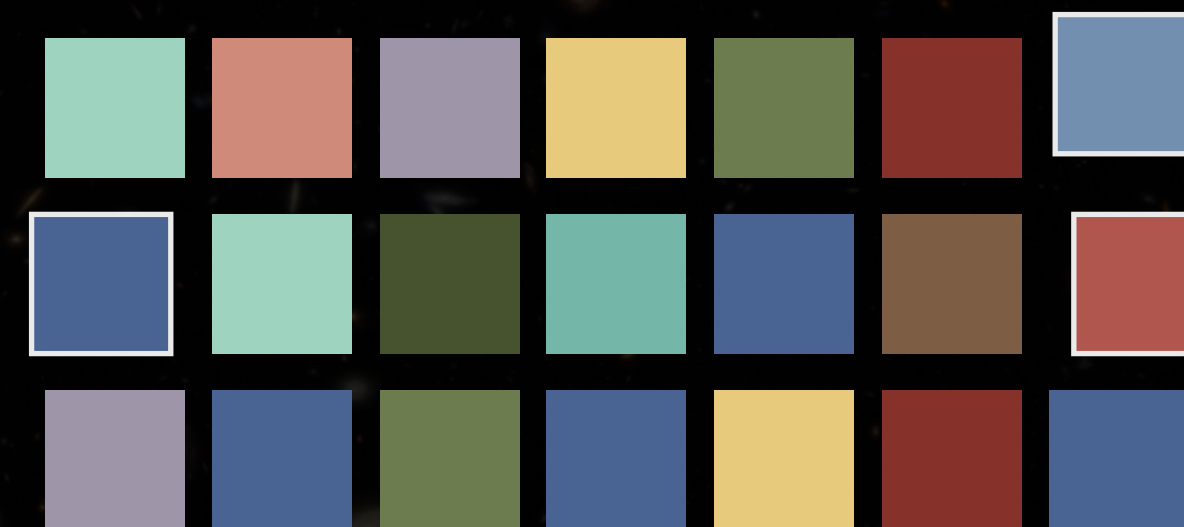
Extra Solar Coronagraph

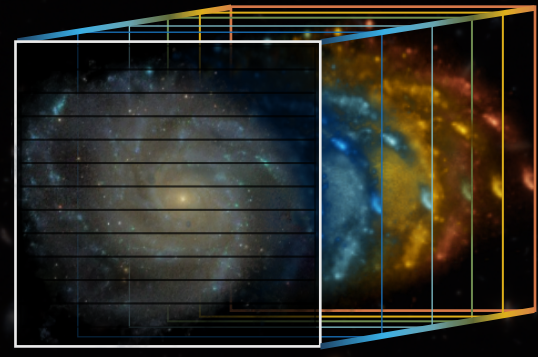


Integral Field Spectrograph

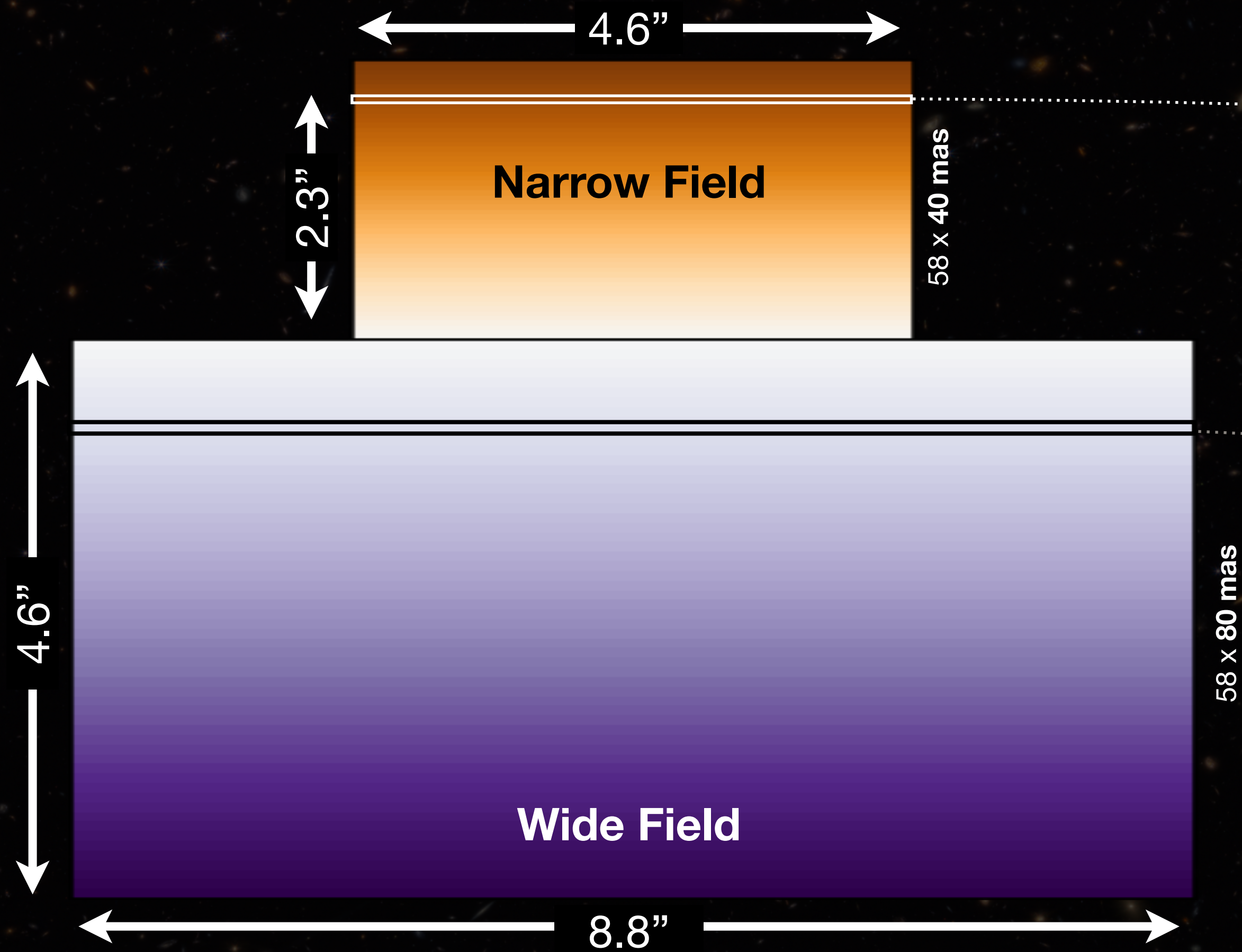


Widefield Context Camera

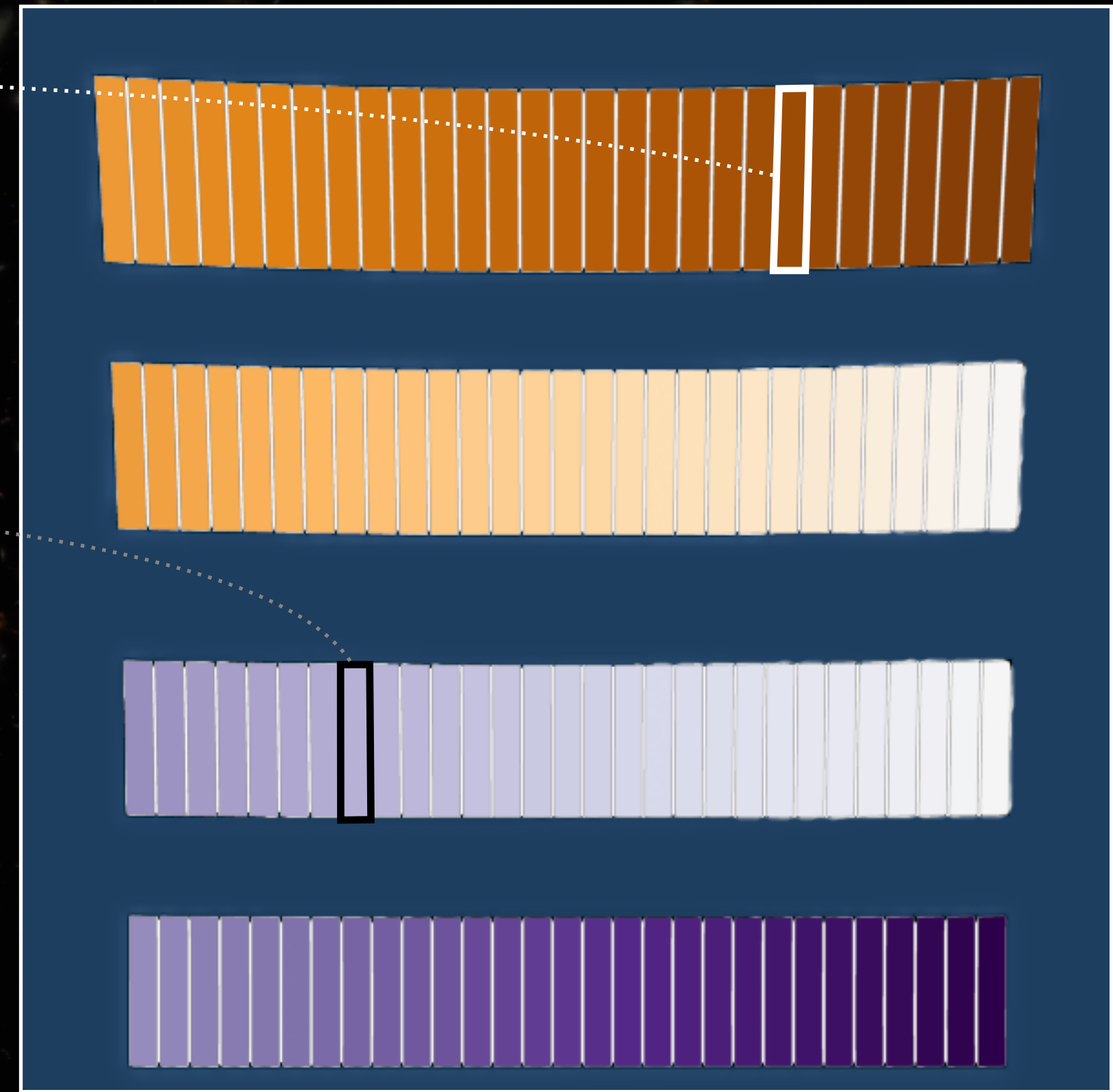




Integral Field Spectrograph

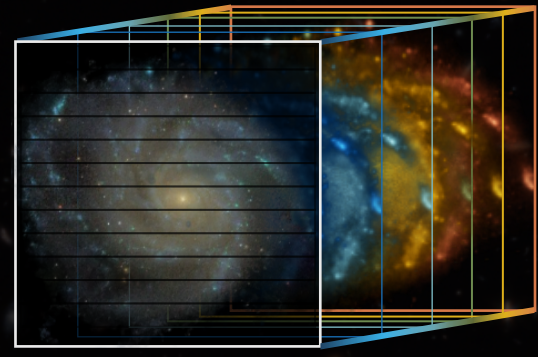


4k x 4k | H4RG Detector ($1.7\mu\text{m}$ cutoff)

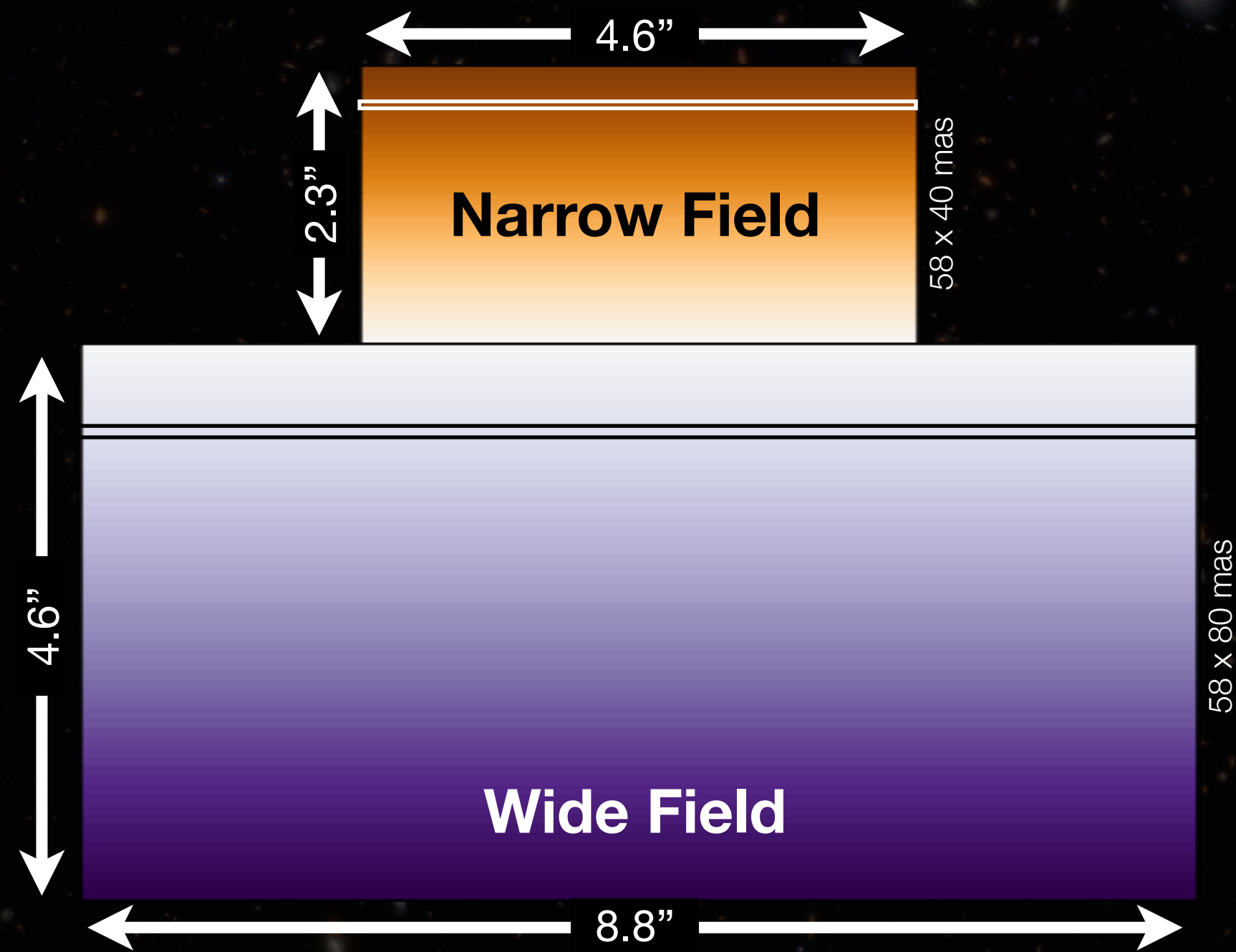


2:1 anamorphose

Roy et al. 2026, Rigault et al. *in prep.*

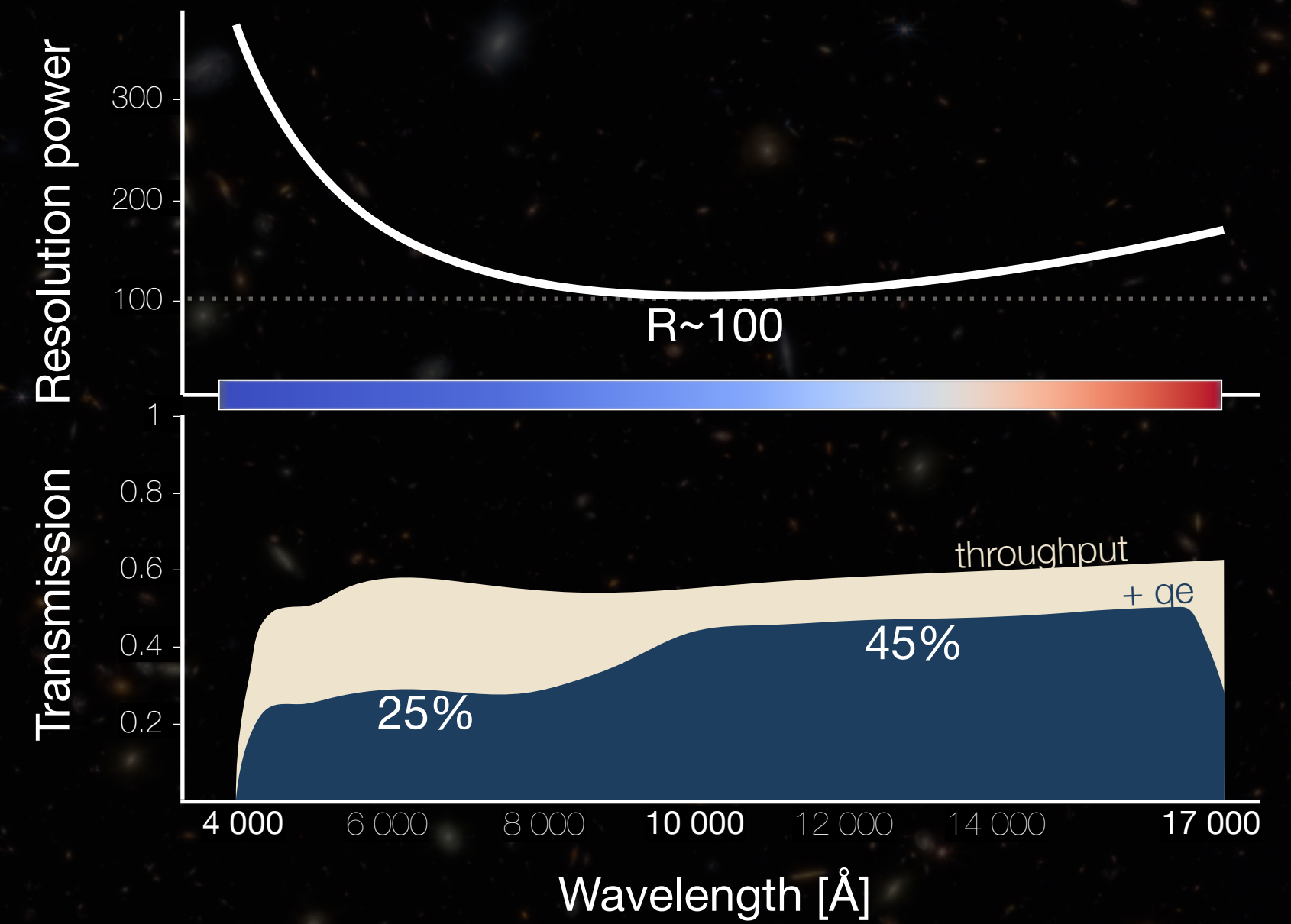
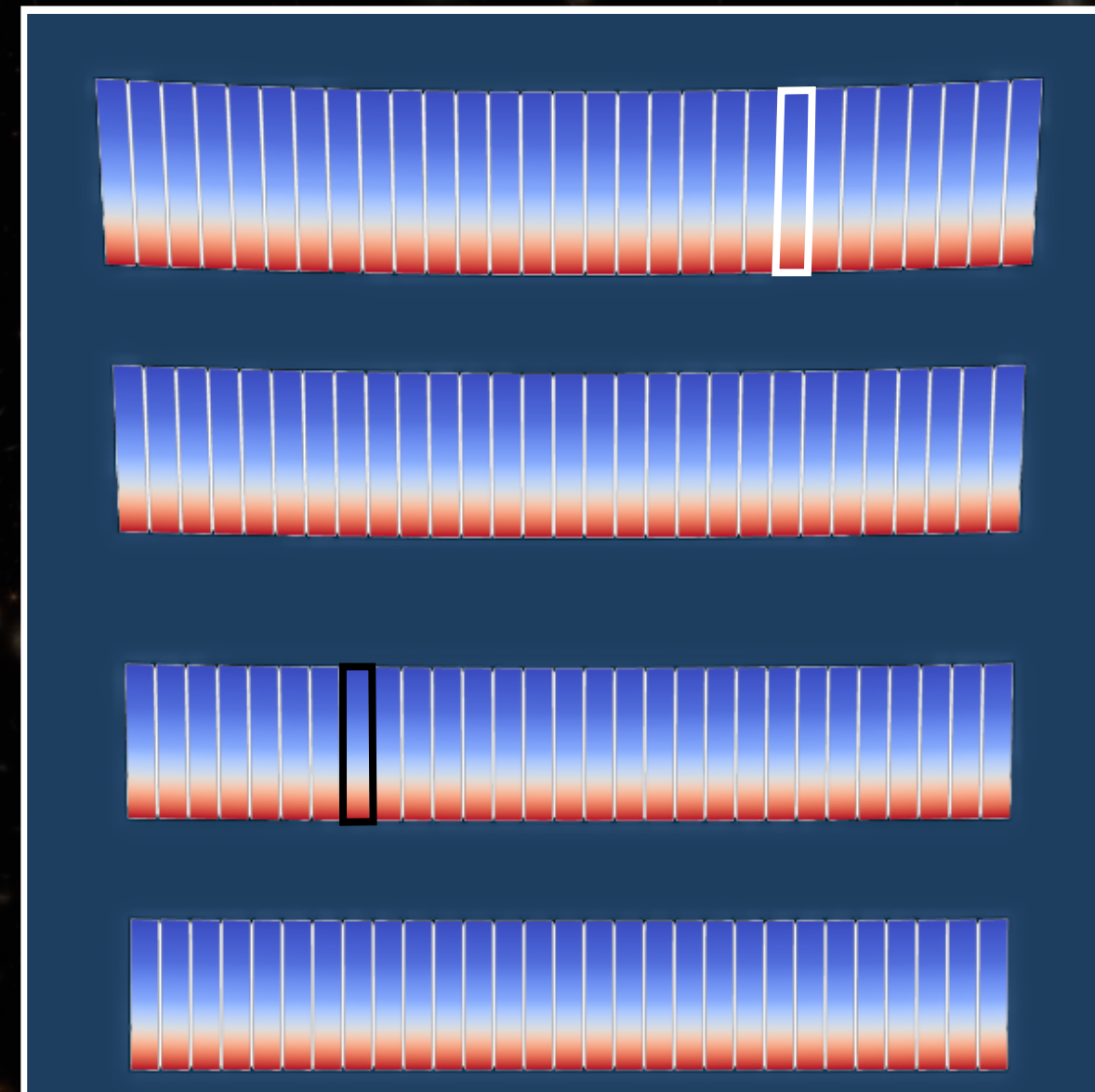


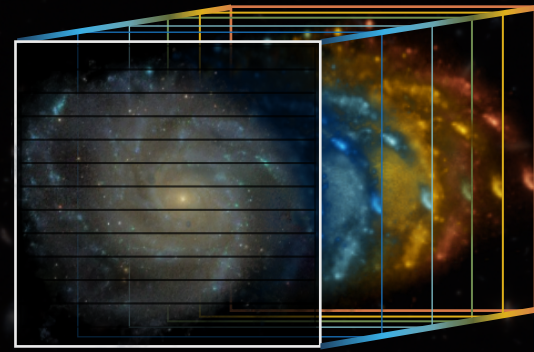
Integral Field Spectrograph



2:1 anamorphose

4k x 4k | H4RG Detector (1.7μm cutoff)



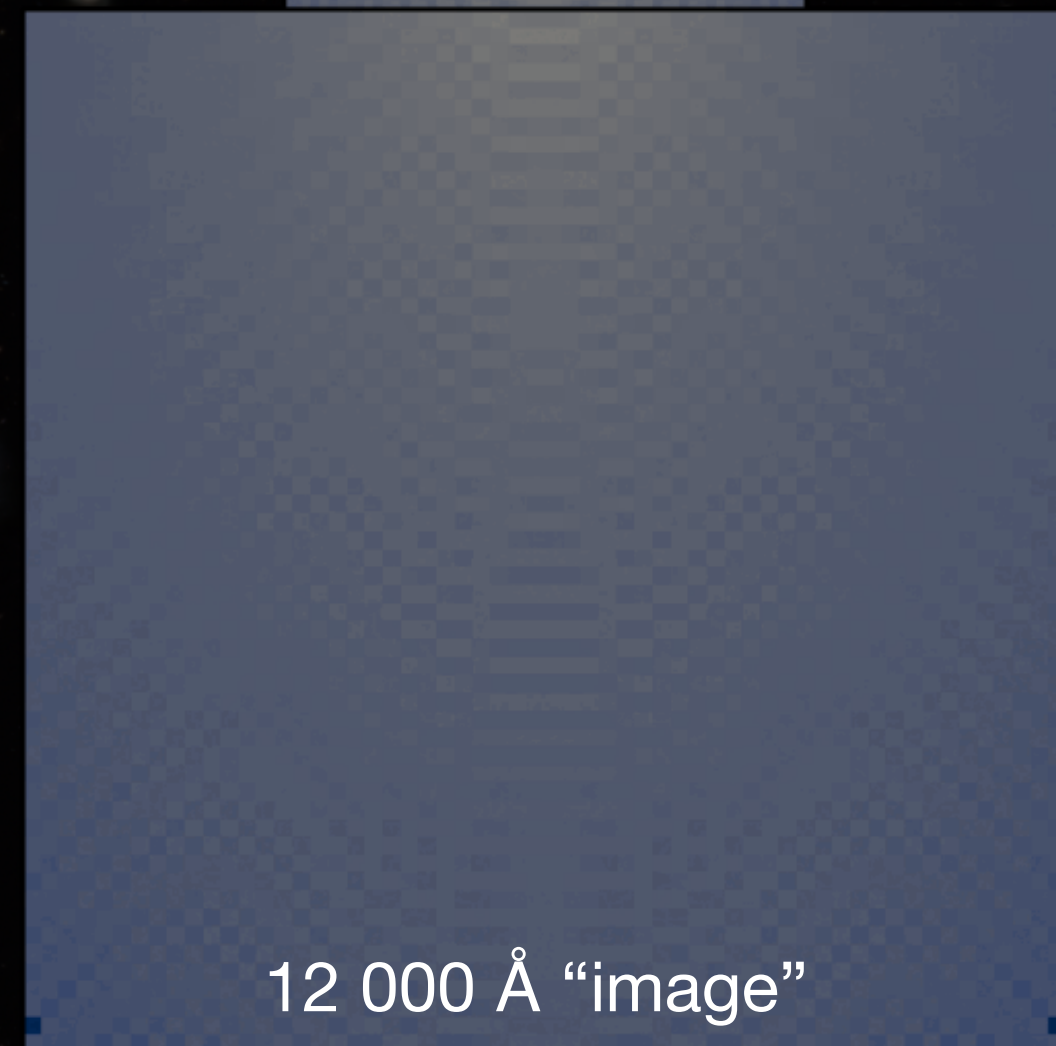
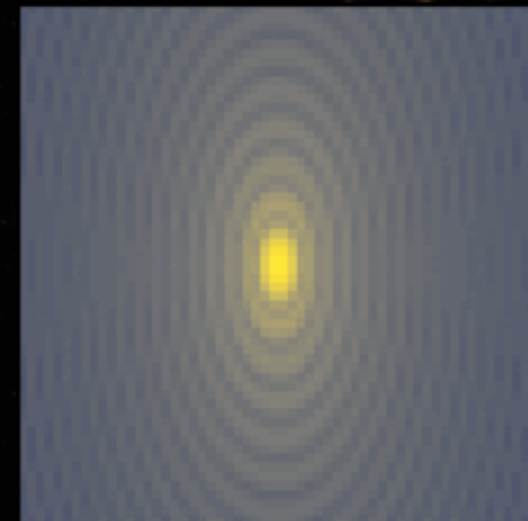


Integral Field Spectrograph

Diffraction limited of 3m off-axis mirror

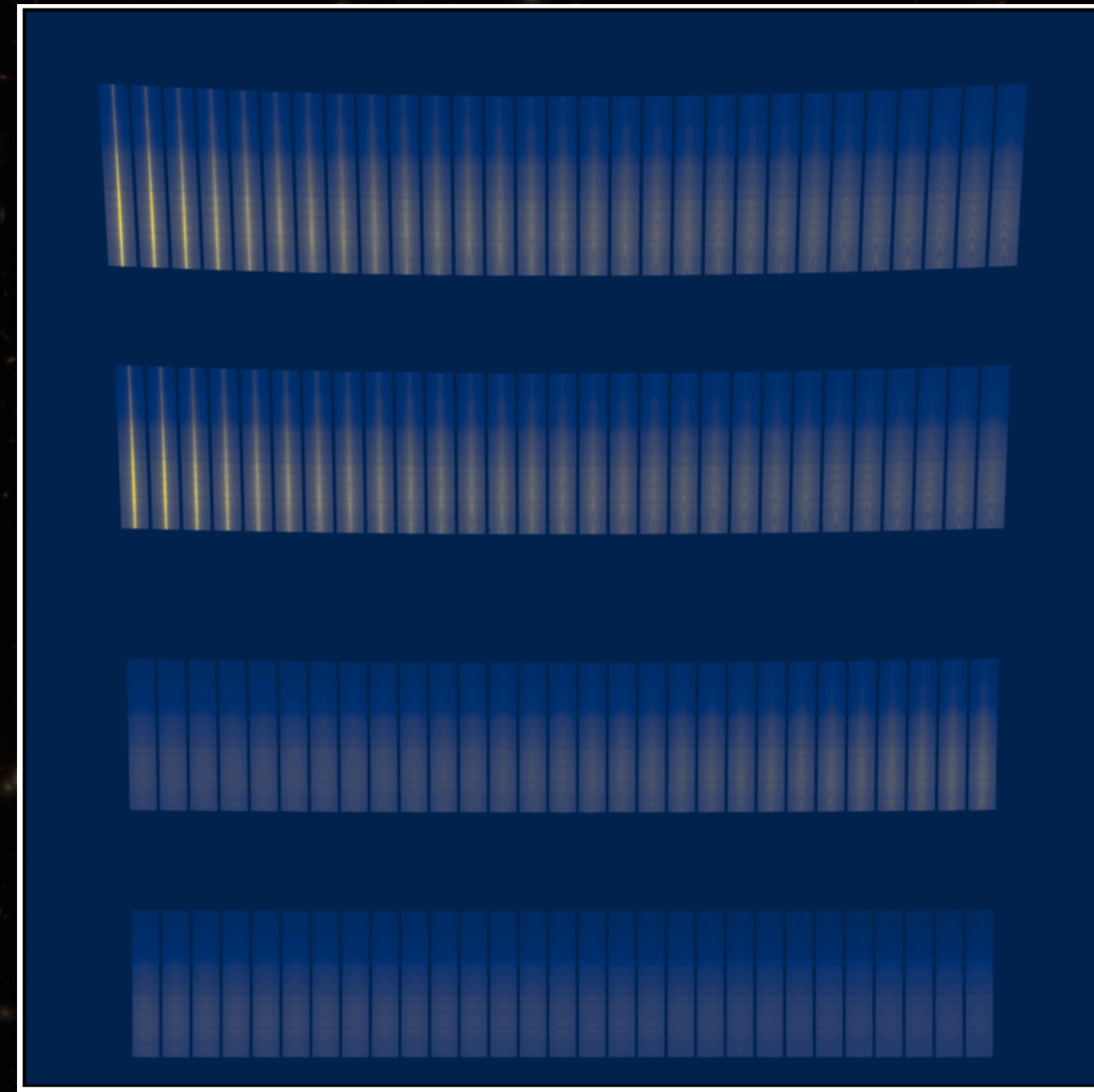
Simple Airy disk

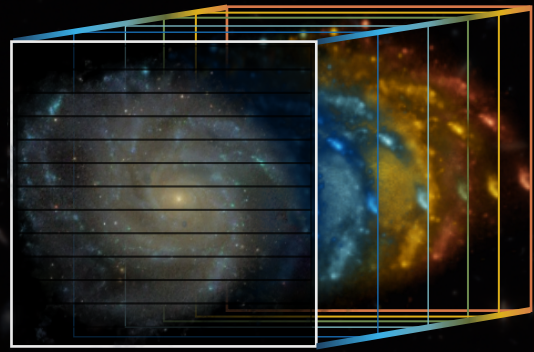
*Illustration made with
no instrumental PSF*



12 000 Å "image"

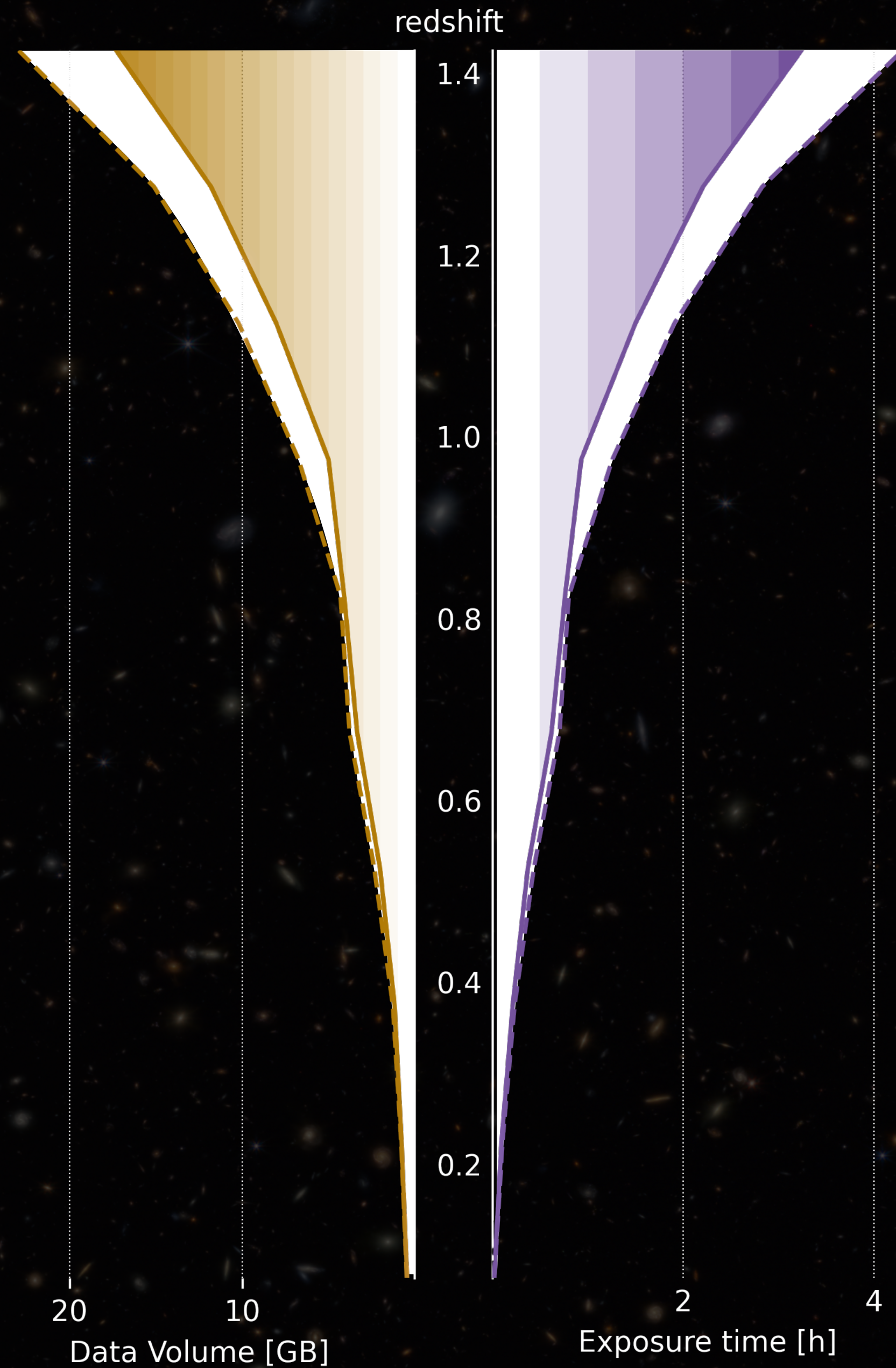
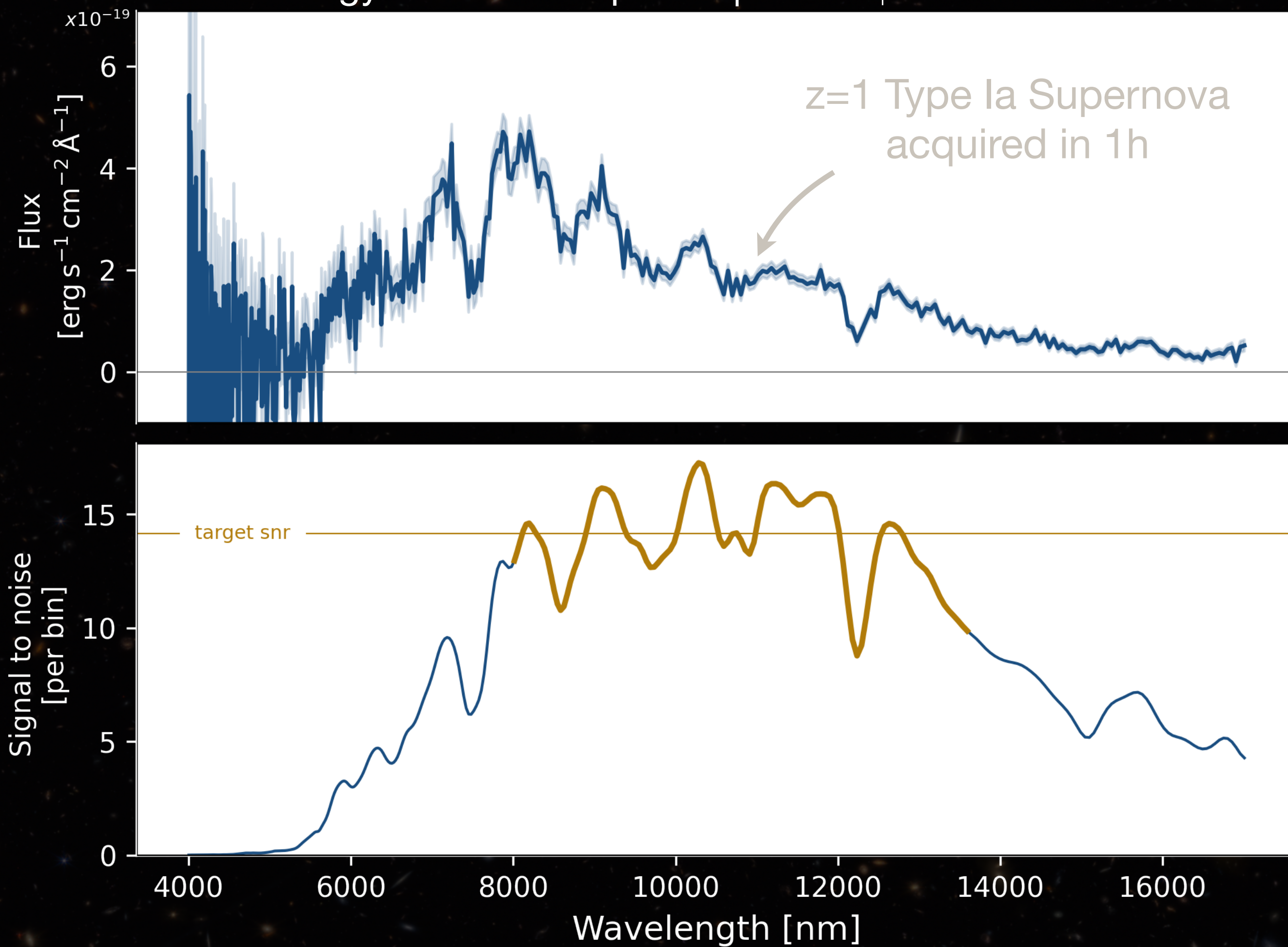
2:1 anamorphose
here as square "spaxels"

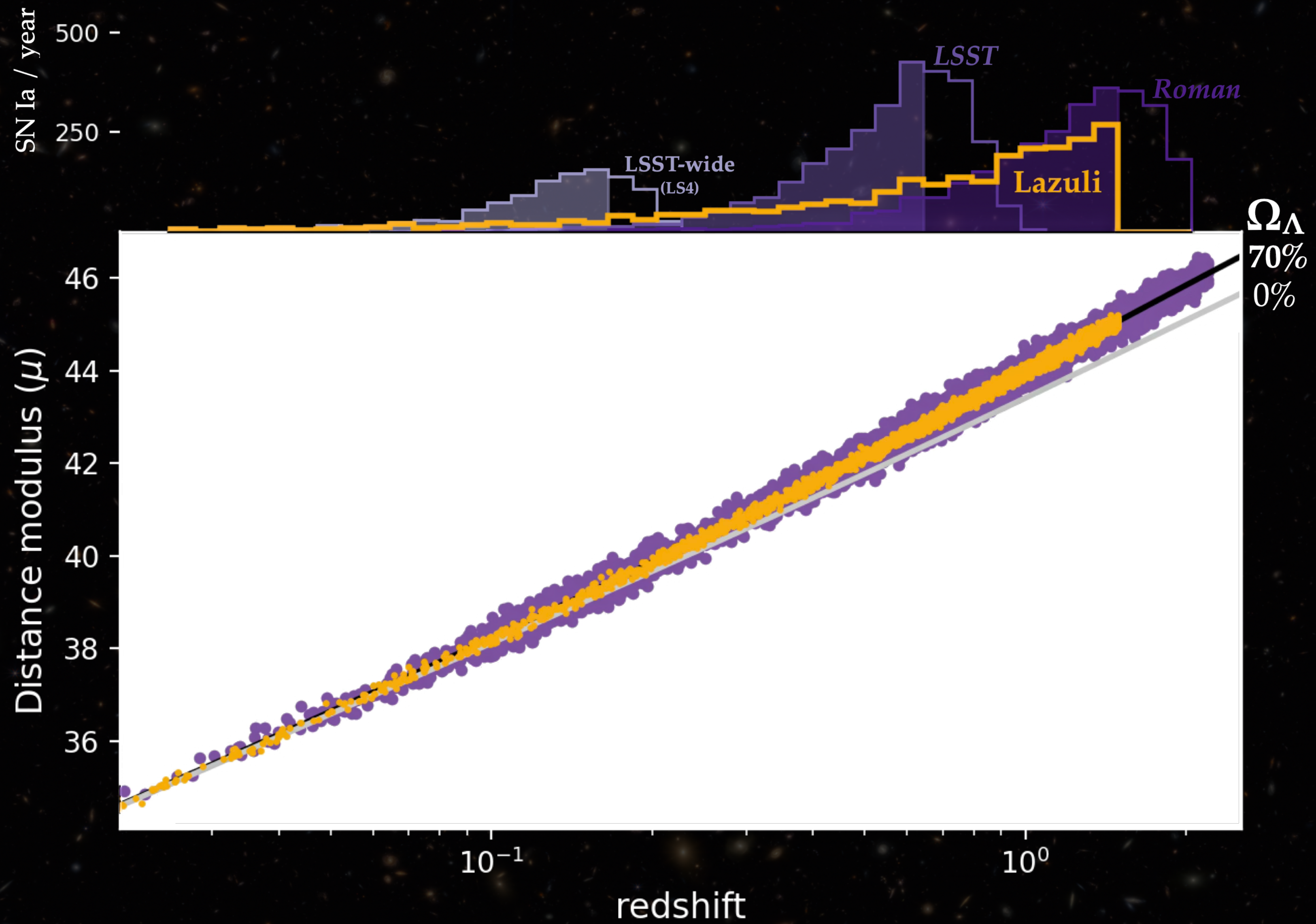


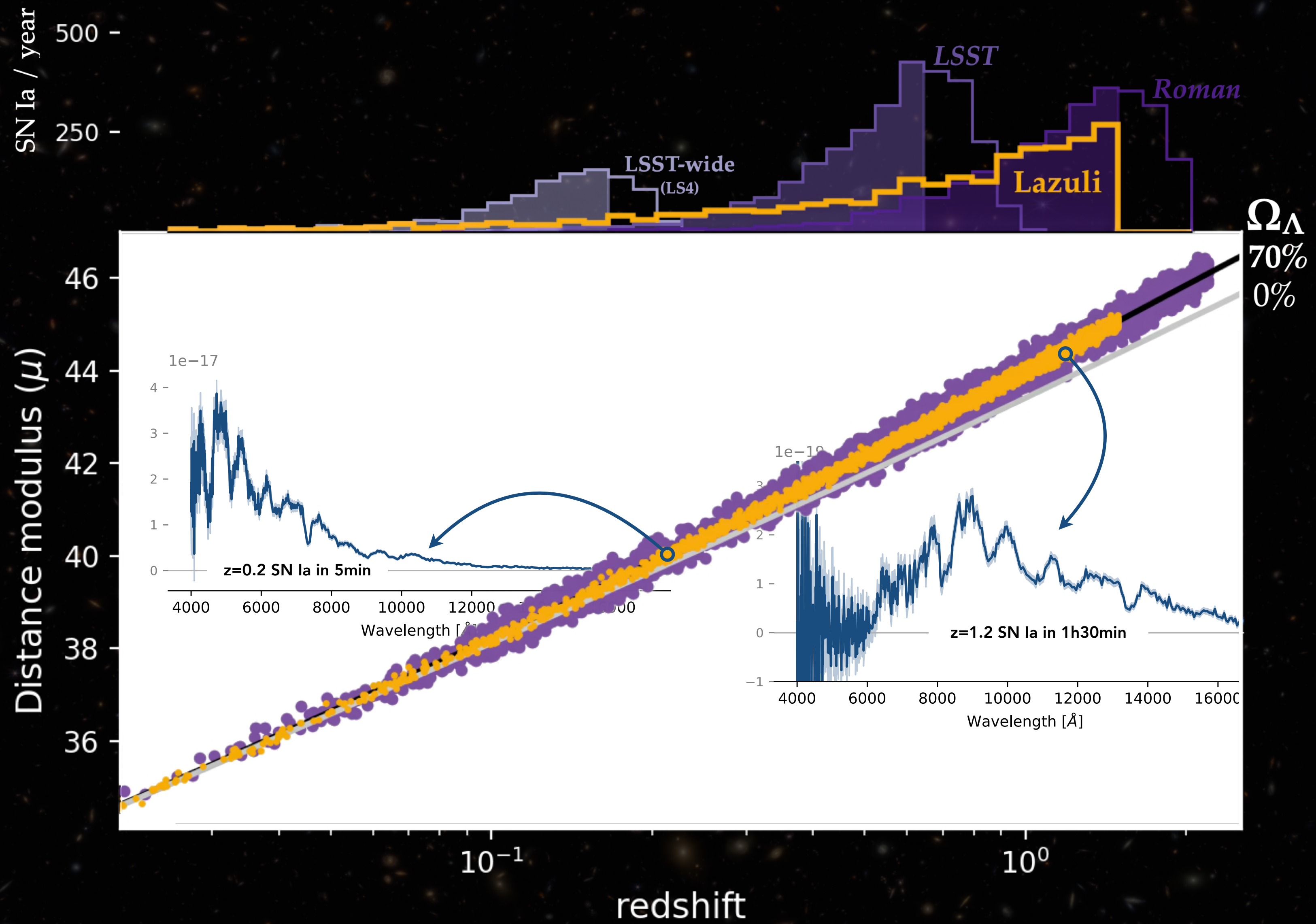


Integral Field Spectrograph

Cosmology with SN Ia spectra | An unique Lazuli science case

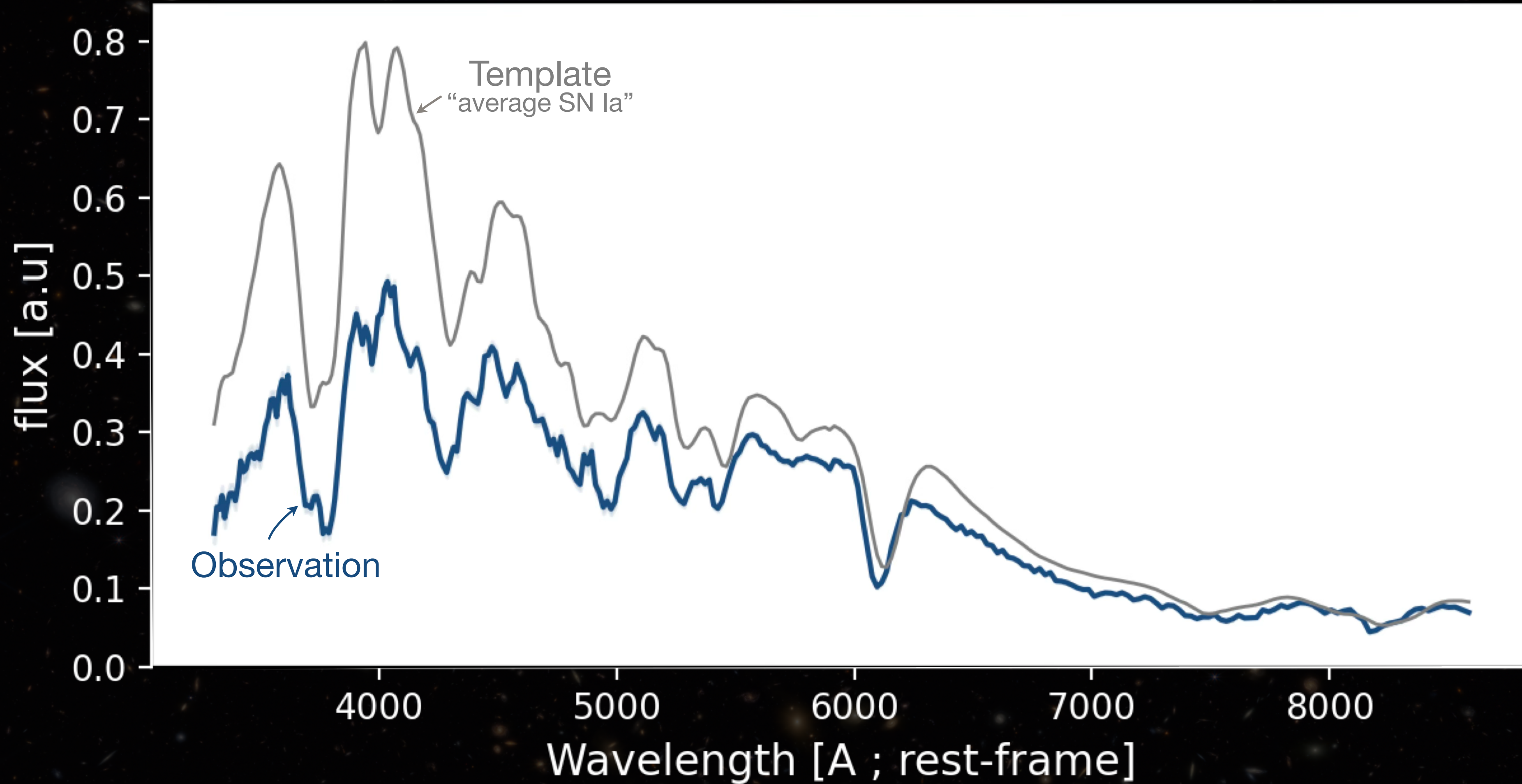






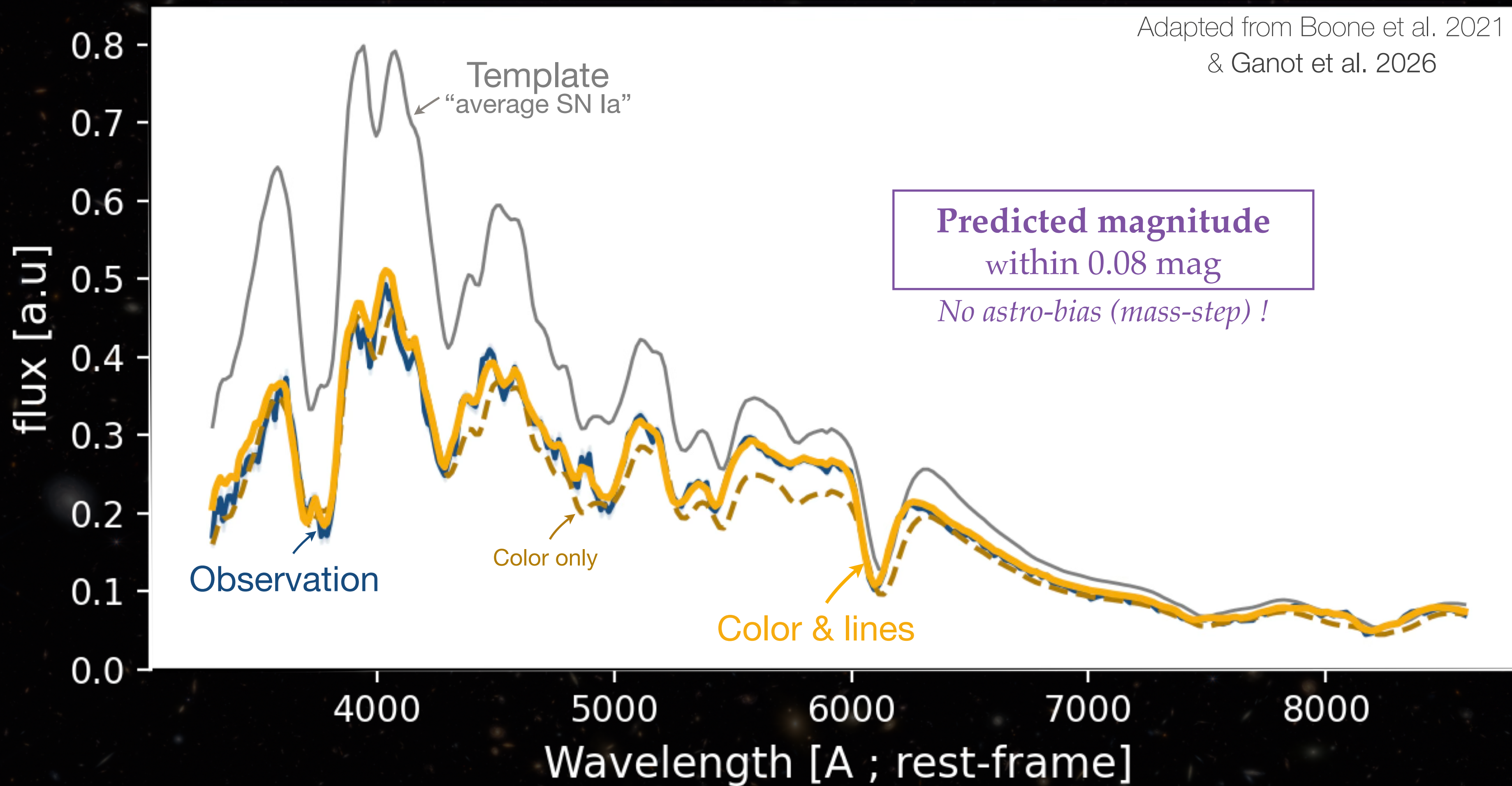
Type Ia Supernova ~~Lightcurve~~ standardisation

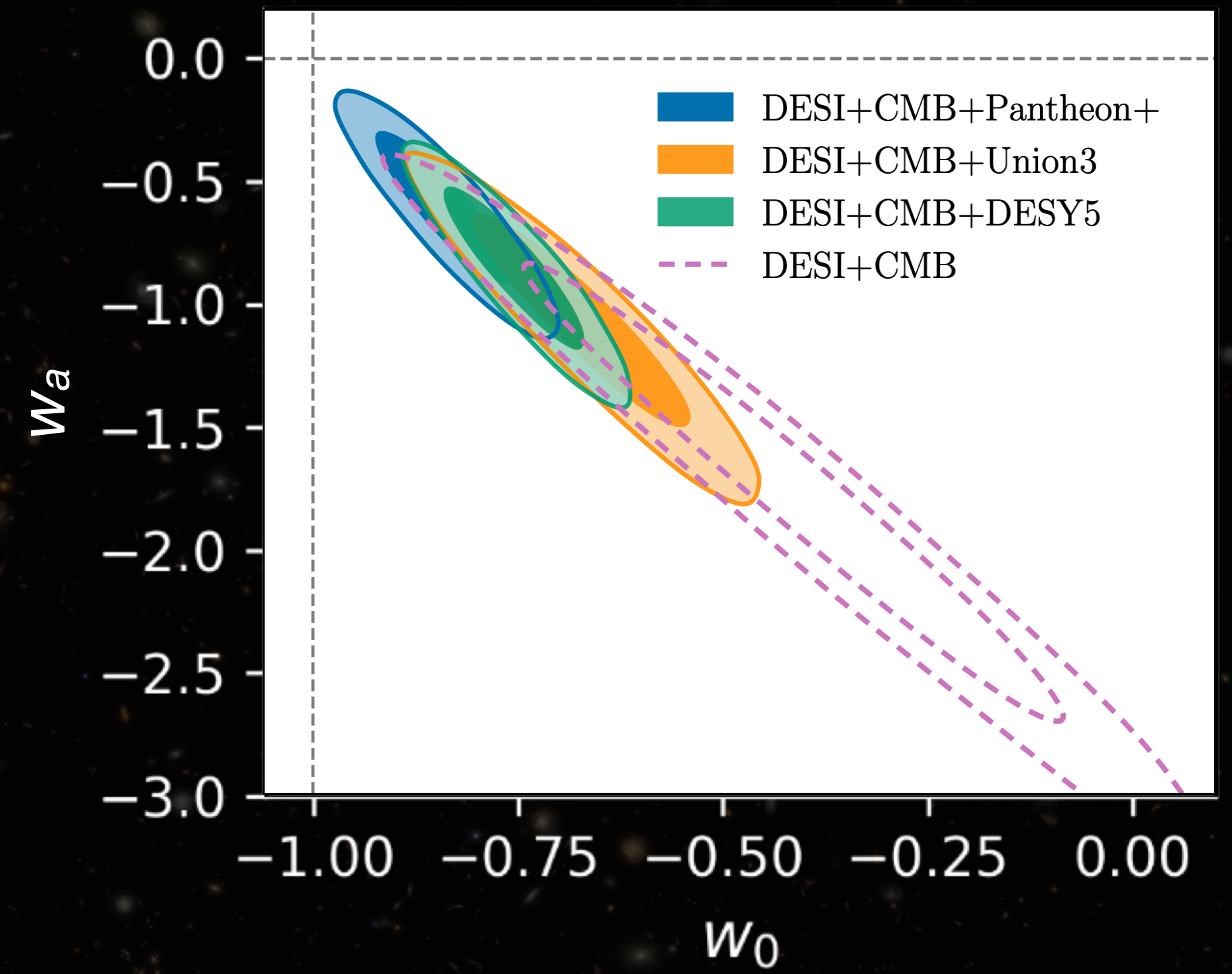
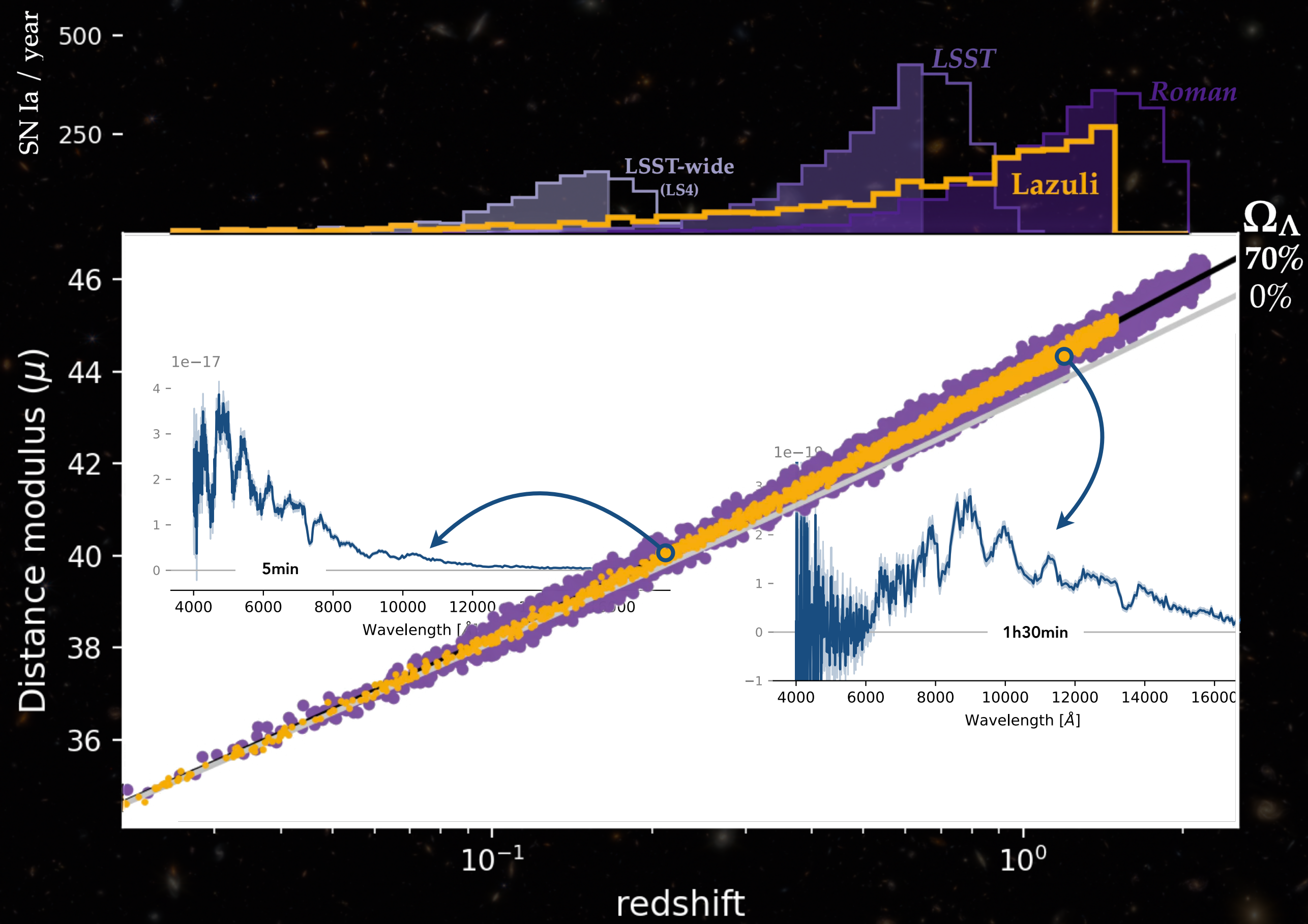
Spectroscopic

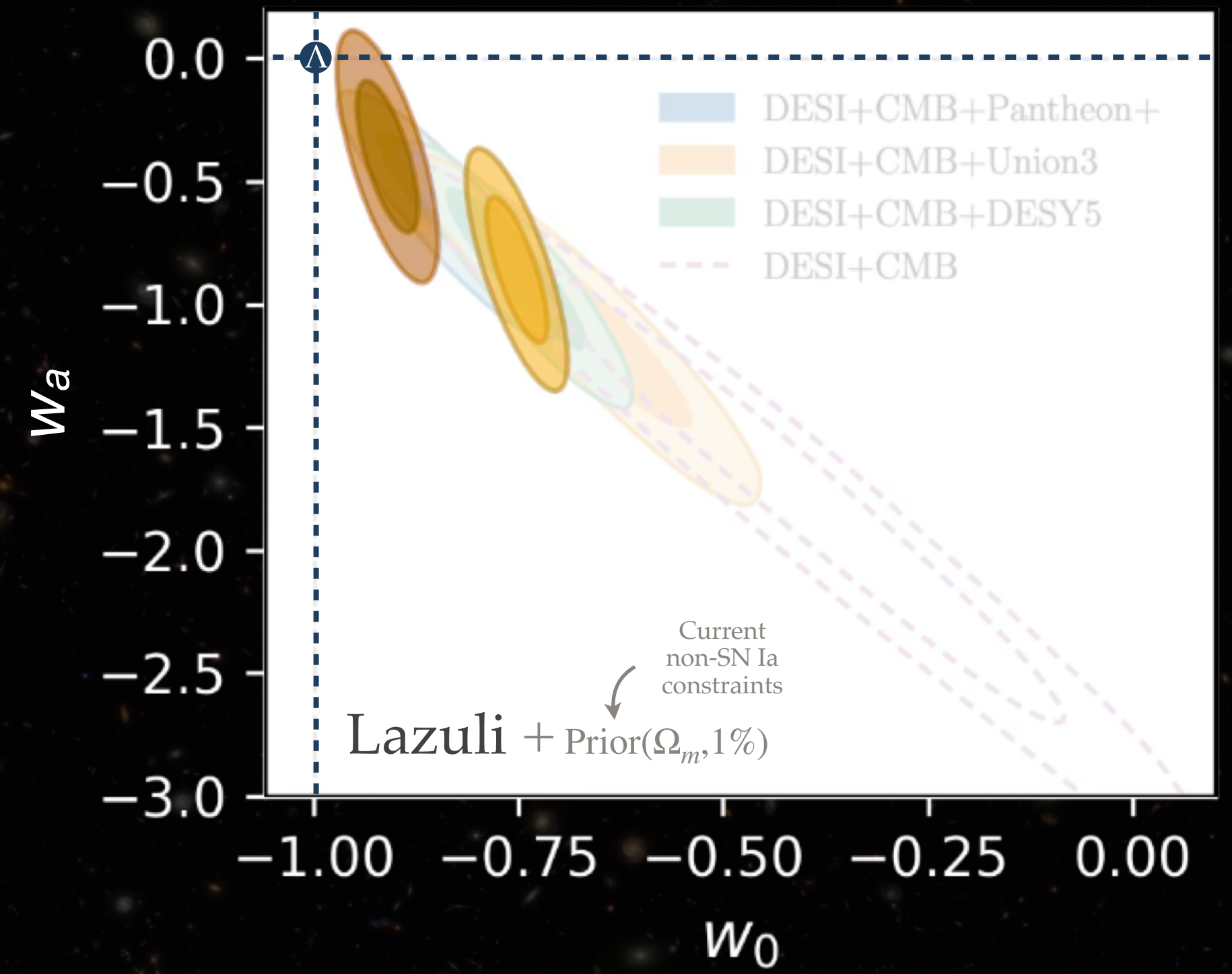
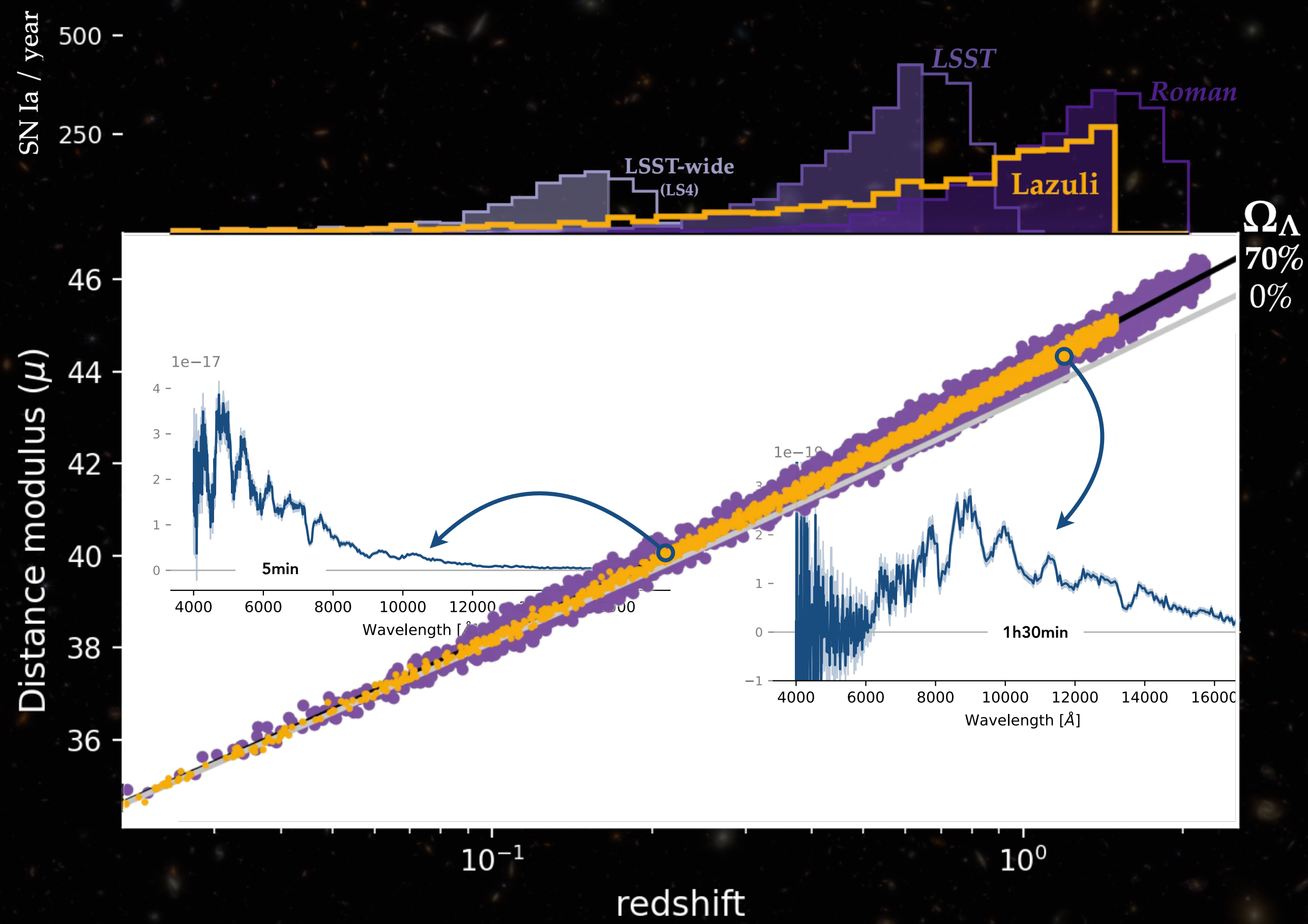


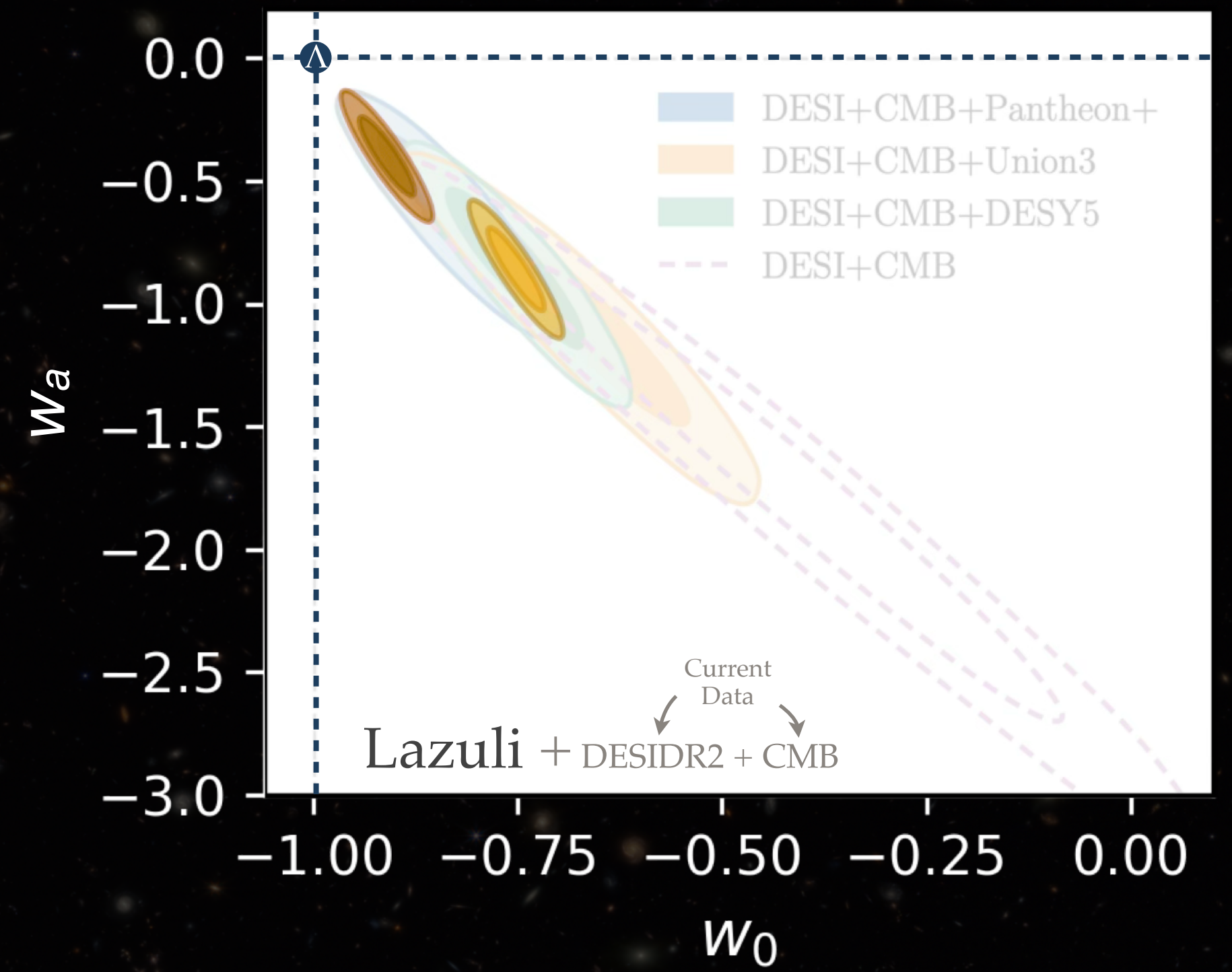
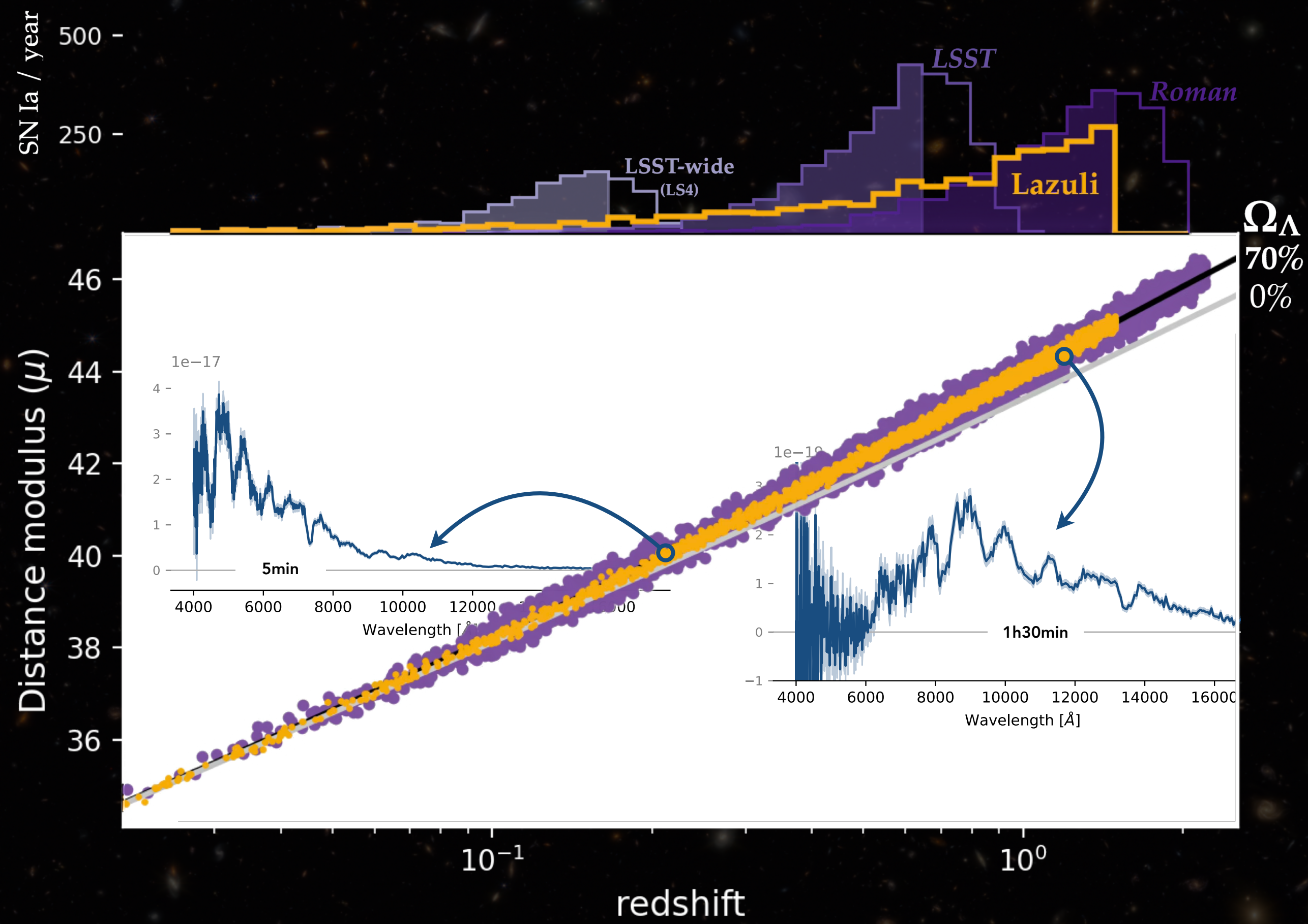
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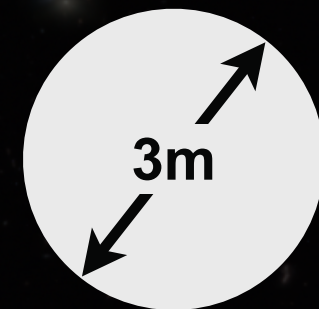
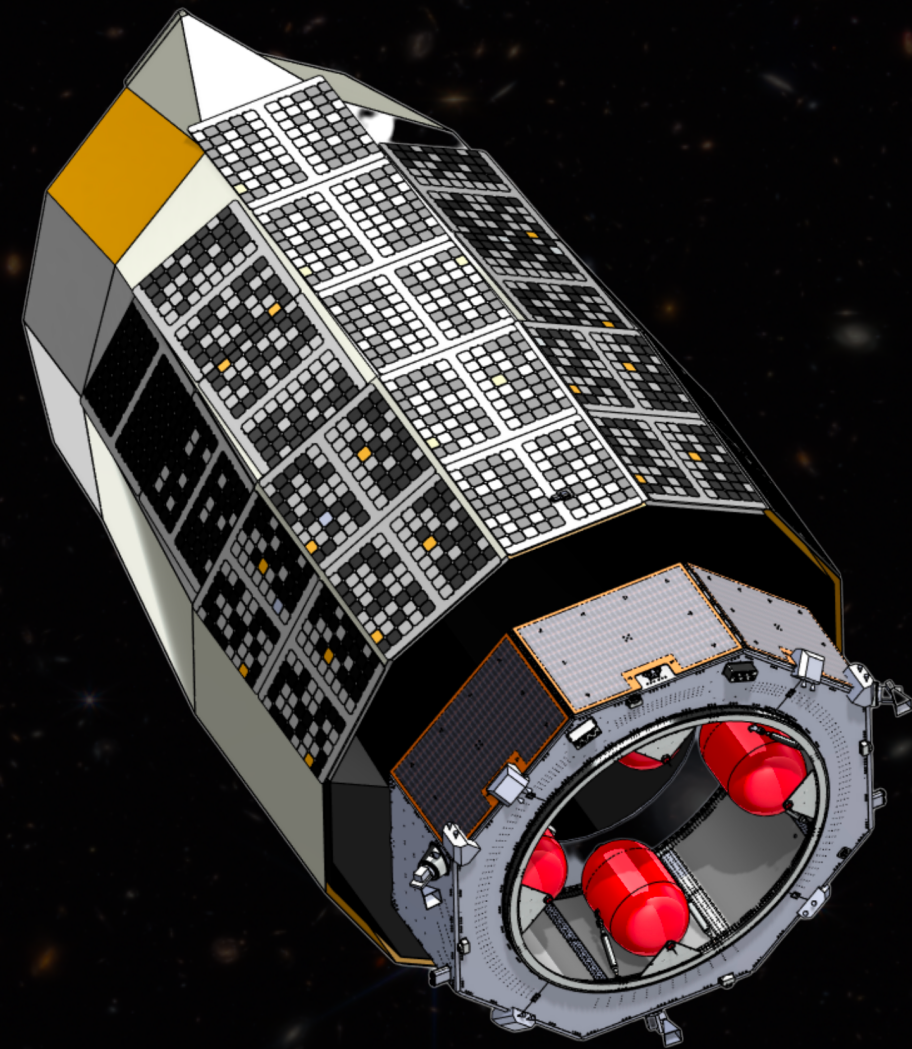


Schmidt Observatory System

Risk-tolerant innovations • open data & software • shared infrastructure • pure research facilities

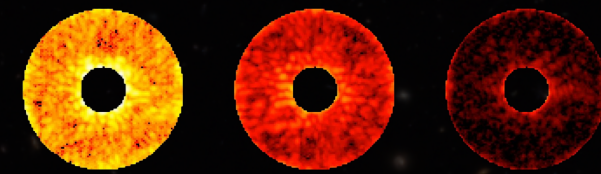
Lazuli

Roy et al. 2026

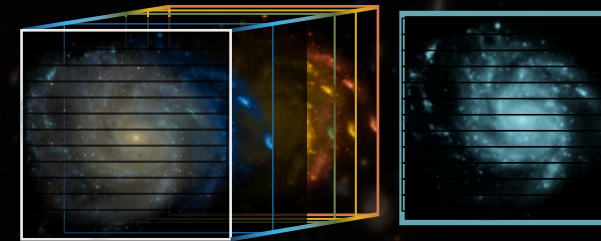


Fully field mirror

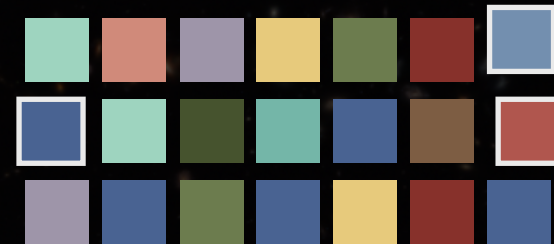
Extra Solar
Coronagraph



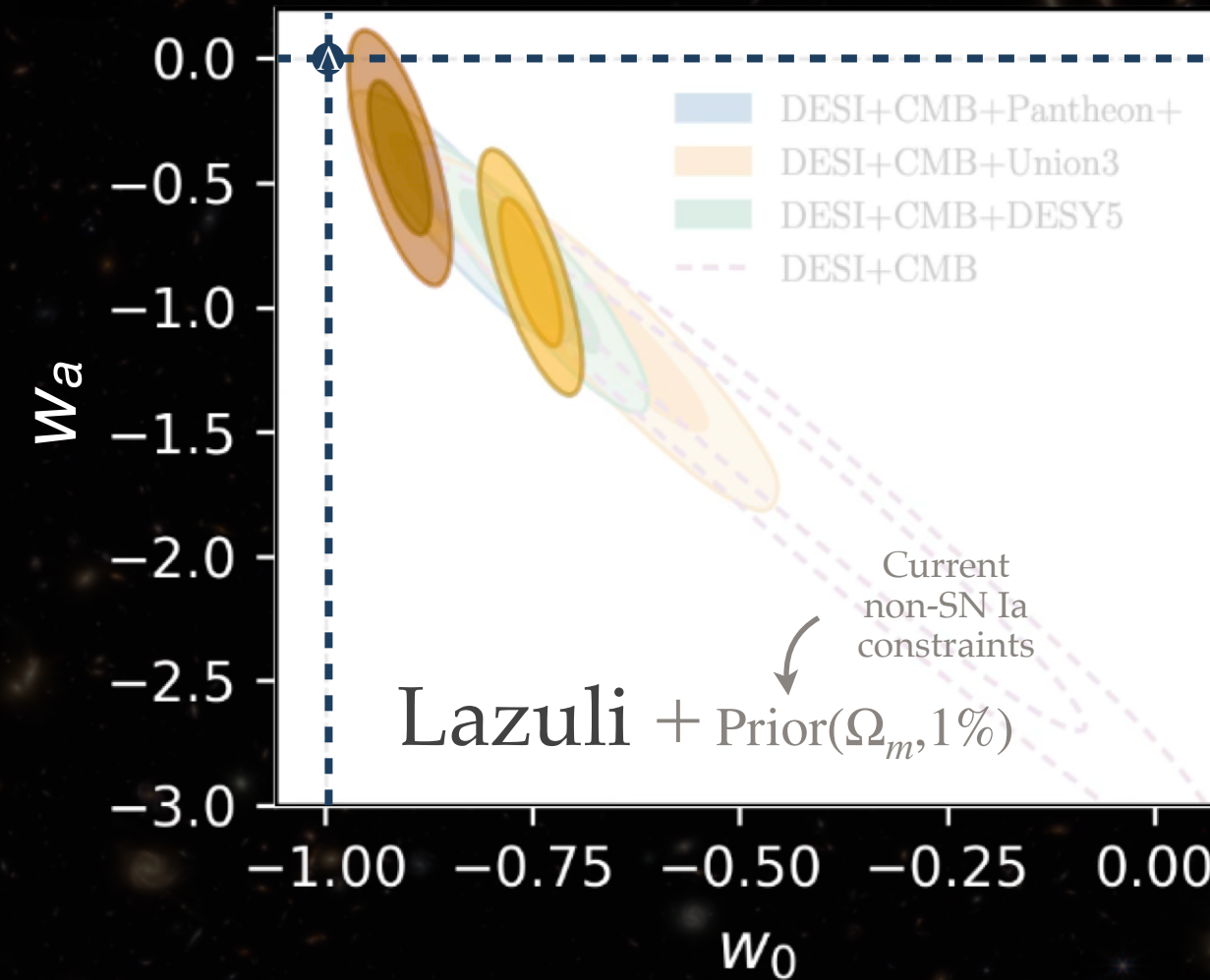
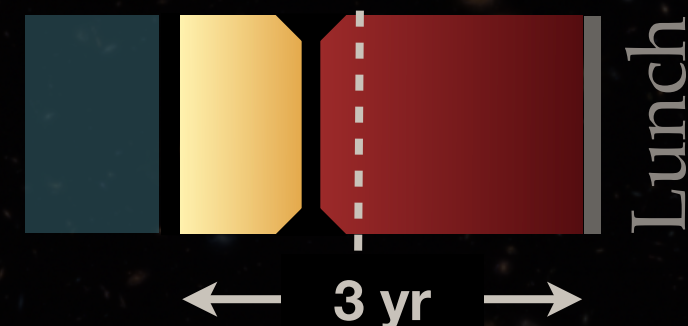
Integral Field
Spectrograph



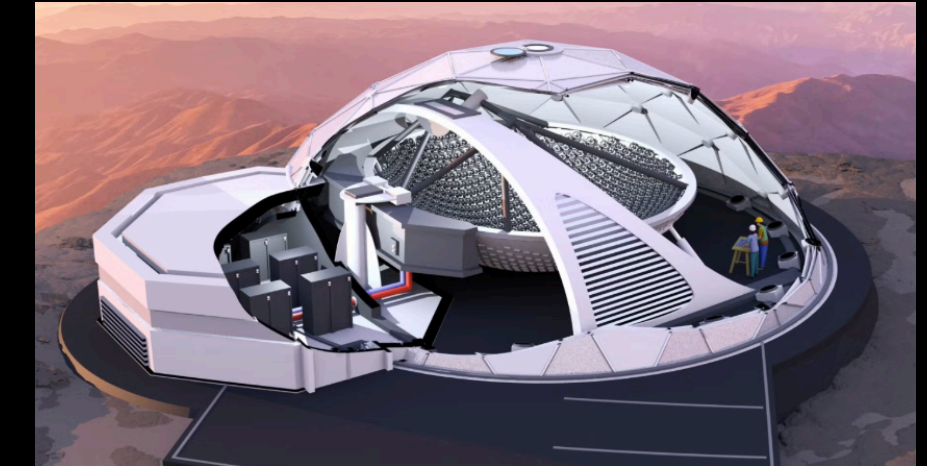
Widefield Context
Camera



Rapid response Optical-IR
Spectroscopy & photometry



8000 deg² at once
1min: 20mag | 1h: 22.3mag



ARGUS

Law et al. 2022

Large light-bucket
for spectroscopy



L-FAST

Berkson et al. 2024

A Radio Survey Camera
3.3" resolution (0.7–2 GHz)



DSA

Hallinan et al. 2019

side note

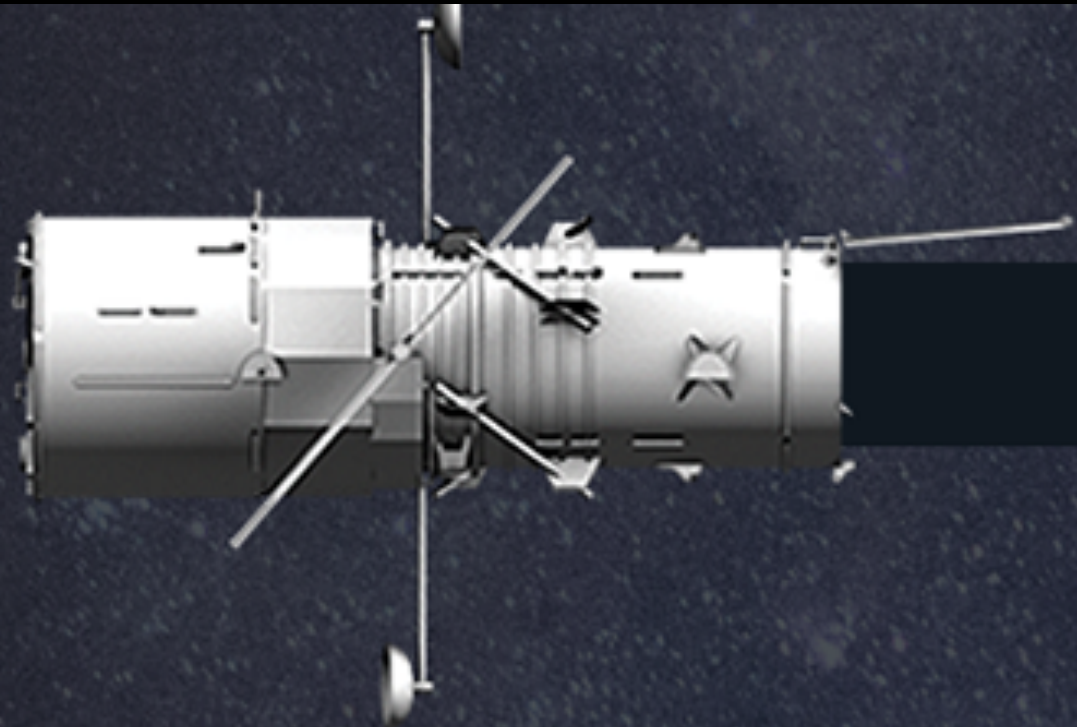
interesting prospects for the future of astronomy



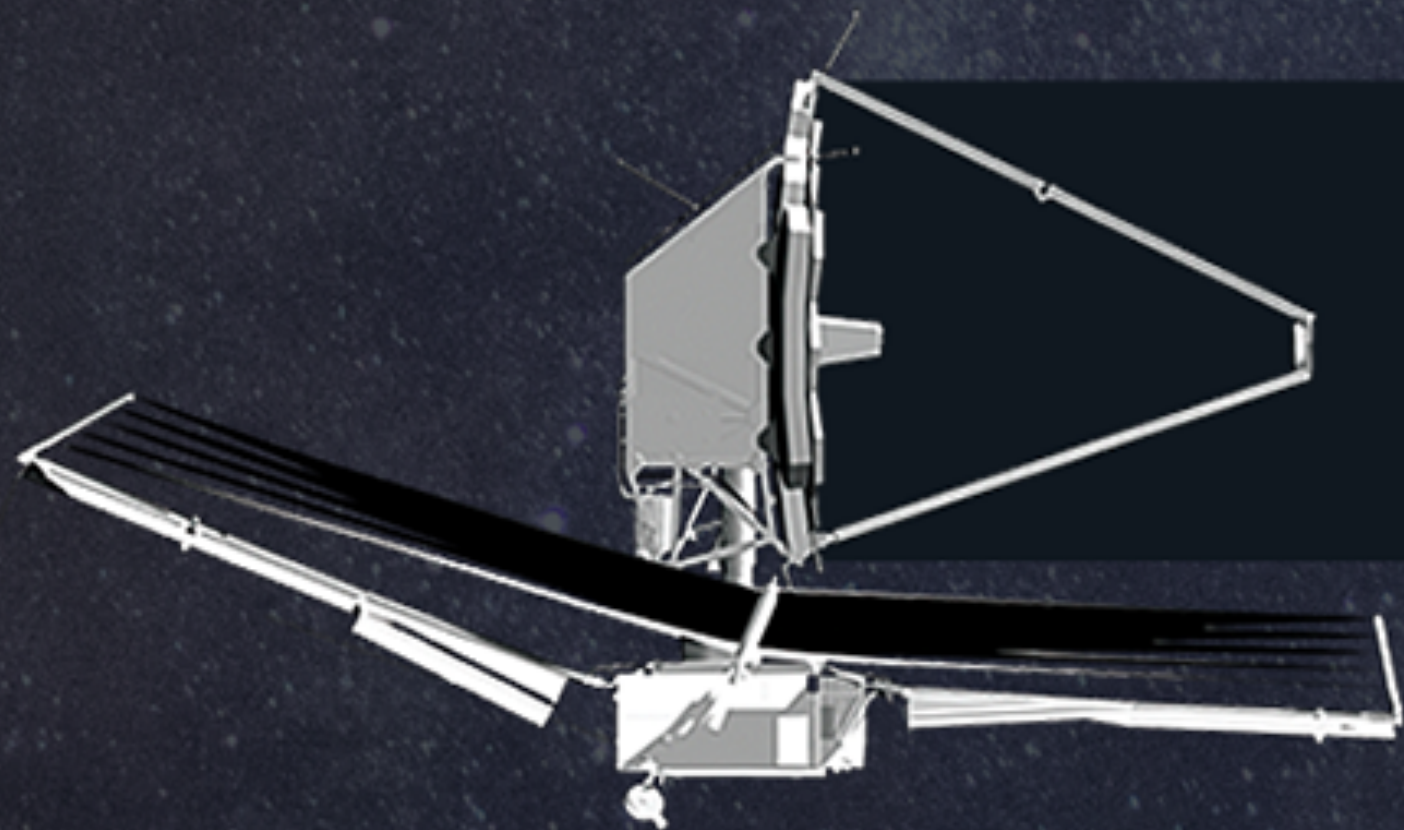
121 m

9 m



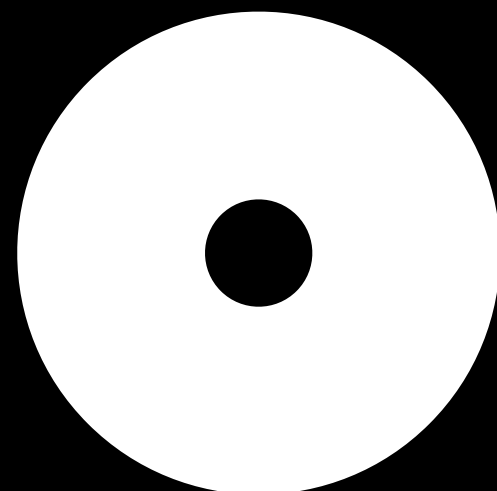


Hubble
2.4 meters

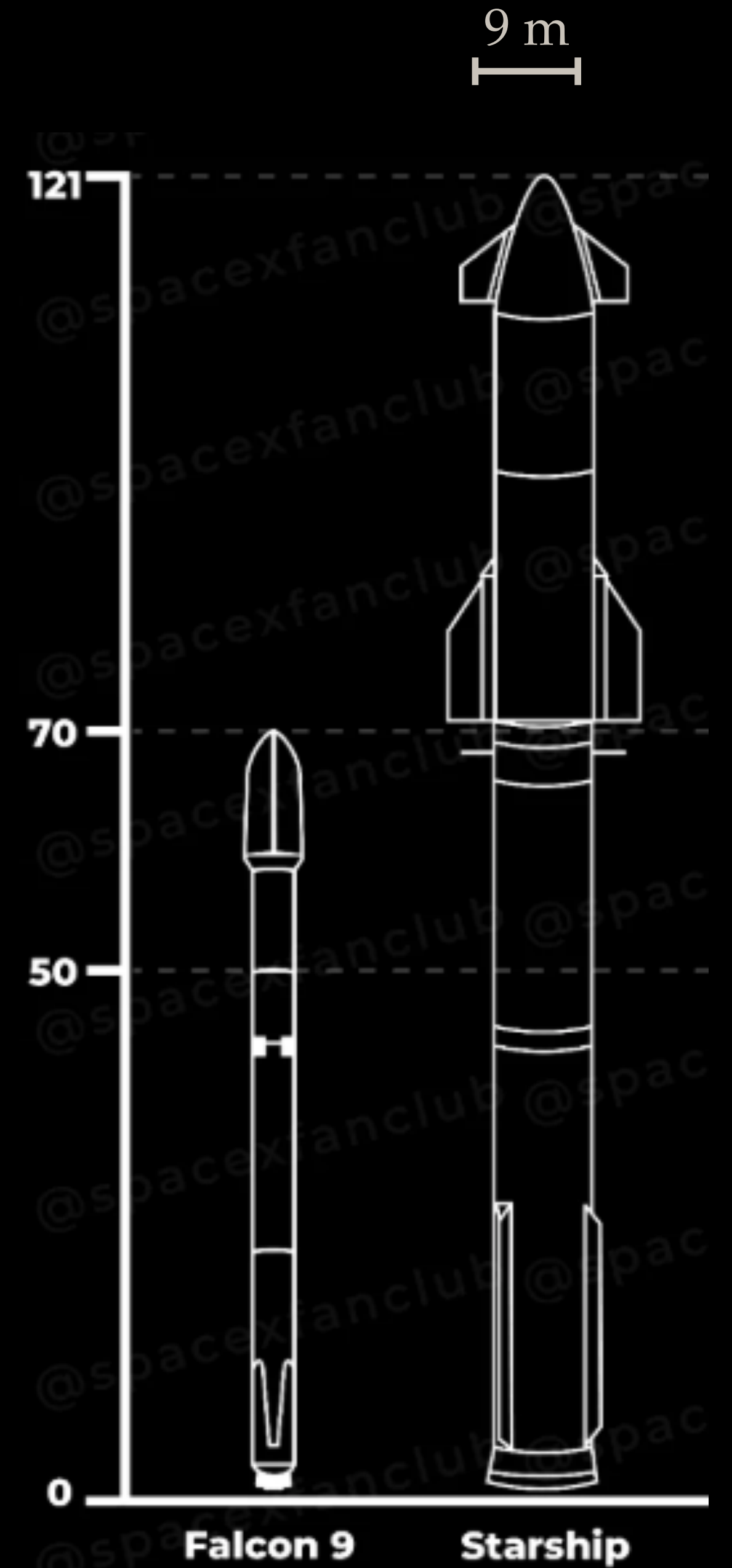


Webb
6.6 meters

This fits in
a starship



6.5 meters



(End of side note)