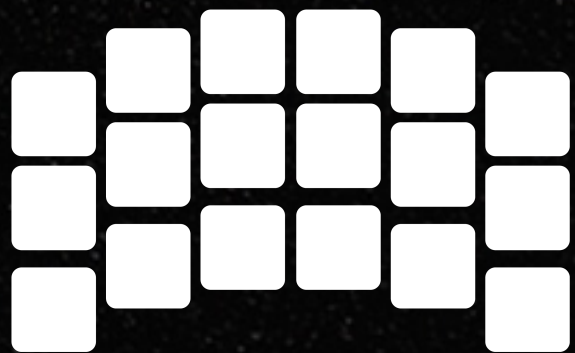
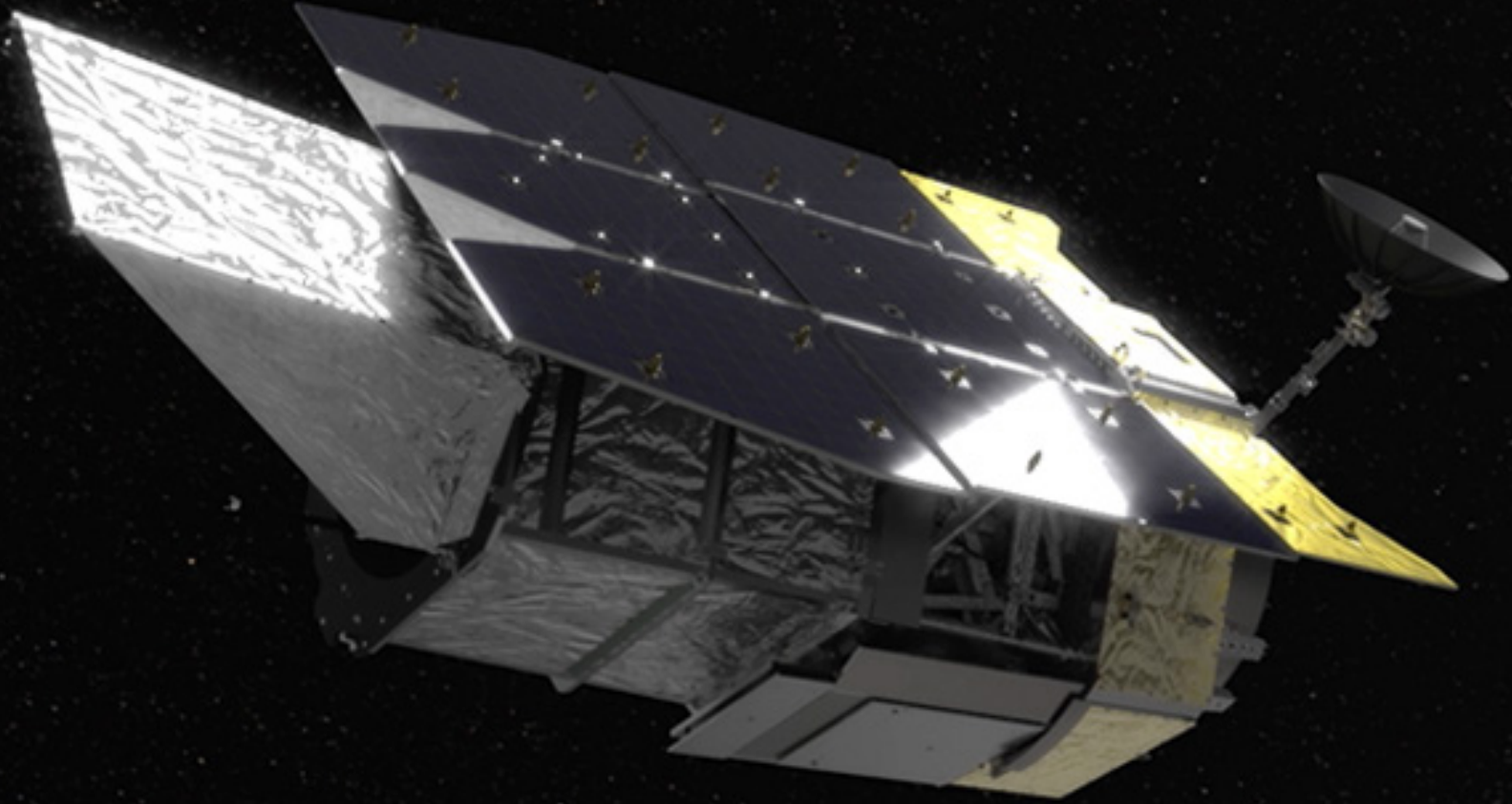




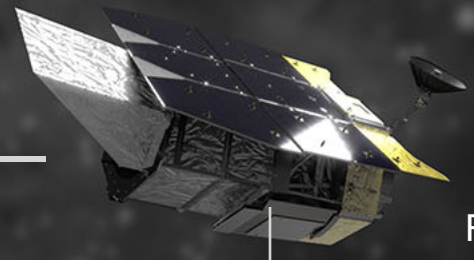
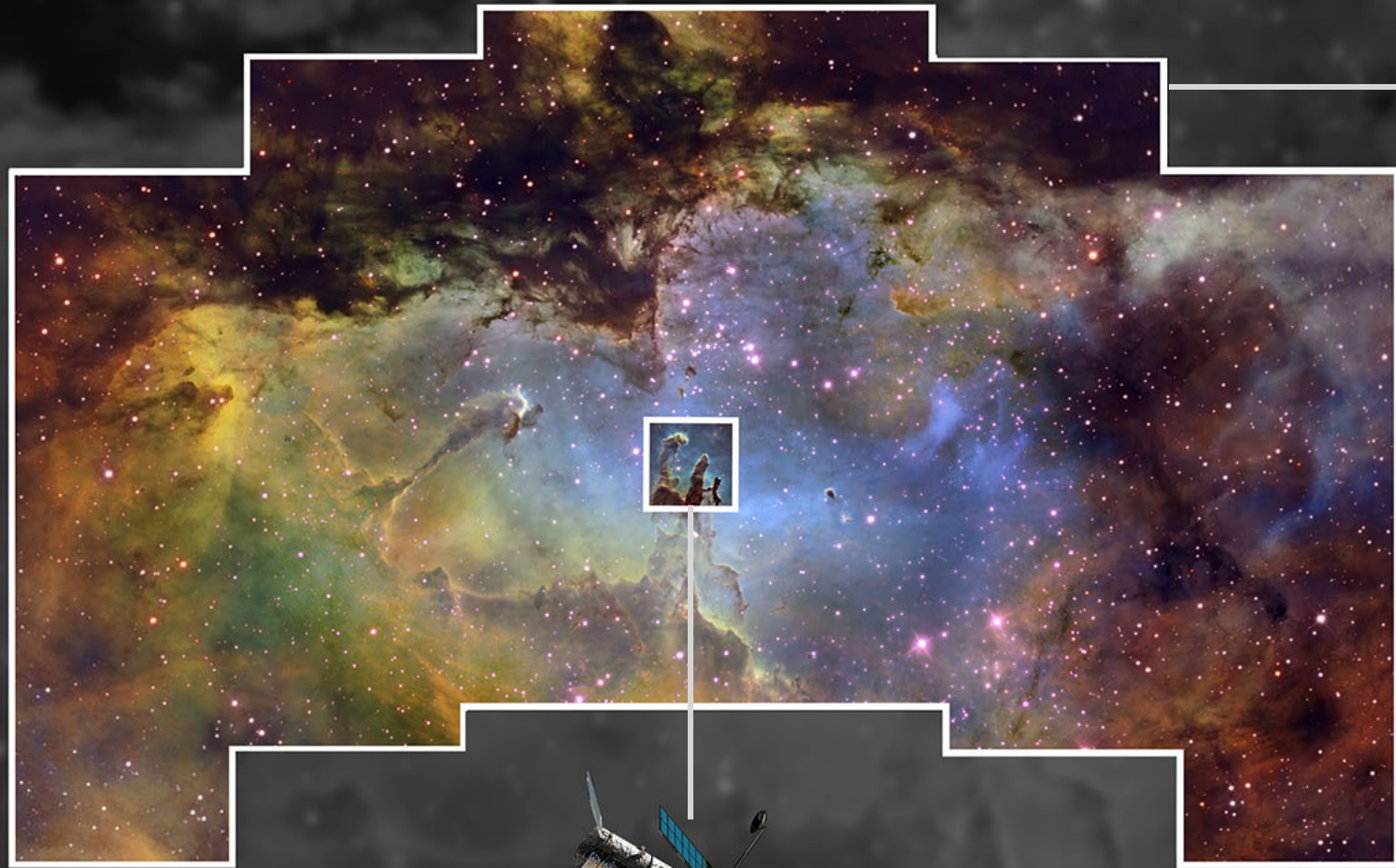
NANCY GRACE  
**R.ÖMAN**



SPACE TELESCOPE



EXPANDING OUR VIEW



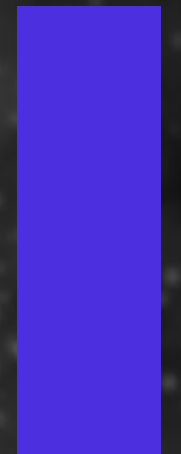
ROMAN

# The Bigger Picture

100x FIELD OF VIEW OF HUBBLE



HUBBLE



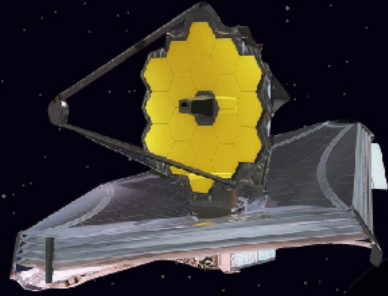
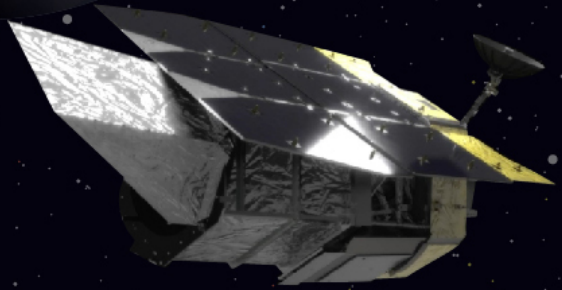
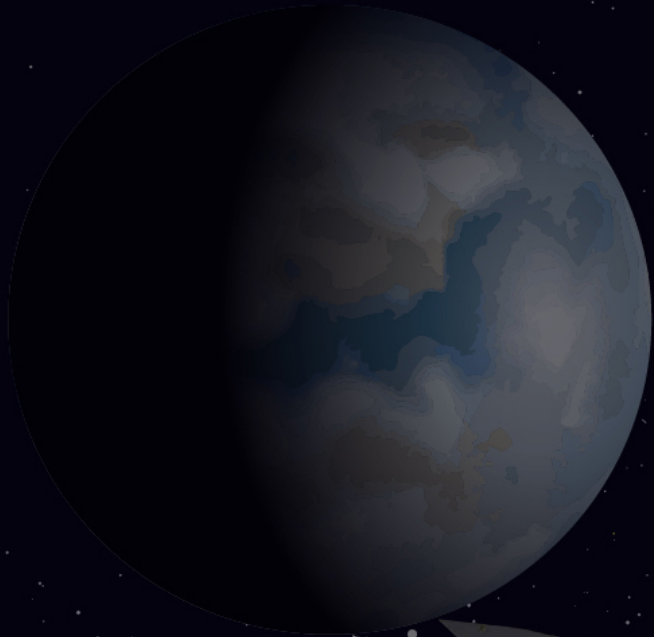




# Nancy Grace Roman

NASA's First Chief of Astronomy

1925–2018



**mid-2020s**  
**ROMAN**

**2021**  
**WEBB**

**2003**  
**SPITZER**

**1999**  
**CHANDRA**

**1990**  
**HUBBLE**

*"Scientific research and engineering is a continuous series of solving puzzles."*

-Nancy Grace Roman

**U.S. Astrophysics Planning**



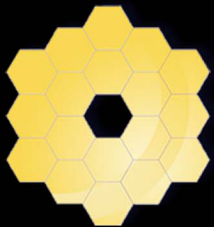
# MIRRORS



HUBBLE

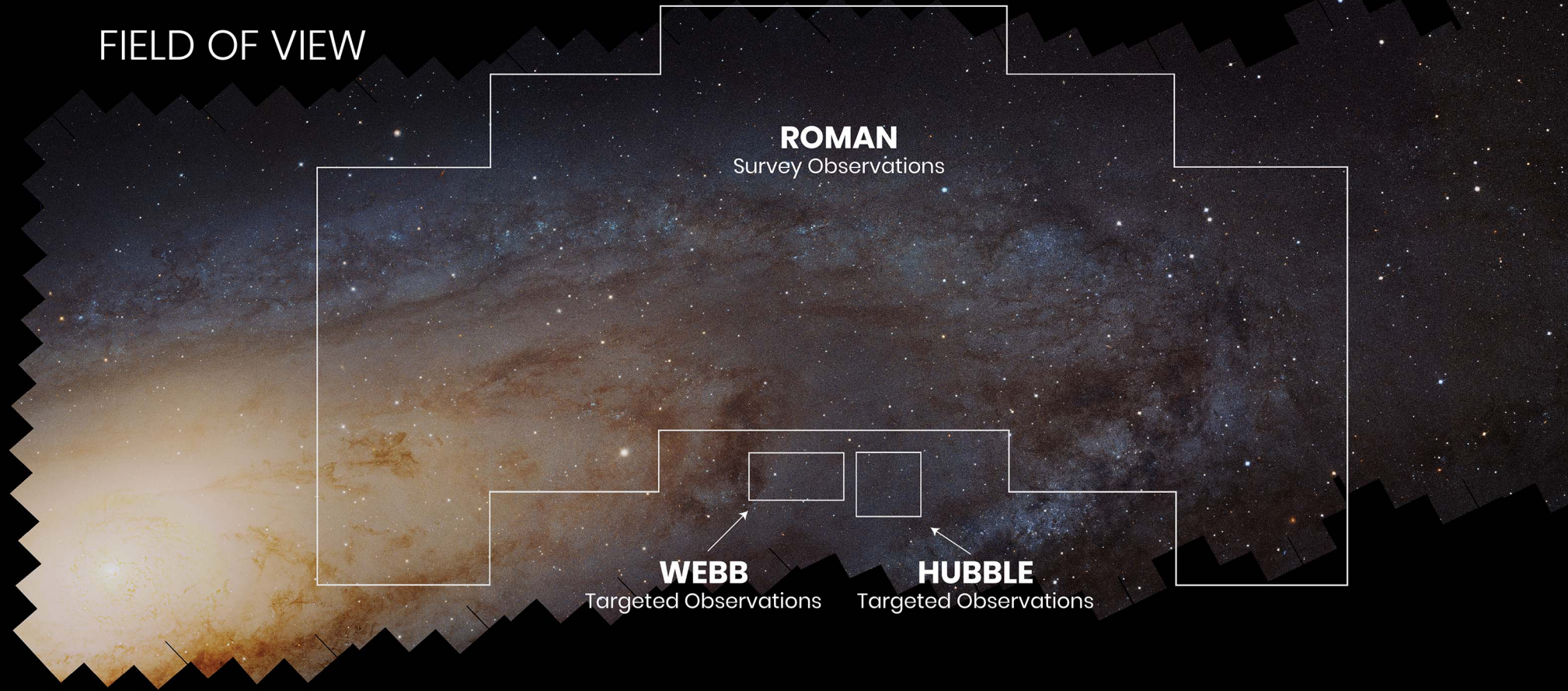


ROMAN

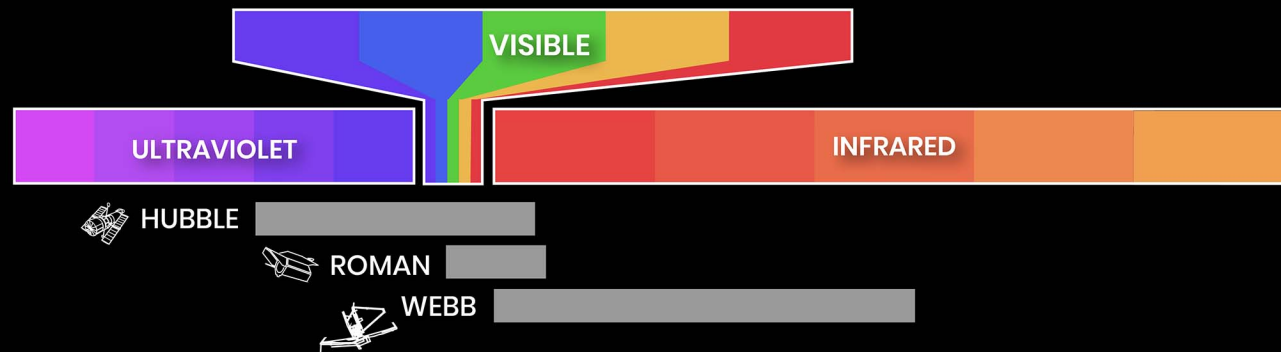


WEBB

# FIELD OF VIEW



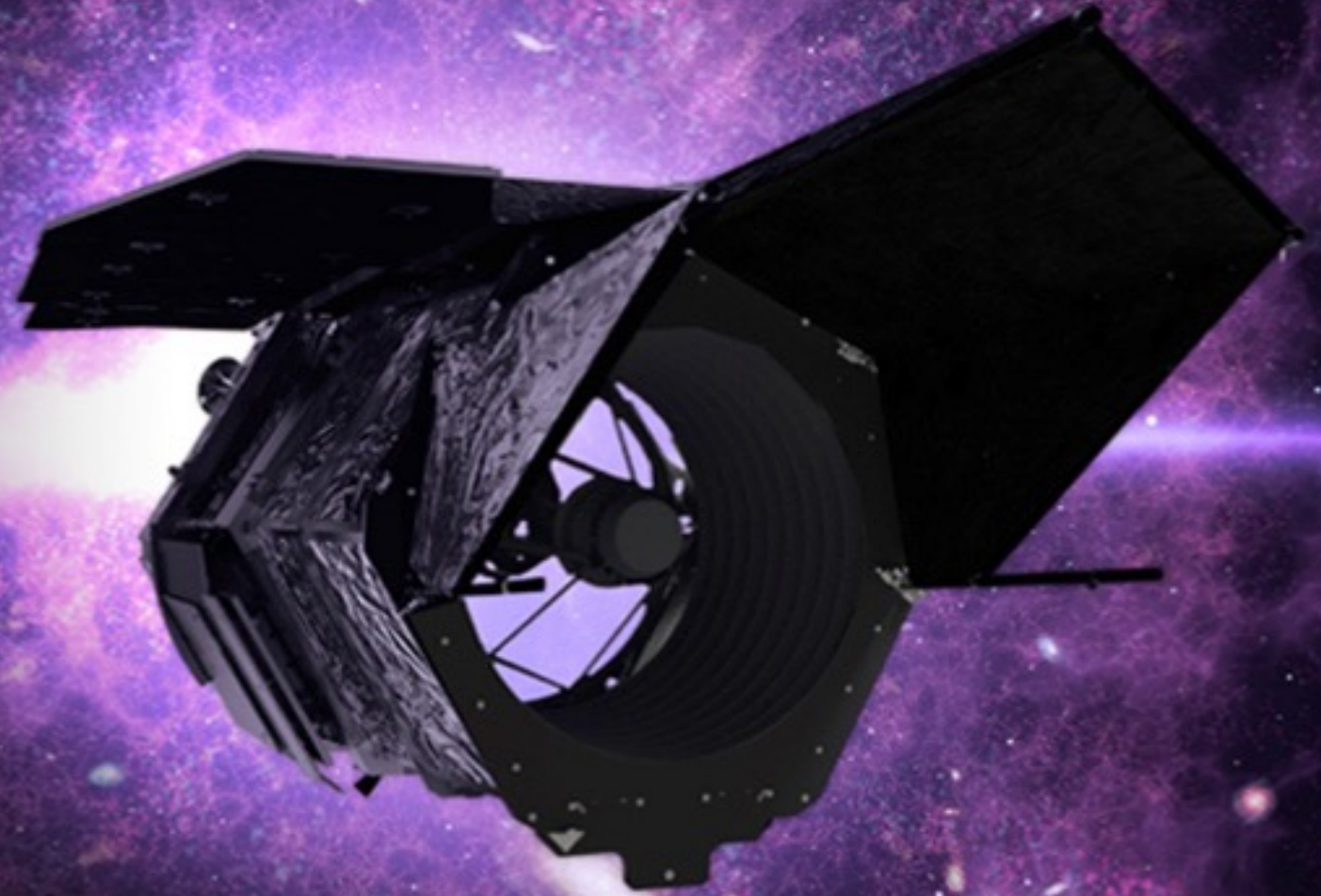
# WAVELENGTH



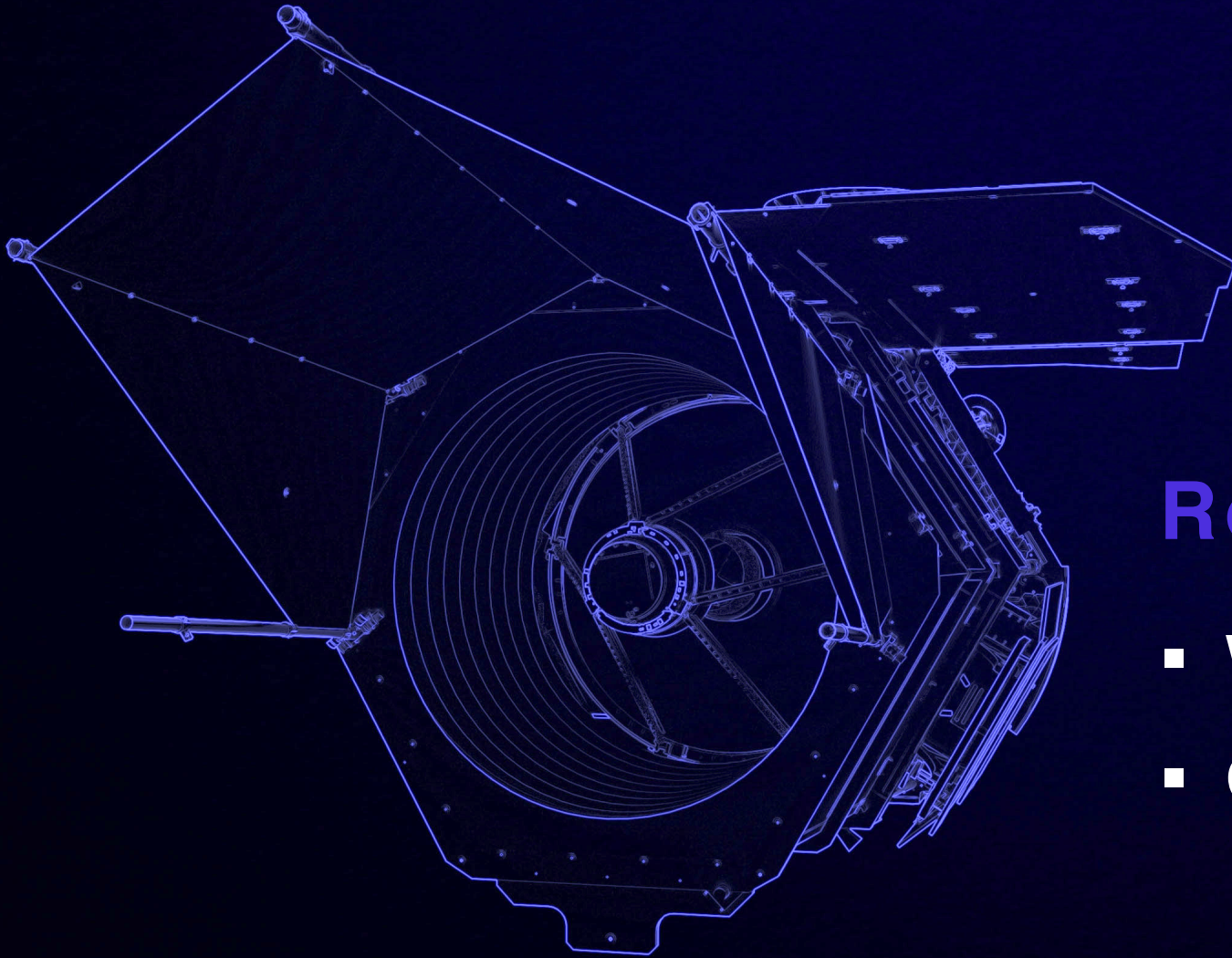


## Roman Facts & Figures

- Mid-2020s launch
- 300-megapixel camera
- 1 advanced coronagraph
- 5-year minimum mission
- 930,000 miles (1.5 million km) from Earth
- 410 lbs (186 kilograms) primary mirror



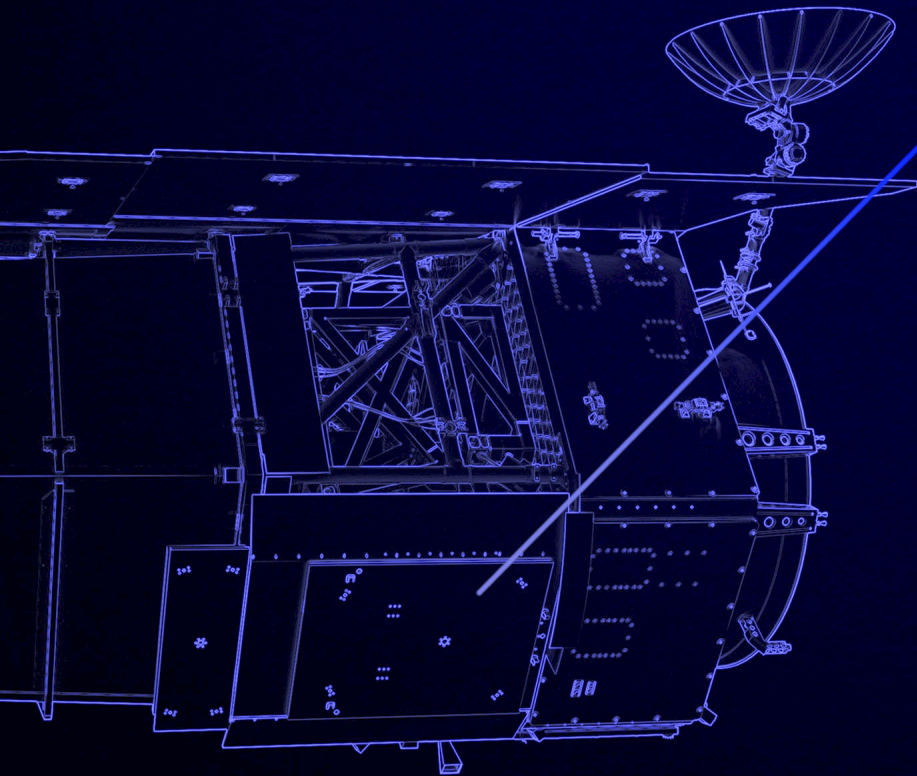




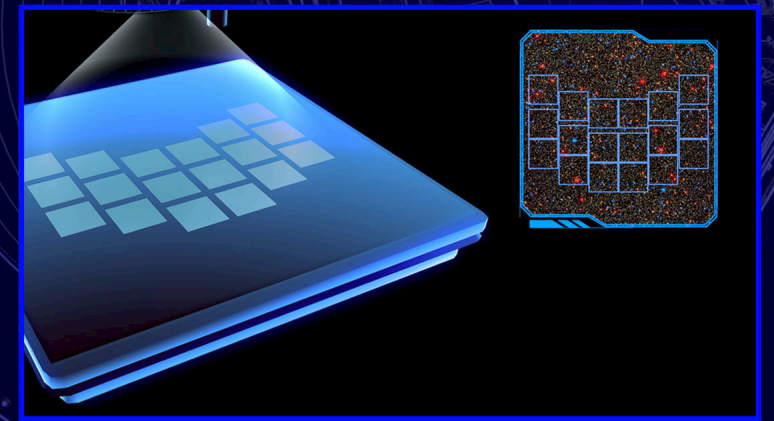
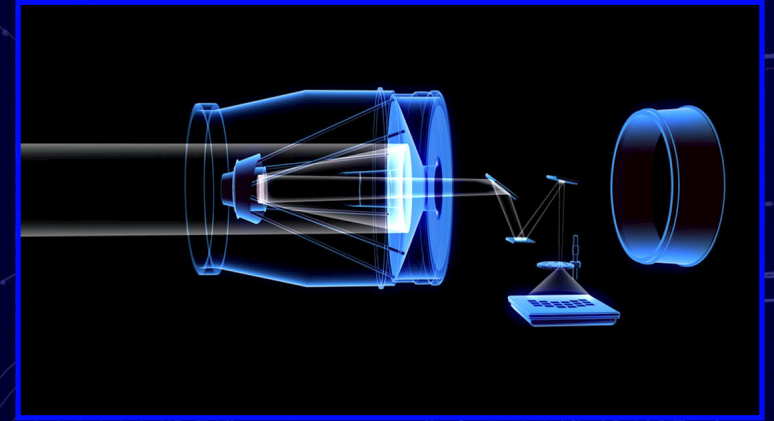
## Roman Instruments

- Wide Field Instrument
- Coronagraph Instrument

# WIDE FIELD INSTRUMENT



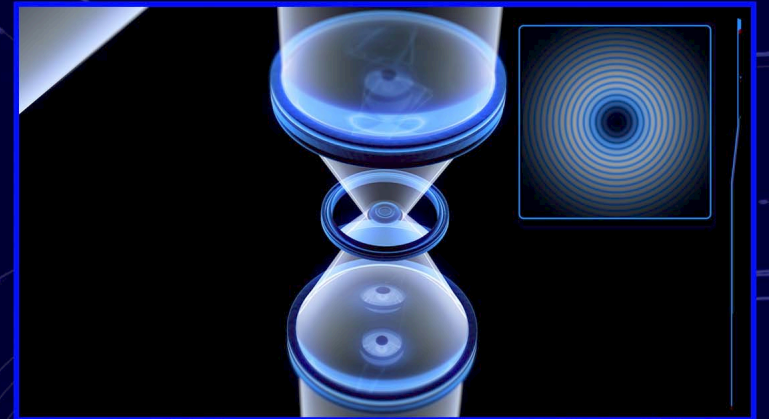
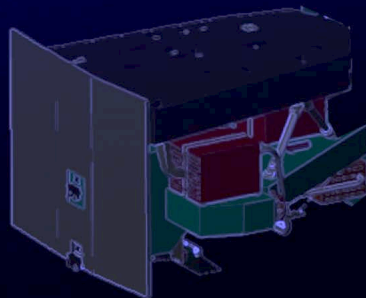
- Survey-style observations
- 18 near-infrared light detectors
- 300-megapixel camera
- 100x Hubble's field of view
- 2 spectroscopic capabilities





# CORONAGRAPH INSTRUMENT

- Technology demonstration
- First-of-its-kind design in space
- Direct detection of faint exoplanets







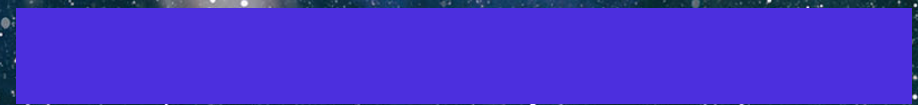
**SCIENCE  
WITH  
ROMAN**





# Planets

by the thousands





The full spectrum of  
**EXOPLANET DIVERSITY**



Planets by  
the thousands



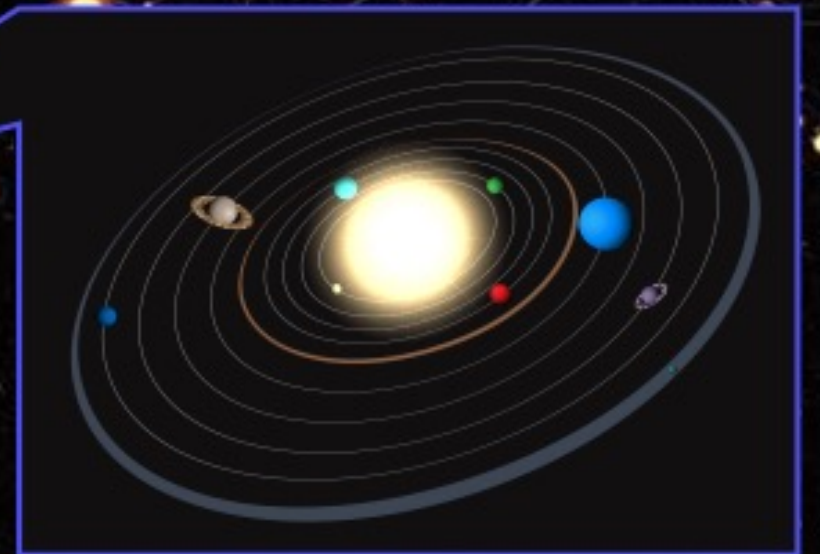
Stars by  
the billions



Galaxies by  
the millions



Fundamental  
physics







Planets by  
the thousands



Stars by  
the billions

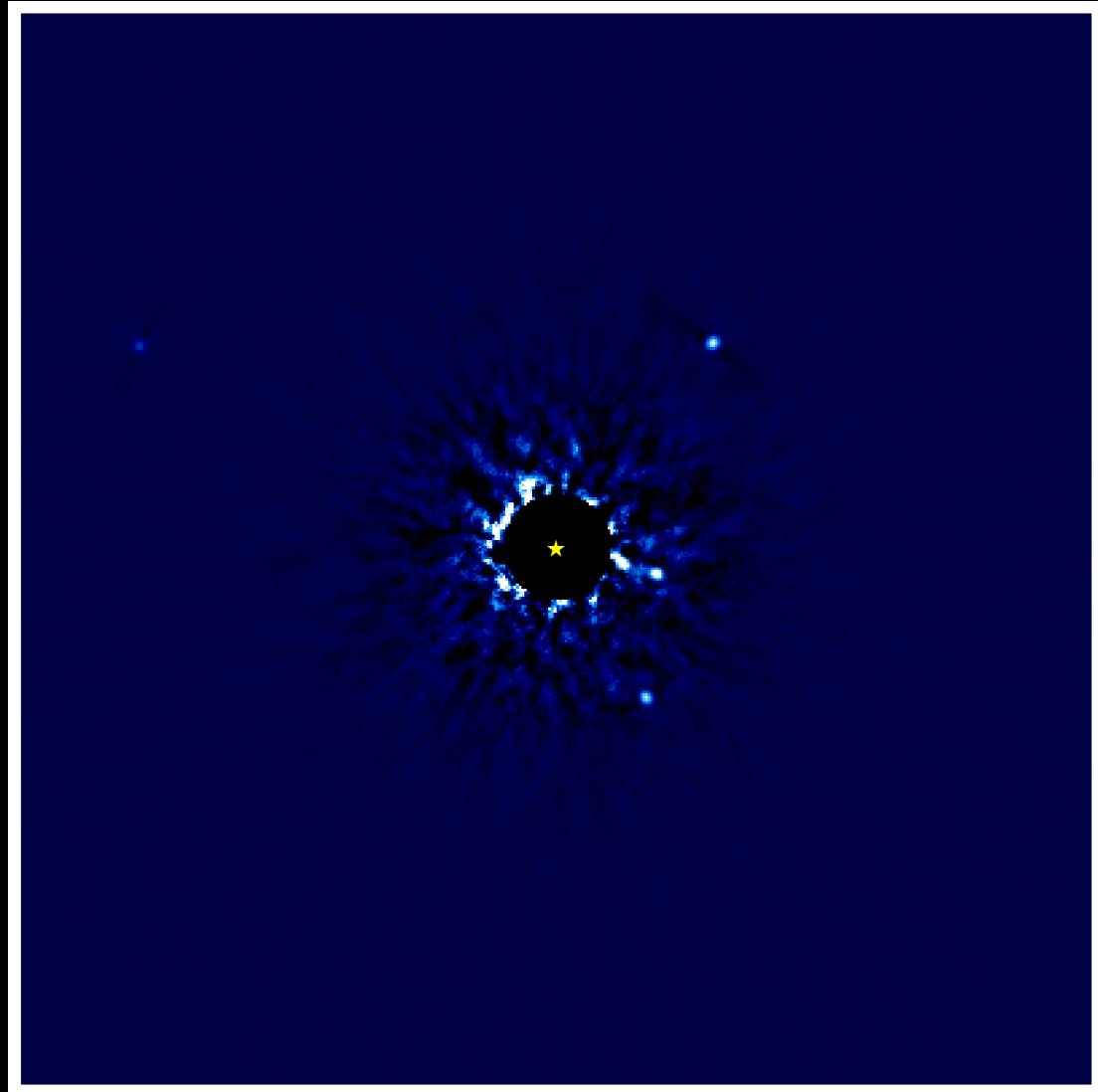


Galaxies by  
the millions



Fundamental  
physics

Advancing planet-detection  
technology





Planets by  
the thousands



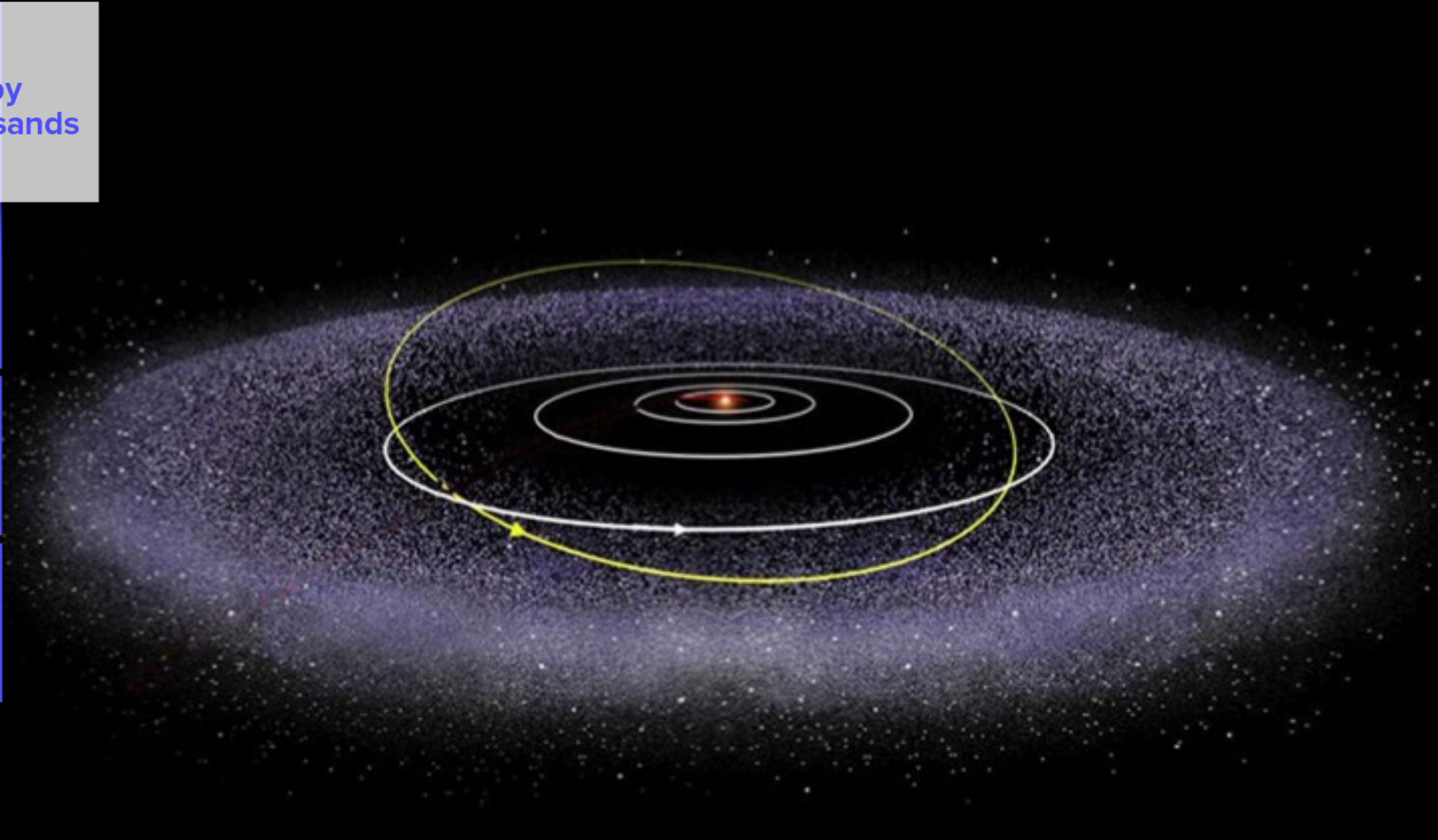
Stars by  
the billions



Galaxies by  
the millions



Fundamental  
physics



Our cosmic neighborhood



A long-exposure photograph of a starry night sky, showing numerous curved star trails in shades of blue, cyan, and white, creating a sense of motion and depth. The trails are most prominent in the lower-left and upper-right quadrants, curving towards the center.

# Stars

by the billions

A solid, horizontal purple bar that spans the width of the text area below the subtitle.





Planets by  
the thousands



Stars by  
the billions

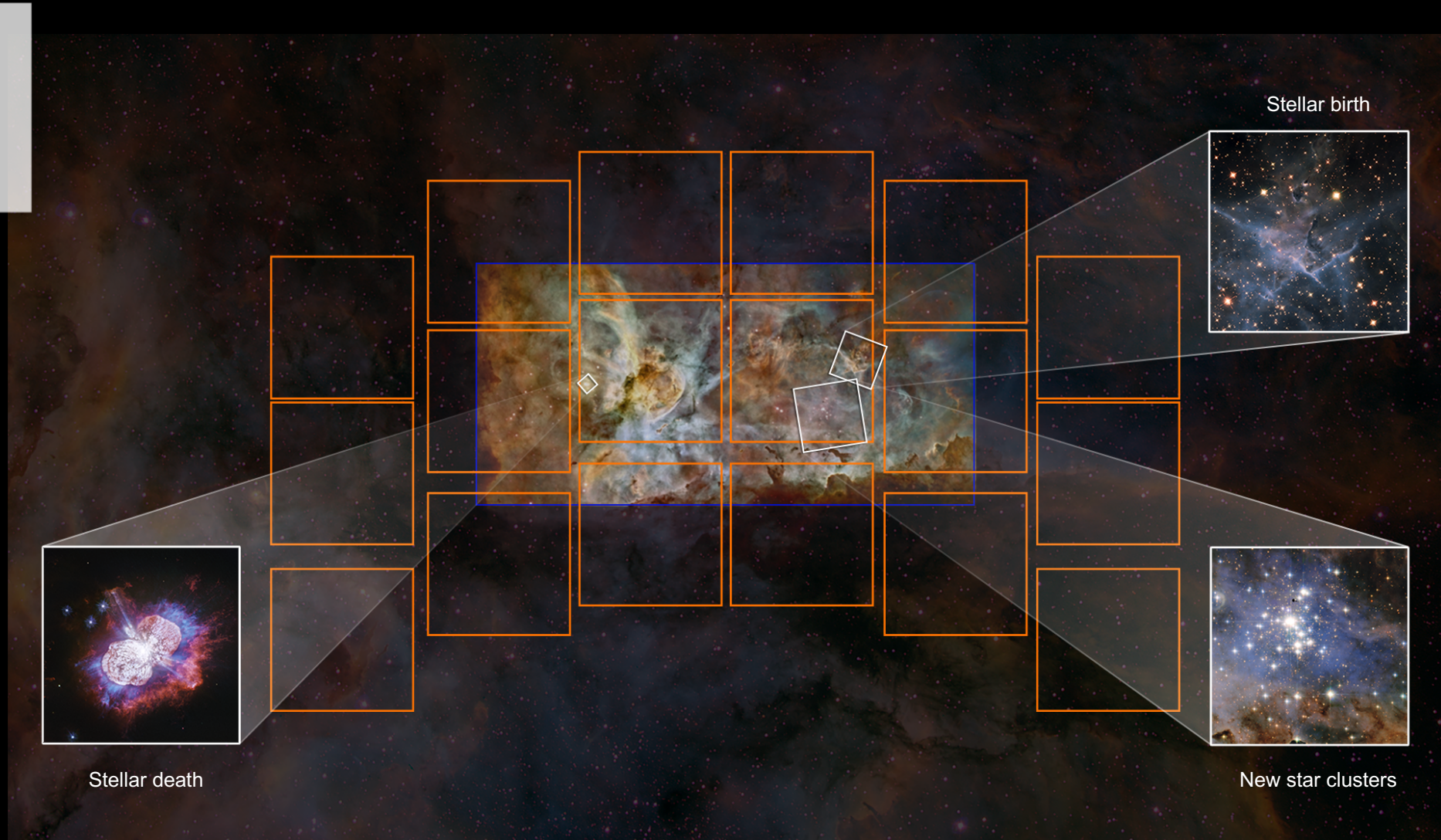


Galaxies by  
the millions



Fundamental  
physics

# The Stellar Lifecycle in a Snapshot







Planets by  
the thousands



Stars by  
the billions



Galaxies by  
the millions



Fundamental  
physics

**The crowded core**  
of the Milky Way galaxy





Planets by  
the thousands



Stars by  
the billions

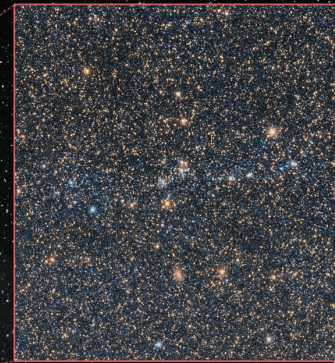
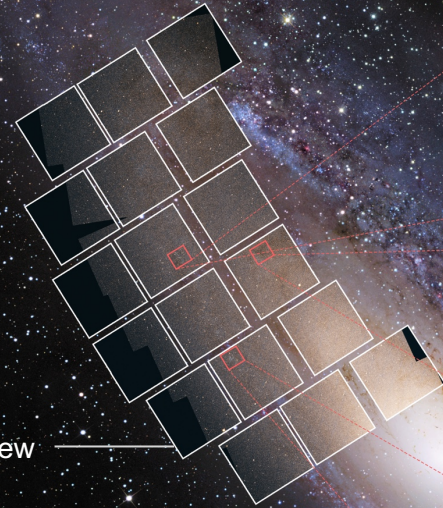


Galaxies by  
the millions



Fundamental  
physics

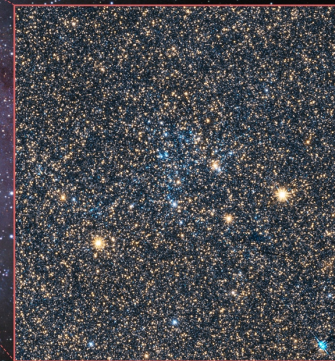
Roman field of view



star cluster and  
background galaxy

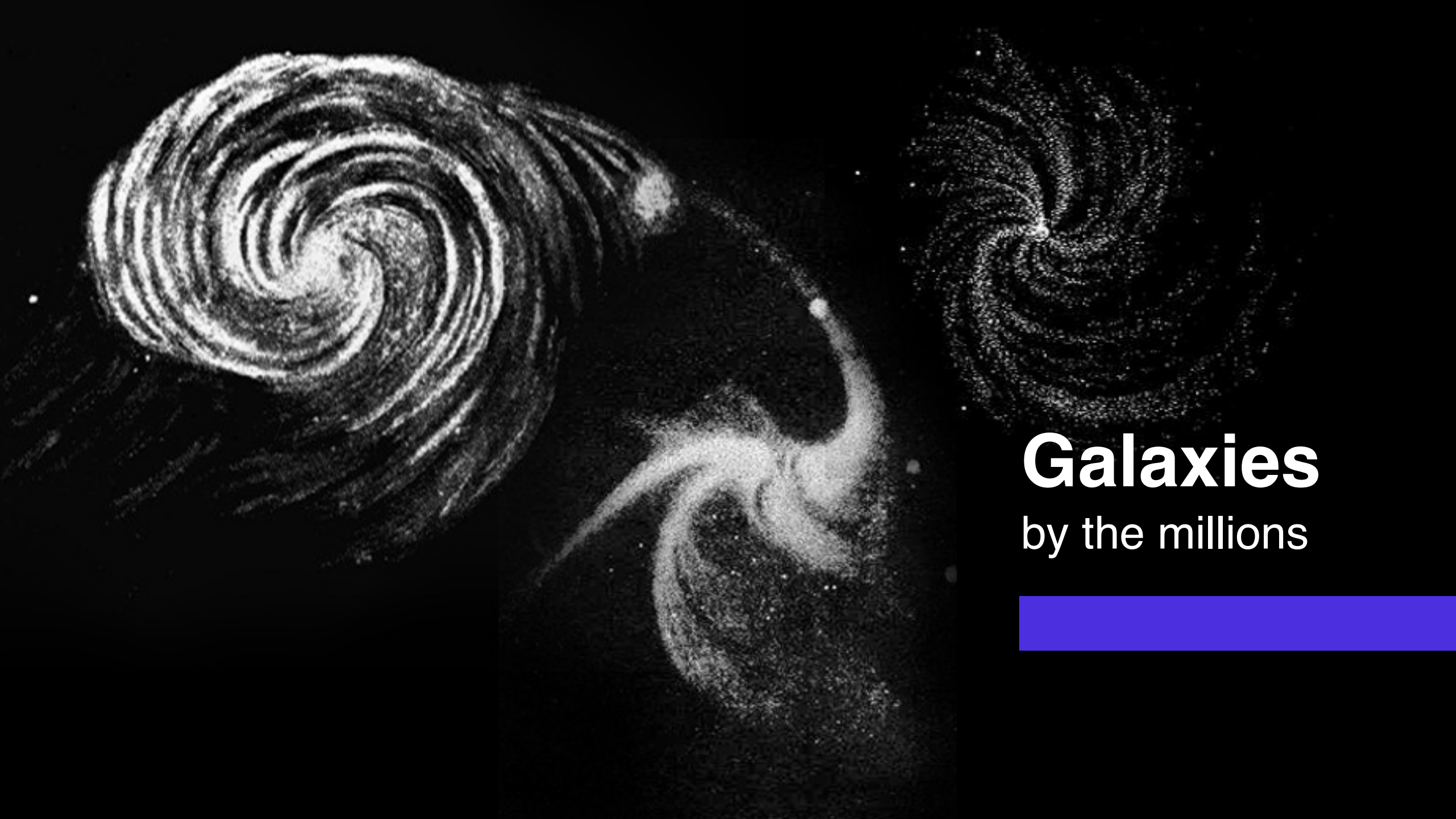


dust cloud



young star cluster





# Galaxies

by the millions







Planets by the thousands



Stars by the billions



Galaxies by the millions



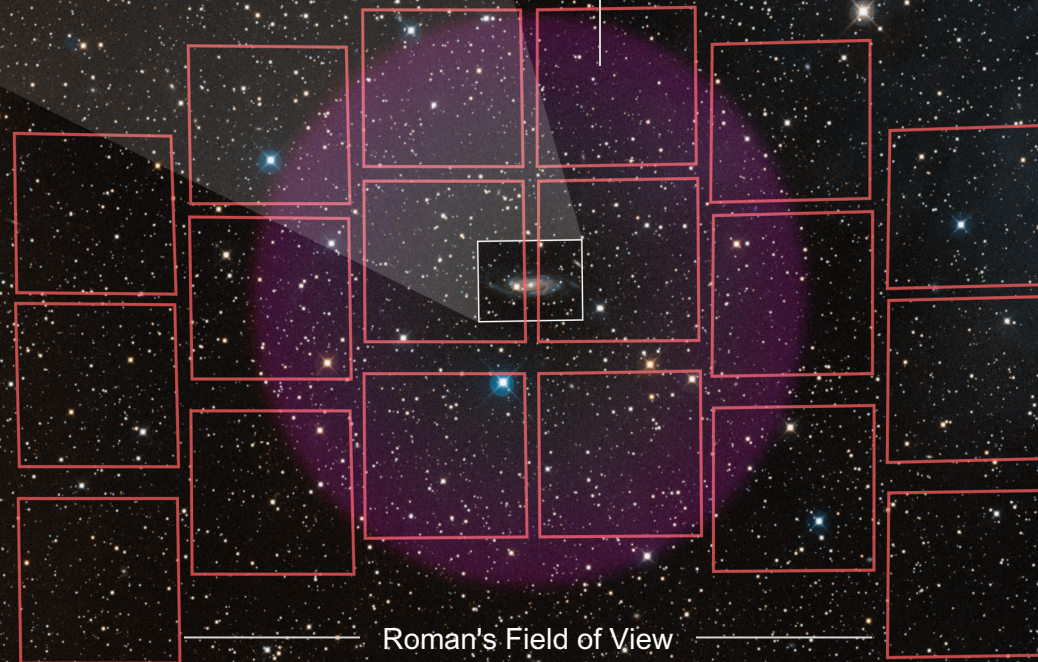
Fundamental physics

# The Local Universe



Hubble's view of Rubin's galaxy

Possible extent of Rubin's halo



Roman's Field of View





Planets by the thousands



Stars by the billions

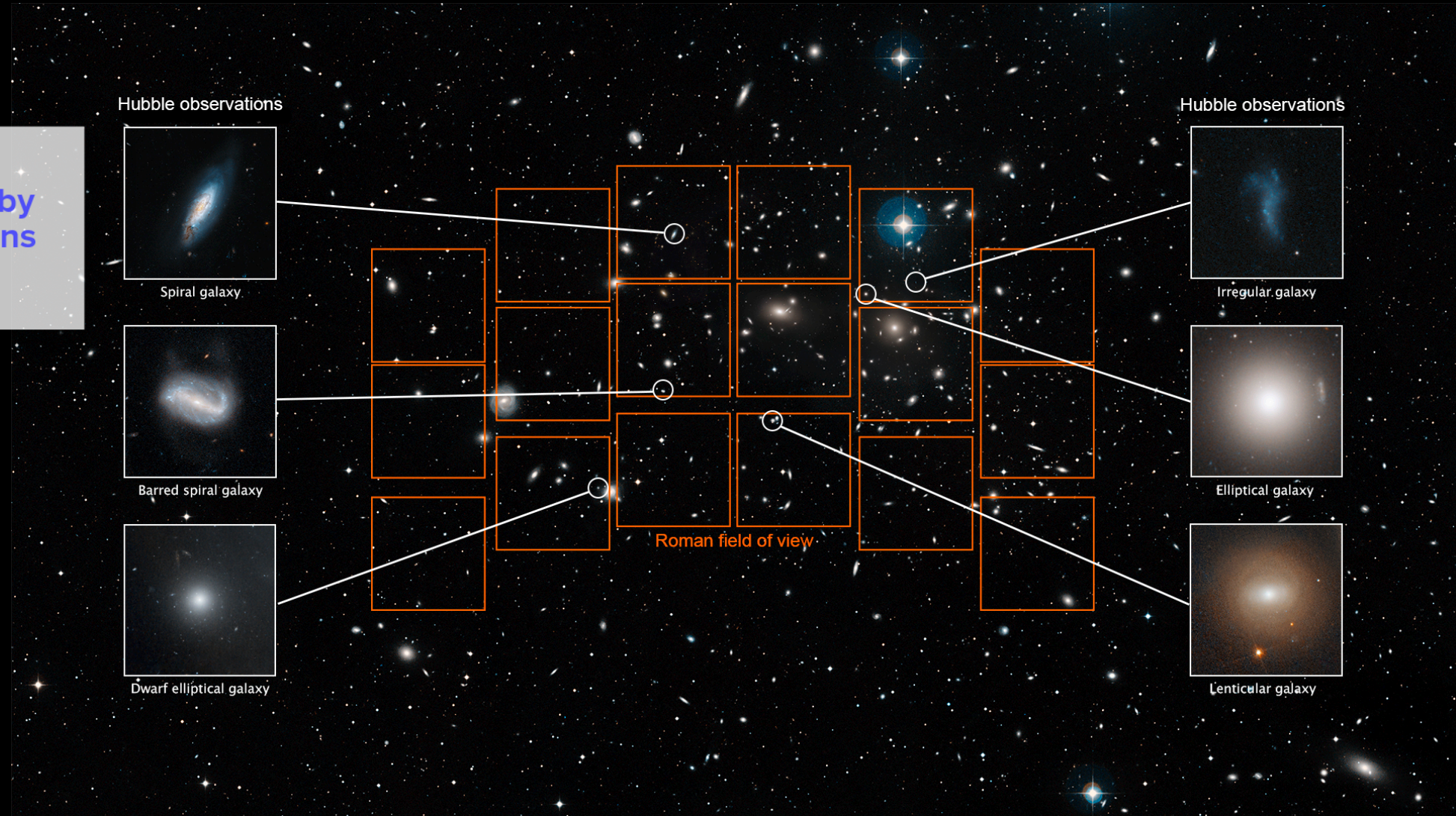


Galaxies by the millions



Fundamental physics

# Galactic Diversity



Hubble observations



Spiral galaxy



Barred spiral galaxy



Dwarf elliptical galaxy

Hubble observations



Irregular galaxy



Elliptical galaxy



Lenticular galaxy

Roman field of view





Planets by the thousands



Stars by the billions

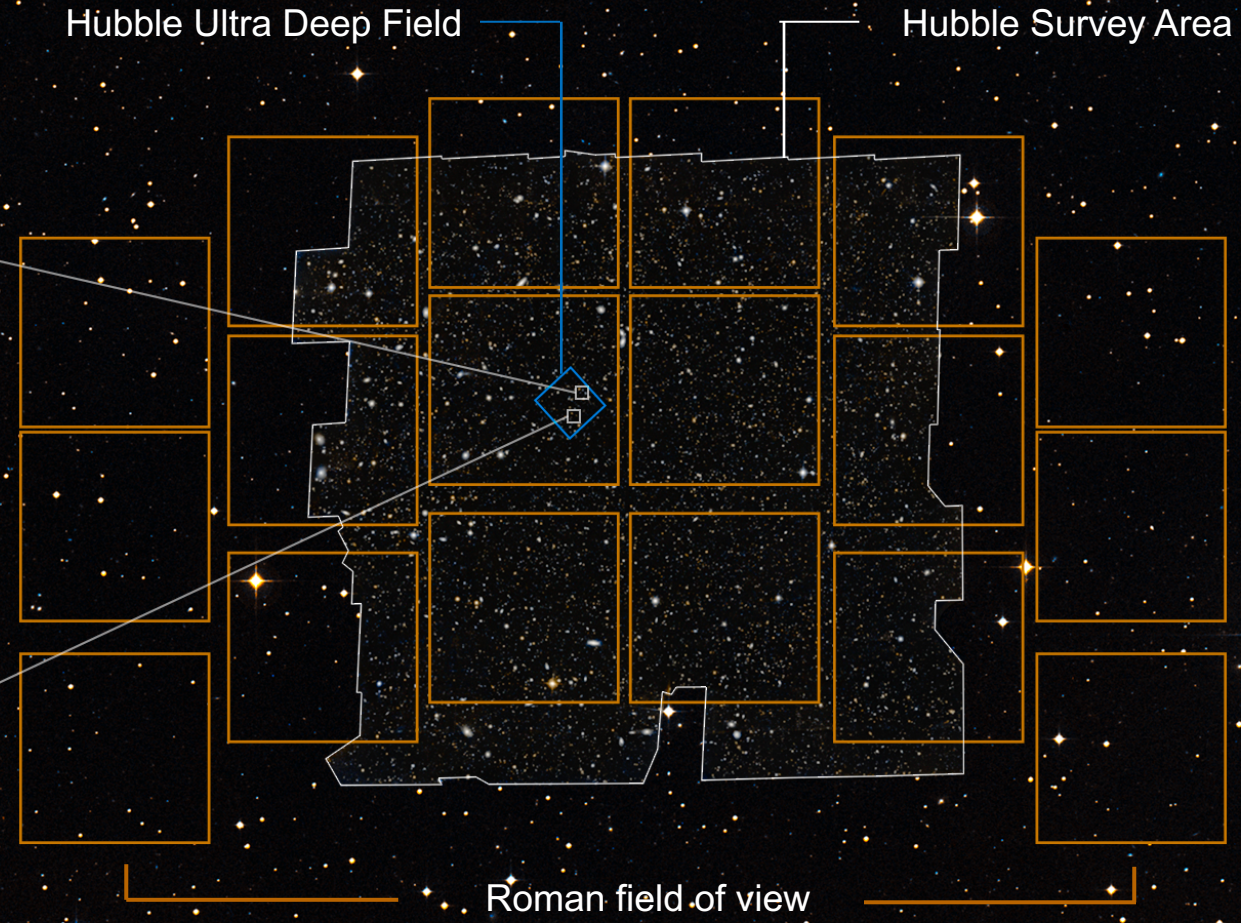


Galaxies by the millions




Fundamental physics

# The Early Universe





The background features a complex, abstract pattern of glowing, translucent spheres and swirling lines in shades of purple, blue, and green. The spheres vary in size and opacity, creating a sense of depth and movement. The lines are thin and delicate, weaving through the space and connecting the spheres. The overall effect is reminiscent of a quantum field or a complex network of particles.

# Fundamental Physics







Planets by the thousands



Stars by the billions

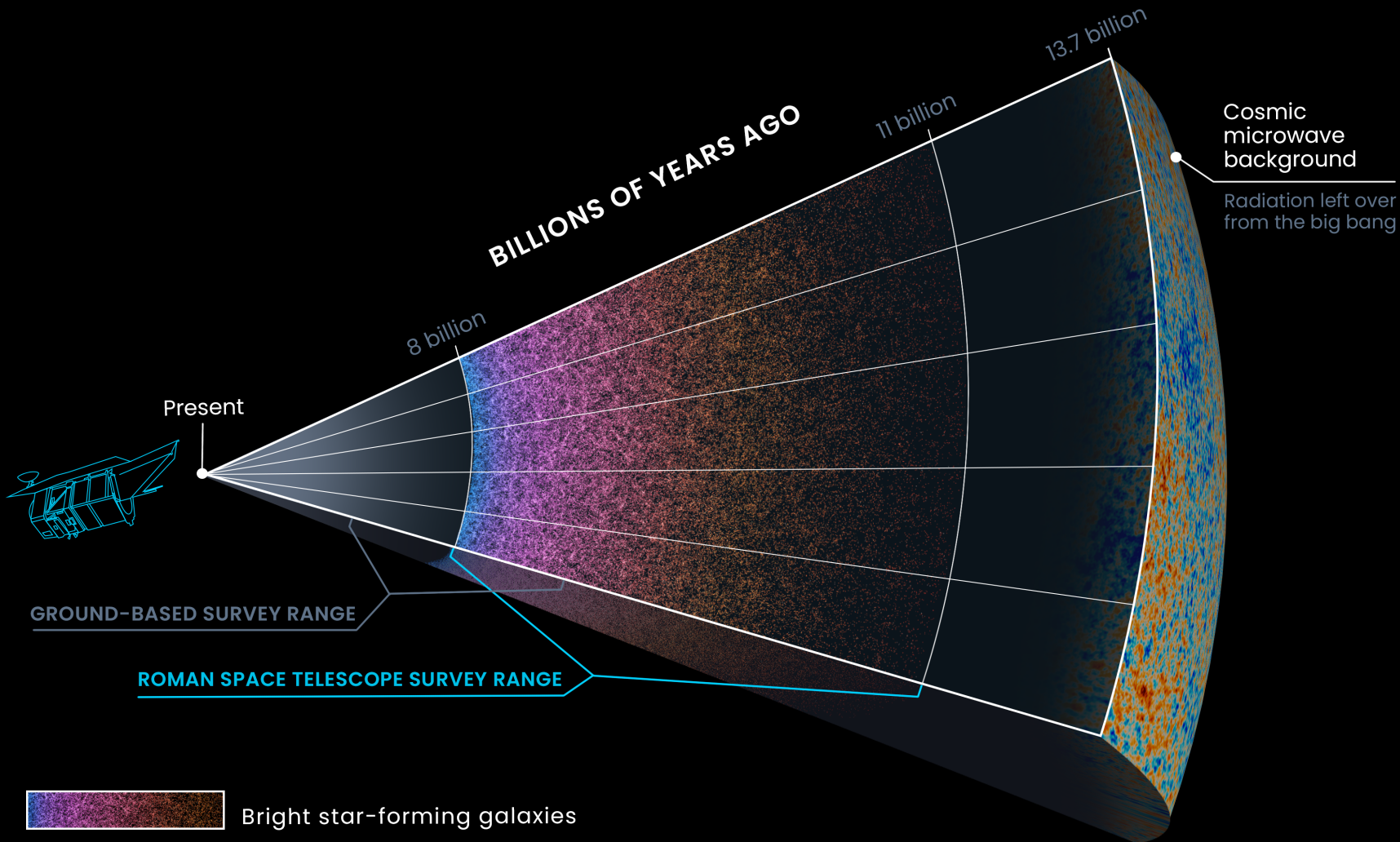


Galaxies by the millions



Fundamental physics

# Structure of the Universe







Planets by  
the thousands



Stars by  
the billions



Galaxies by  
the millions



**Fundamental  
physics**

## The Mystery of Dark Energy

---



SN 2011fe





Planets by  
the thousands



Stars by  
the billions



Galaxies by  
the millions



**Fundamental  
physics**

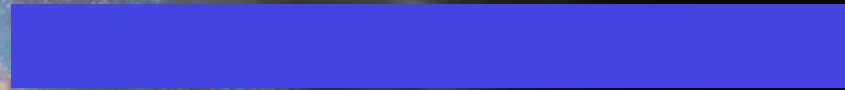
**The Nature of Dark Matter**



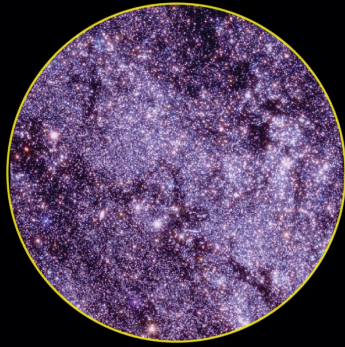


# New Physics

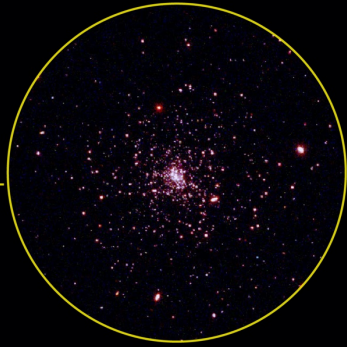
Expect the Unexpected







NEARBY GALAXIES



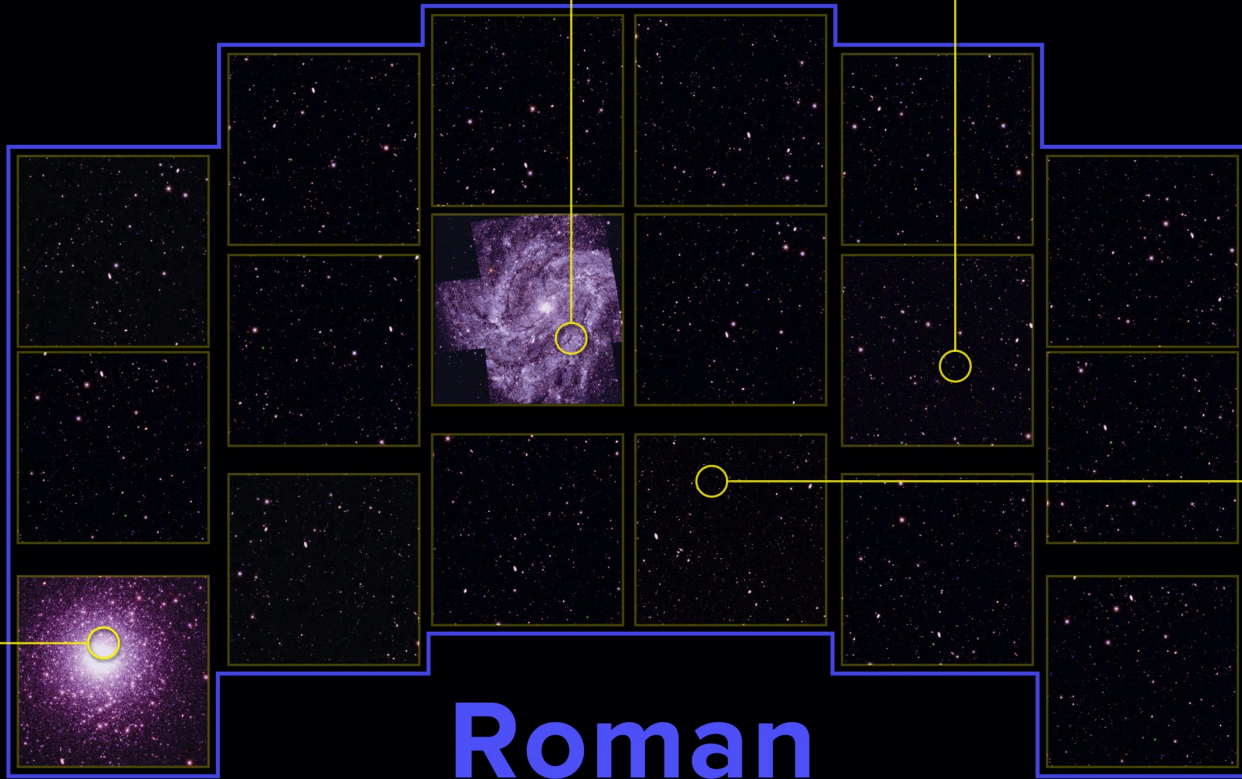
DWARF GALAXIES



STAR CLUSTERS



DISTANT GALAXIES



# Roman



Hubble



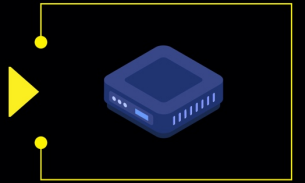
# BIG DATA

172

Terabytes

Hubble's data archive

30 years (1990–2020)

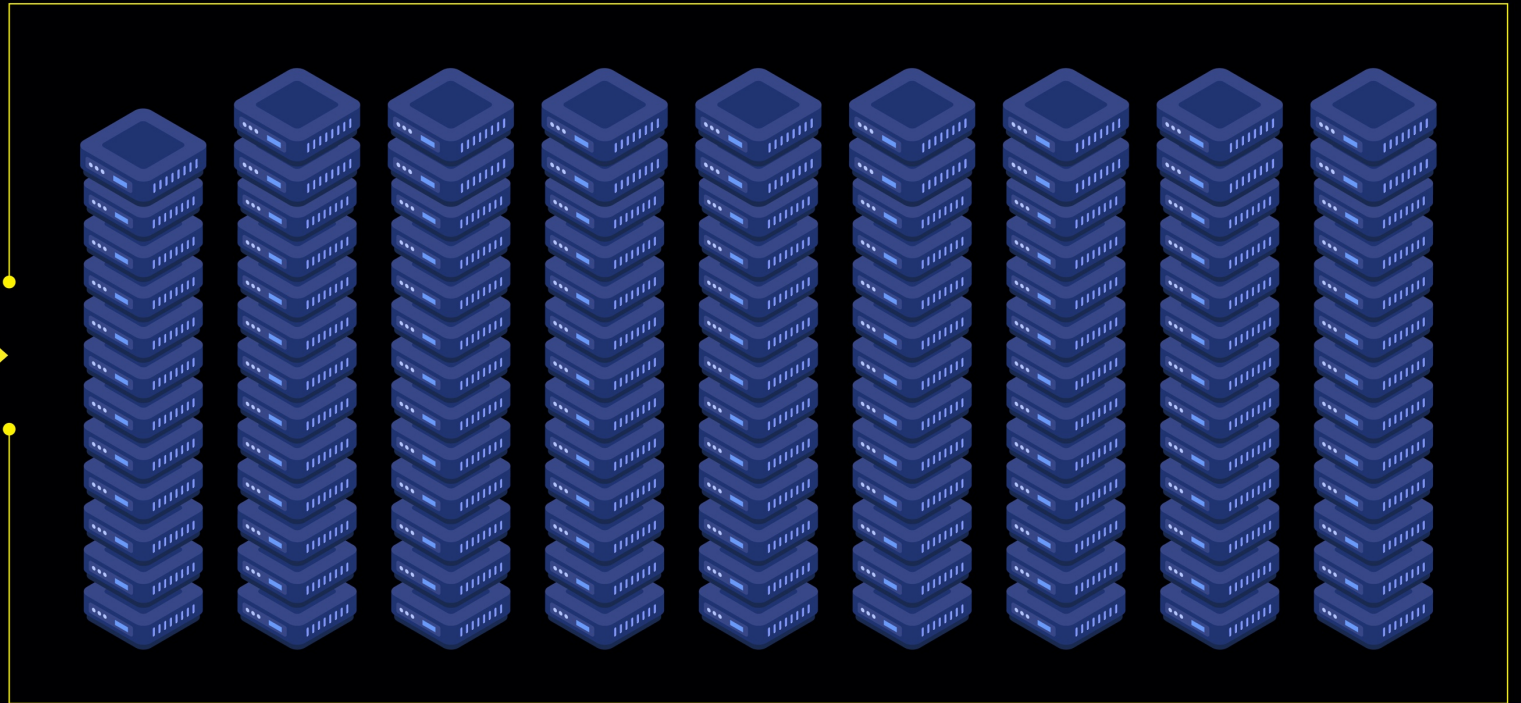


20,000

Terabytes

Roman's data archive

5 year primary mission  
(projected)





# PARTNERS IN EXPLORATION

GAMMA

X-RAY

ULTRAVIOLET

VISIBLE

INFRARED

MICROWAVE

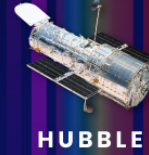
RADIO



FERMI



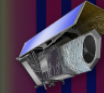
CHANDRA



HUBBLE



ROMAN



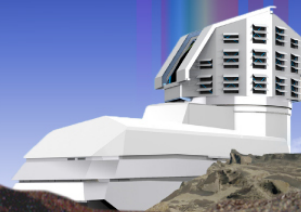
EUCLID



WEBB



SOFIA



RUBIN and ELTs



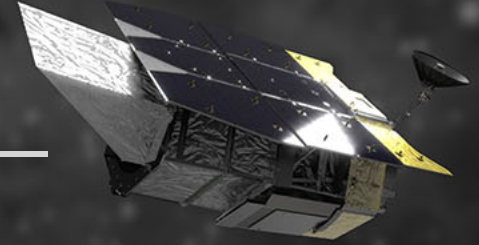
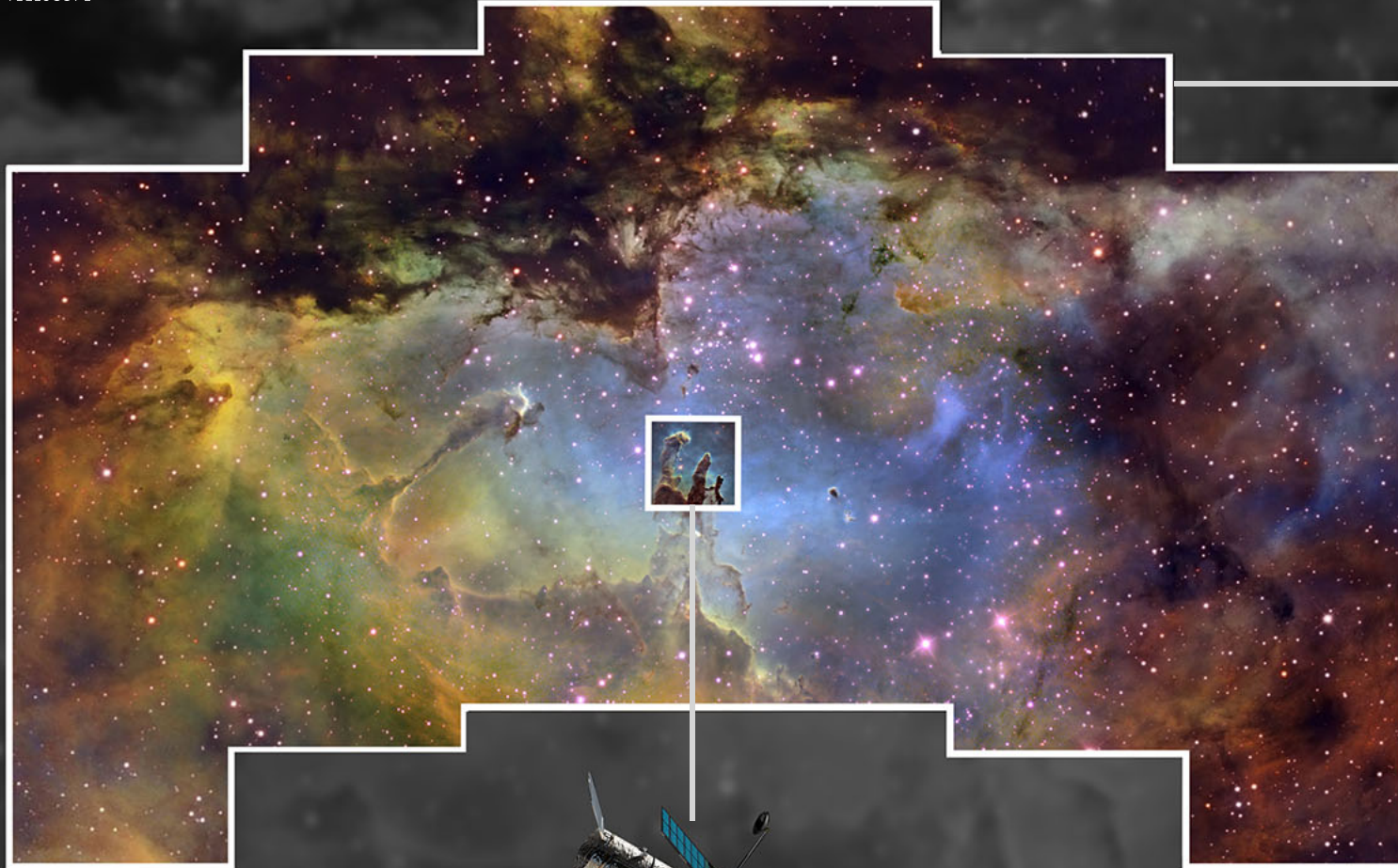
ALMA



SKA

ATMOSPHERE





## The Bigger Picture with the Roman Space Telescope

- Planets by the thousands
- Stars by the billions
- Galaxies by the millions
- Fundamental Physics
- The Unexpected

