NISE Network Online Workshop

Ready for Roman - Resources for Celebrating the Launch of NASA's Nancy Grace Roman Space Telescope

August 11, 2026

Today's Presenters:

- **Rob Zellem, Research Astrophysicist,** Exoplanets and Stellar Astrophysics Laboratory, **NASA's Goddard Space Flight Center,** Greenbelt, MD
- **Timothy Rhue II**, Principal Informal Education Specialist, **Space Telescope Science Institute, NASA's Universe of Learning**, Baltimore, MD

Welcome! As we wait to get started with today's discussion, please…

Introduce yourself! Type your name, institution, and location into the Chat Box

Questions? Feel free to type your questions into the Chat Box at any time throughout the webinar. A selection of questions from the chat and workshop registration will be read aloud by moderators for presenters to answer during the Q&A.

See you next time!
Upcoming Online Workshops…

Tuesdays; 2pm-3pm Eastern / 11am-12pm Pacific

- **September 29th: Inspiring Ideas for Interpreting Scientific Data with Artwork**

Learn more and register at nisenet.org/events

Rob Zellem

Research Astrophysicist

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Greenbelt, MD

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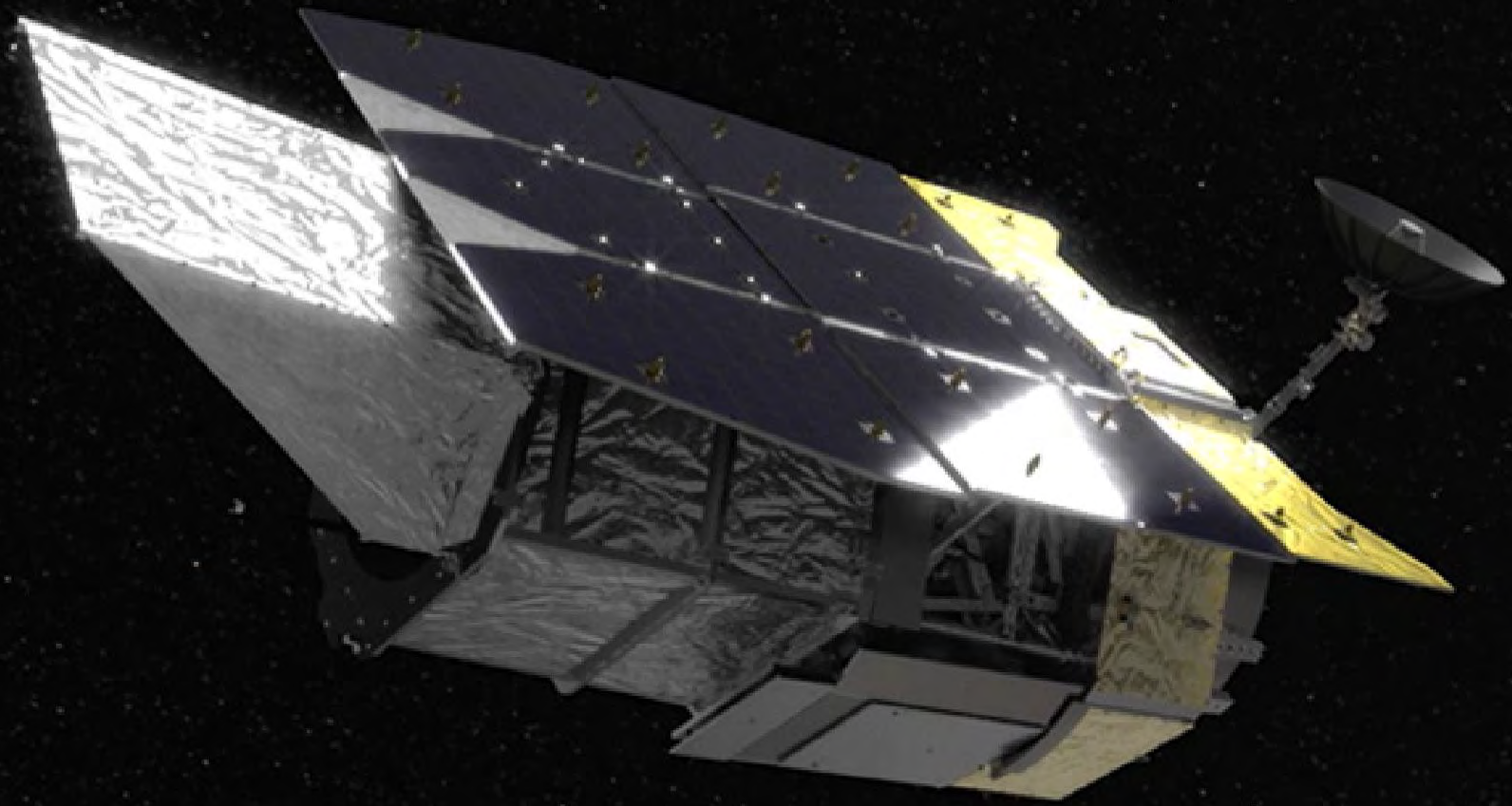
NANCY GRACE
ROMAN
SPACE TELESCOPE

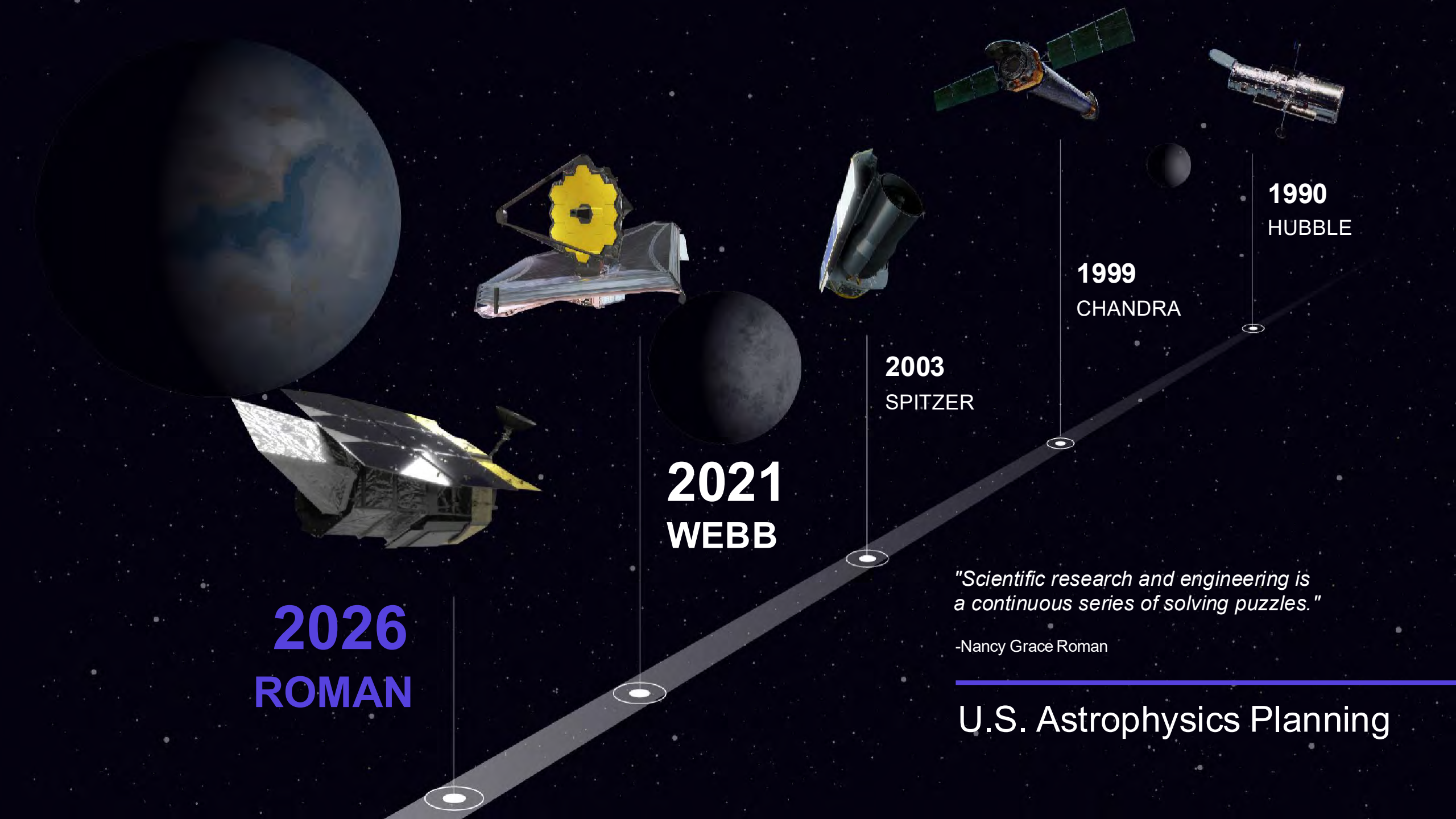


EXPANDING OUR VIEW

Nancy Grace Roman

NASA's First Chief of Astronomy

1925–2018


1990
HUBBLE
1999
CHANDRA
2003
SPITZER
2021
WEBB
2026
ROMAN
"Scientific research and engineering is a continuous series of solving puzzles."
-Nancy Grace Roman
U.S. Astrophysics Planning

MIRRORS

HUBBLE

ROMAN

WEBB

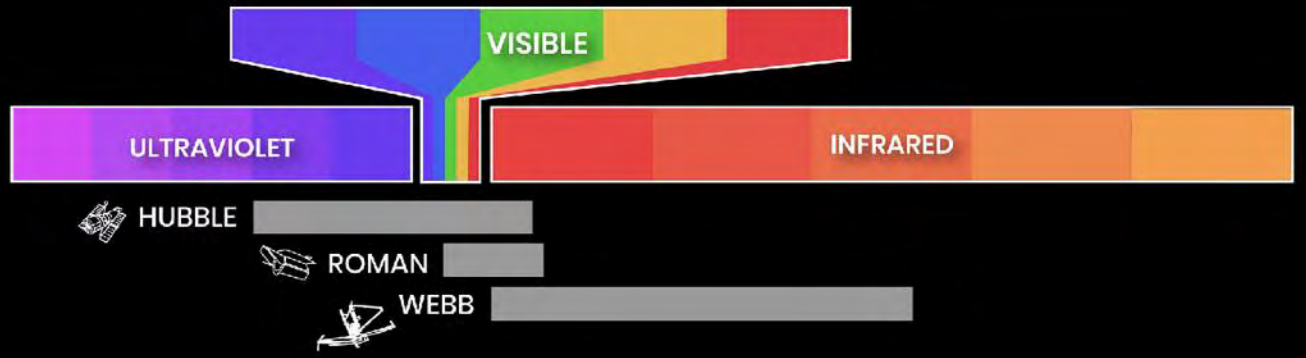
FIELD OF VIEW

ROMAN
Survey Observations

WEBB
Targeted Observations

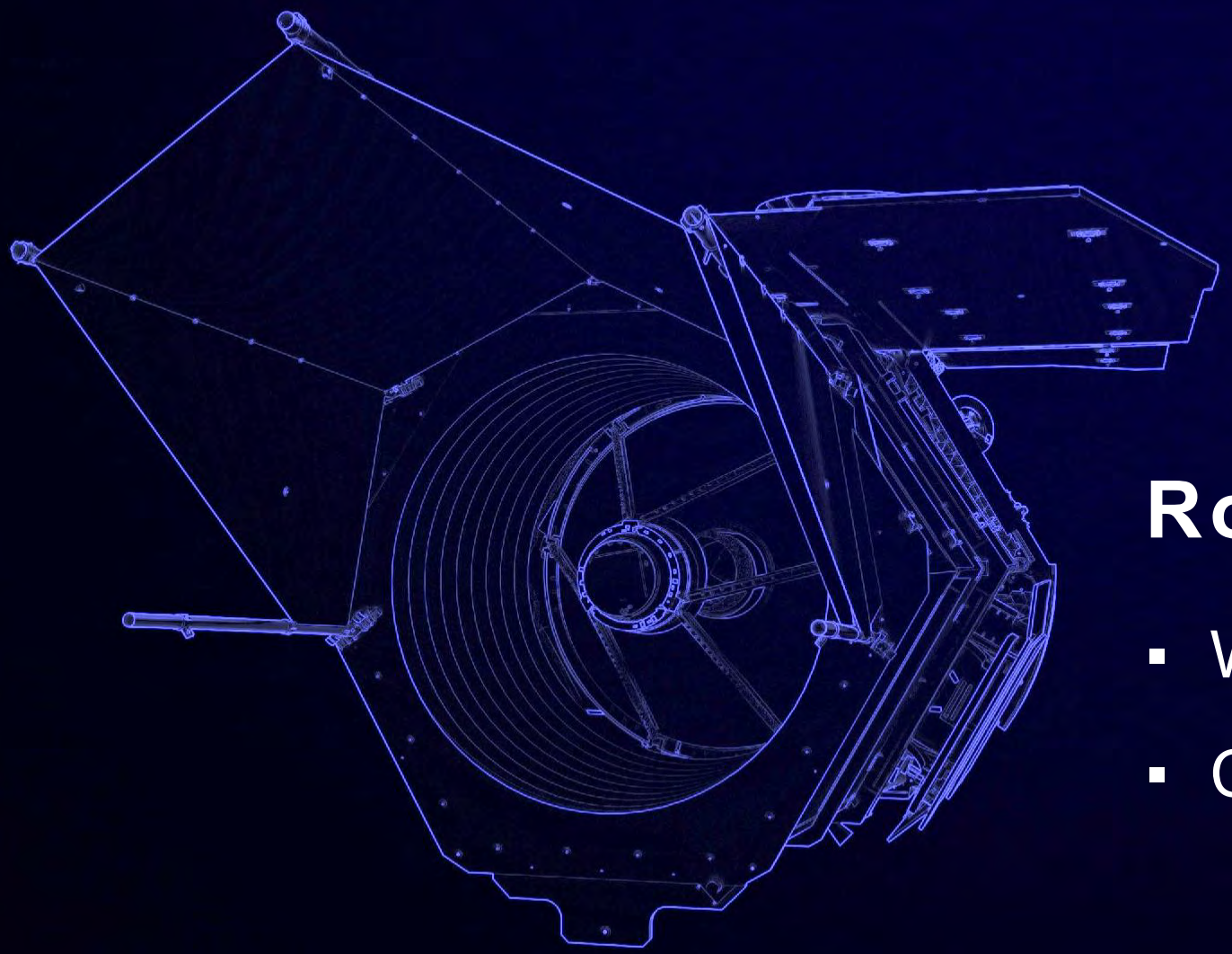
HUBBLE
Targeted Observations

WAVELENGTH



Roman Facts

- Launching ~September 2026
- 5-year minimum mission
- 930,000 miles (1.5 million km) from Earth
- 410 lbs (186 kilograms) primary mirror



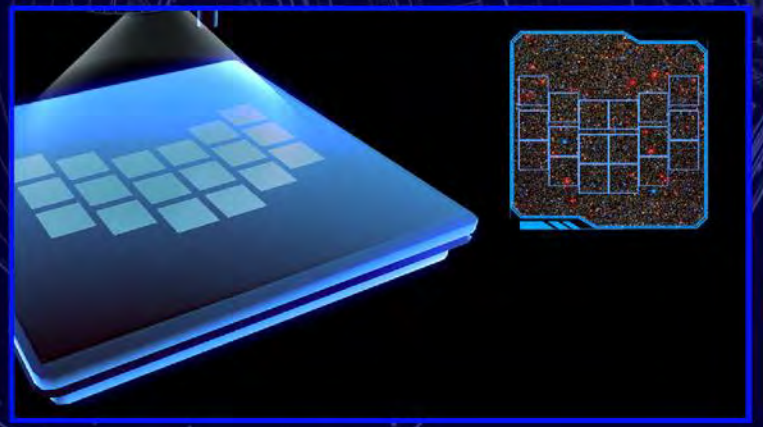
Roman Instruments

- Wide Field Instrument
- Coronagraph Instrument

WIDE FIELD INSTRUMENT

NANCY GRACE ROMAN SPACE TELESCOPE

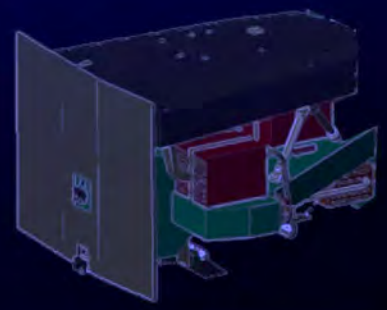
- Survey-style observations
- 18 near-infrared light detectors
- 300-megapixel camera
- 100x Hubble's field of view
- 2 spectroscopic capabilities

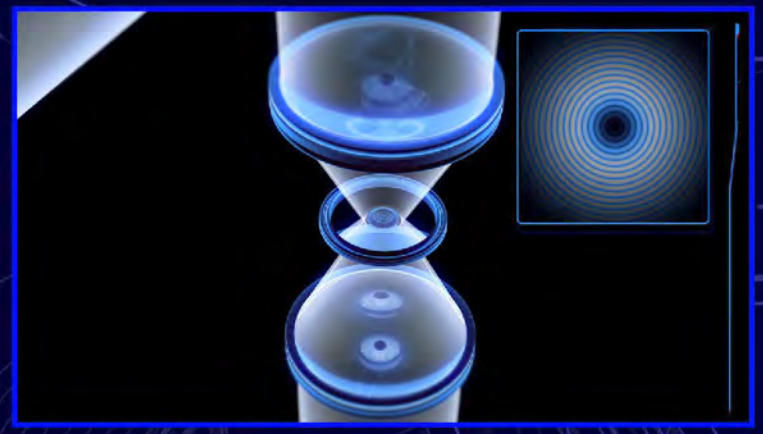


CORONAGRAPH INSTRUMENT

NANCY GRACE
ROMAN
SPACE TELESCOPE

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

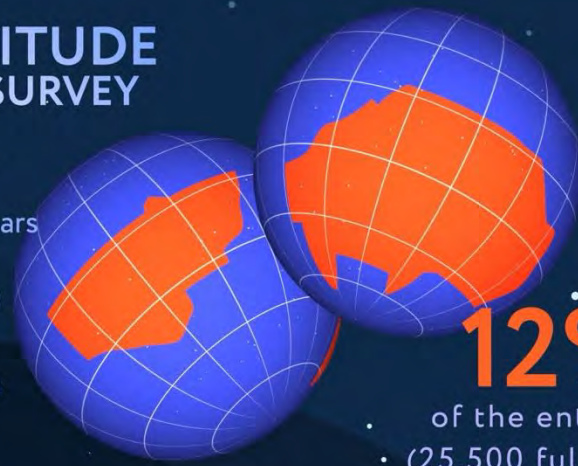





SCIENCE
WITH
ROMAN

ROMAN'S THREE CORE SURVEYS

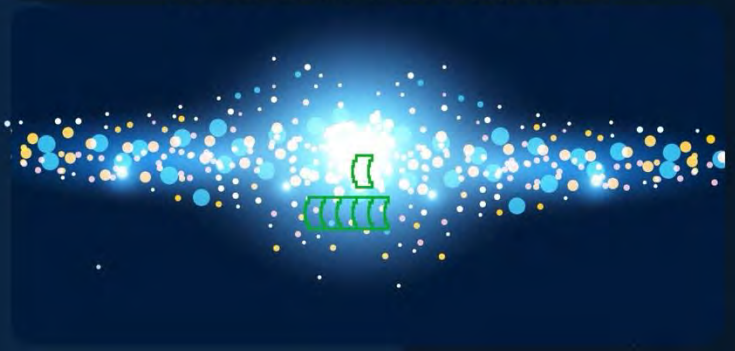
HIGH-LATITUDE WIDE-AREA SURVEY



- 520 days over five years
- Exposure times from 11 to 150 minutes
- 5,100 square degrees

12% of the entire sky (25,500 full moons)

GALACTIC BULGE TIME-DOMAIN SURVEY



The area of **8.5** full moons

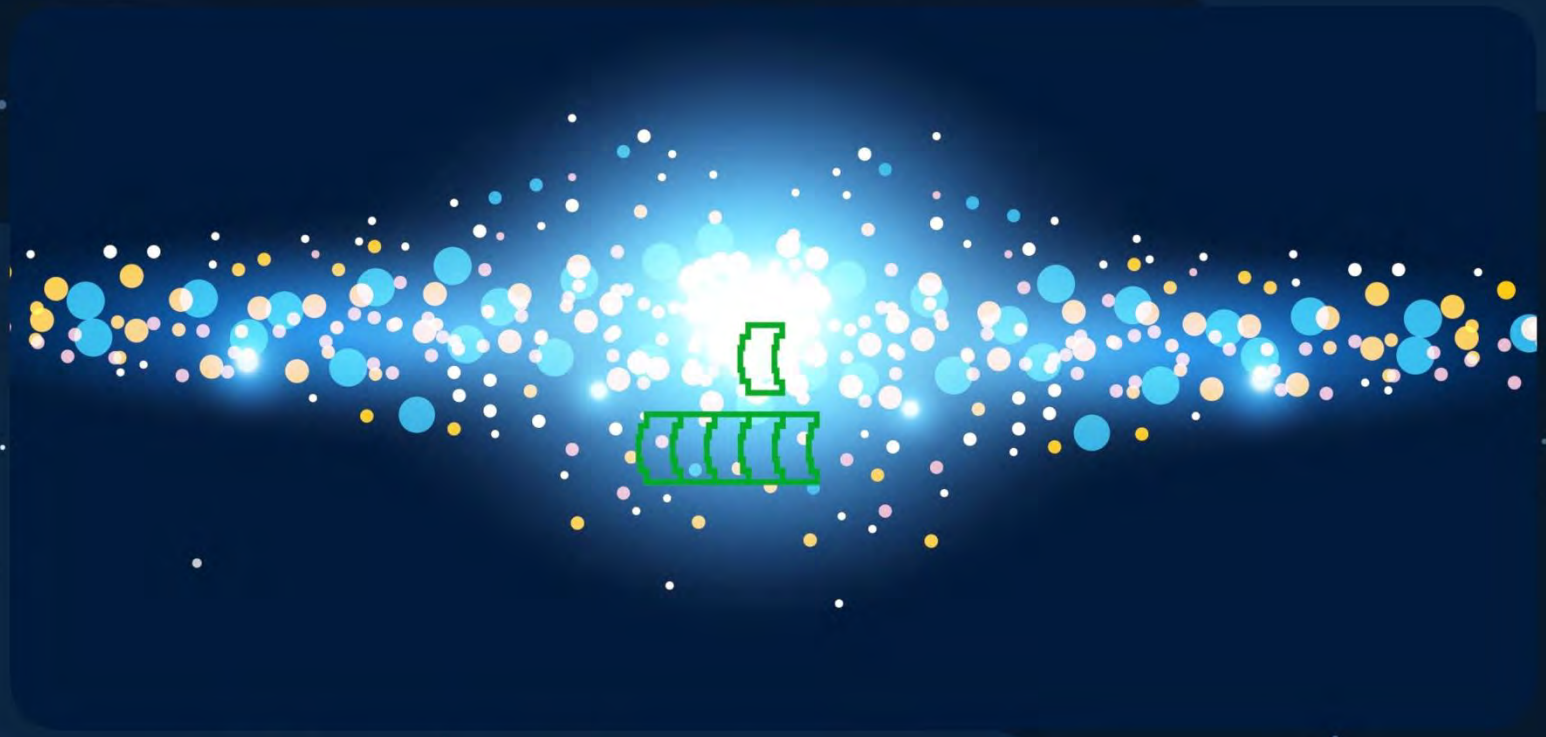
- 438 days, primarily in six sets of 72 days each
- Full survey area imaged every 12 minutes
- 1.7 square degrees

The area of **90** full moons

HIGH-LATITUDE TIME-DOMAIN SURVEY

- 180 days, primarily in two years
- 30 hours every five days
- 18 square degrees

GALACTIC BULGE
TIME-DOMAIN SURVEY



The area of

8.5

full moons

Exoplanets

Transients

Black Holes

438 days, primarily in six sets of 72 days each

Full survey area imaged every 12 minutes

1.7 square degrees


Planets by
the thousands
Stars by
the billions
Galaxies by
the millions
Fundamental
physics
The crowded core
of the Milky Way galaxy

NASA

Transits

Measures the change in brightness as the planet passes in front of or behind its host star

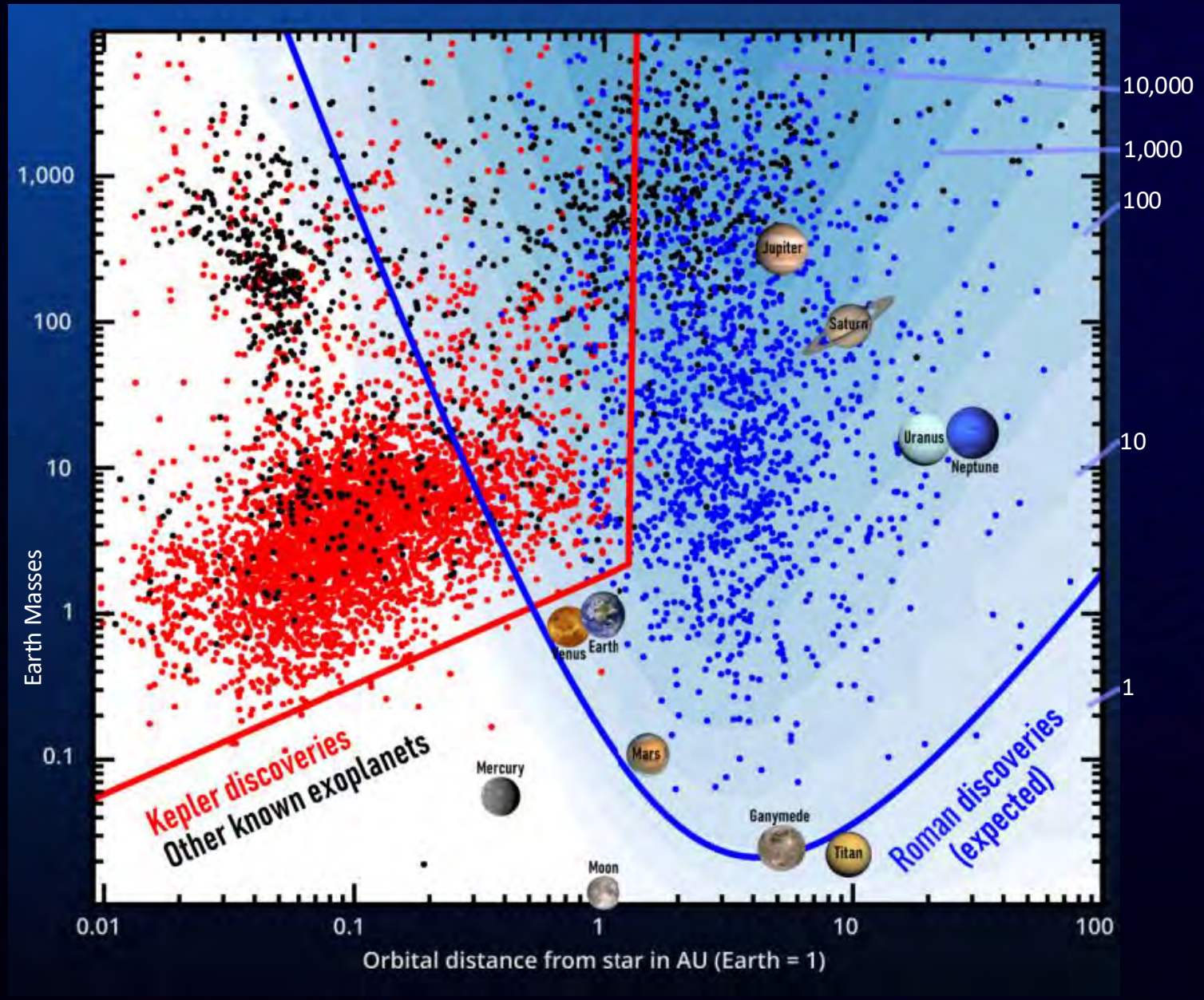
At best, the dip in brightness is 1%

Gives us the planet-to-star radius ratio

Also allow us to study a planet's atmosphere

Method used to discover ~4000 exoplanets of the ~6000 currently-known

NASA



Roman/WFI will discover hundreds of thousands of new planets

NASA

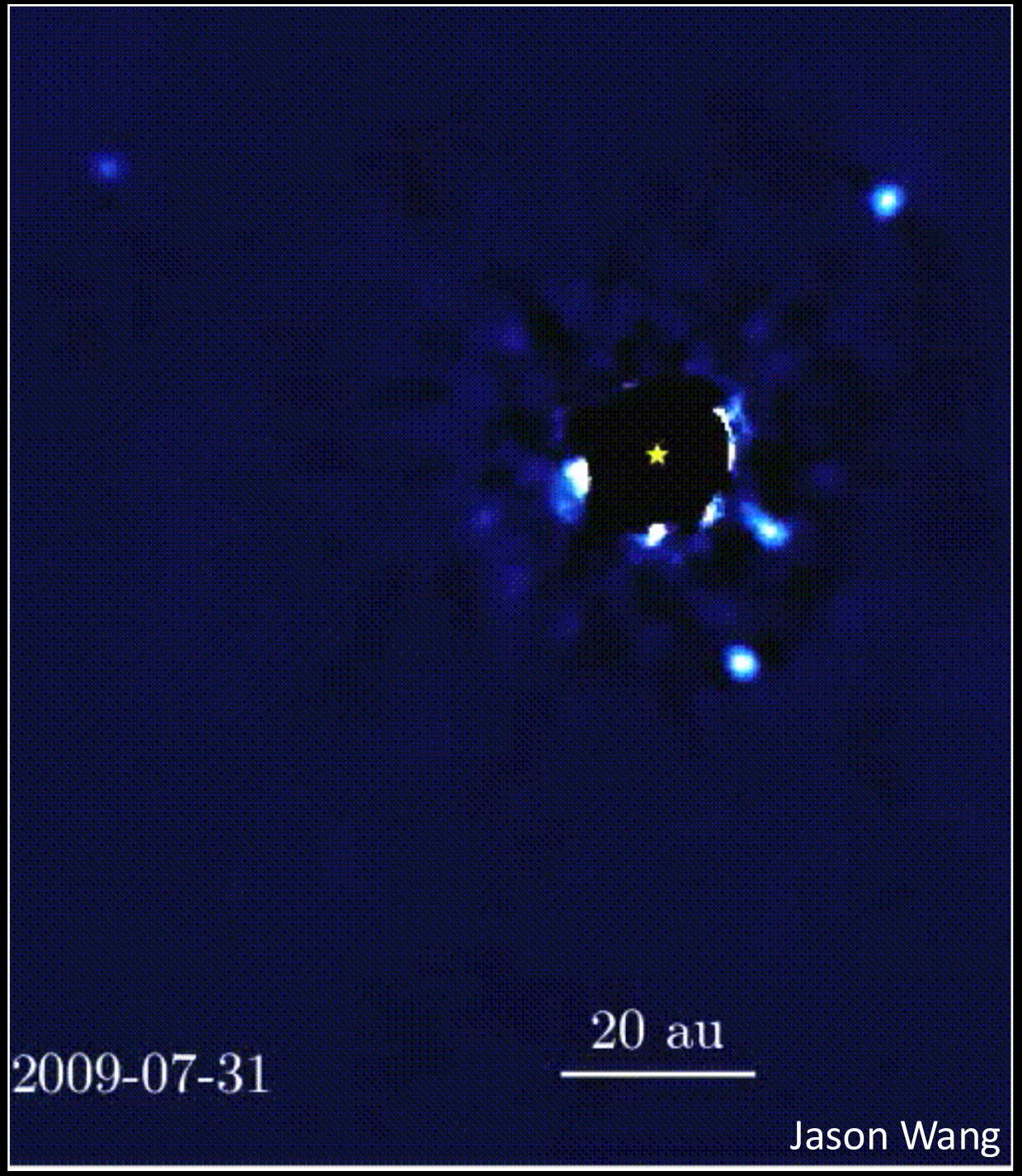
Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics

Advancing planet-detection technology

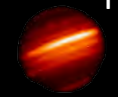


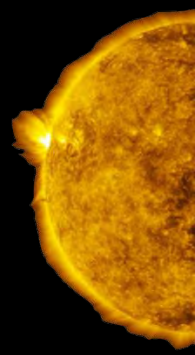
Roman Coronagraph
Exoplanet Science

Current ground-based observations are largely limited to infrared light.

These observations only detect young, hot super-Jupiters.

Current Observations
Infrared wavelengths
Hot, super-Jupiters



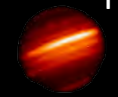


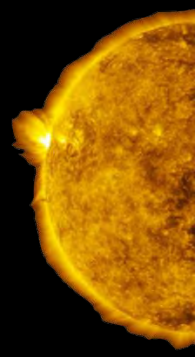
Roman Coronagraph Exoplanet Science

Using its coronagraph, Roman will take the first visible-light image and spectrum of a cool, Jupiter-like exoplanet

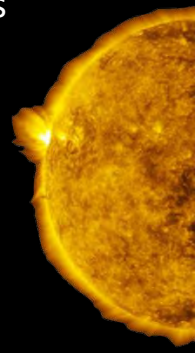
- Cool planets can be seen by their reflected visible light
- Visible wavelengths are sensitive to clouds and hazes

Current Observations
Infrared wavelengths
Hot, super-Jupiters



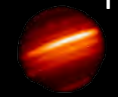


Roman/CGI
Visible and near-infrared wavelengths
Jupiter-like planets



Roman Coronagraph Exoplanet Science

Current Observations
Infrared wavelengths
Hot, super-Jupiters



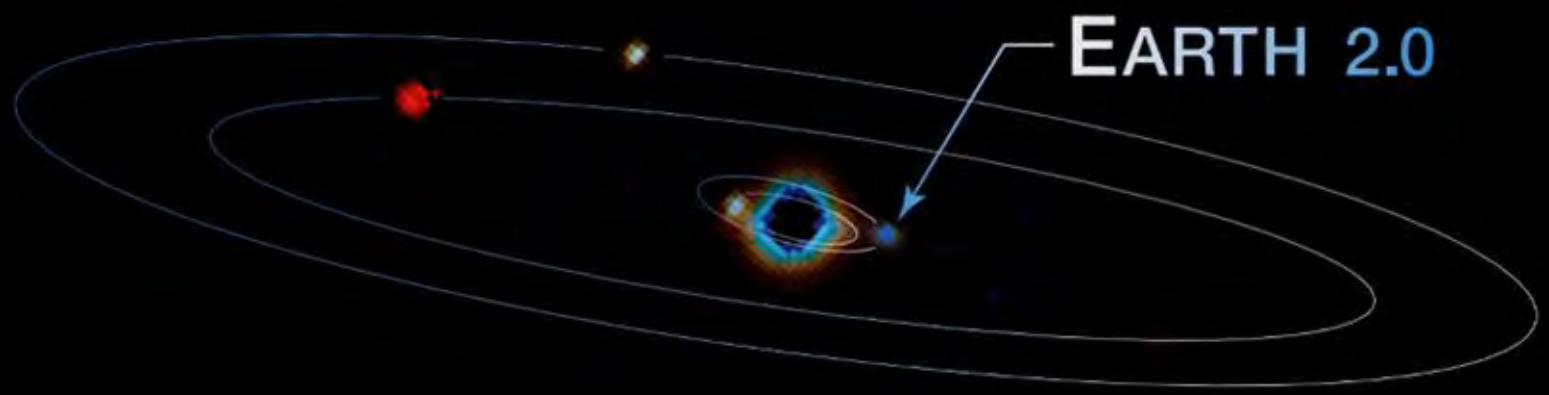
Roman/CGI
Visible and near-infrared wavelengths
Jupiter-like planets

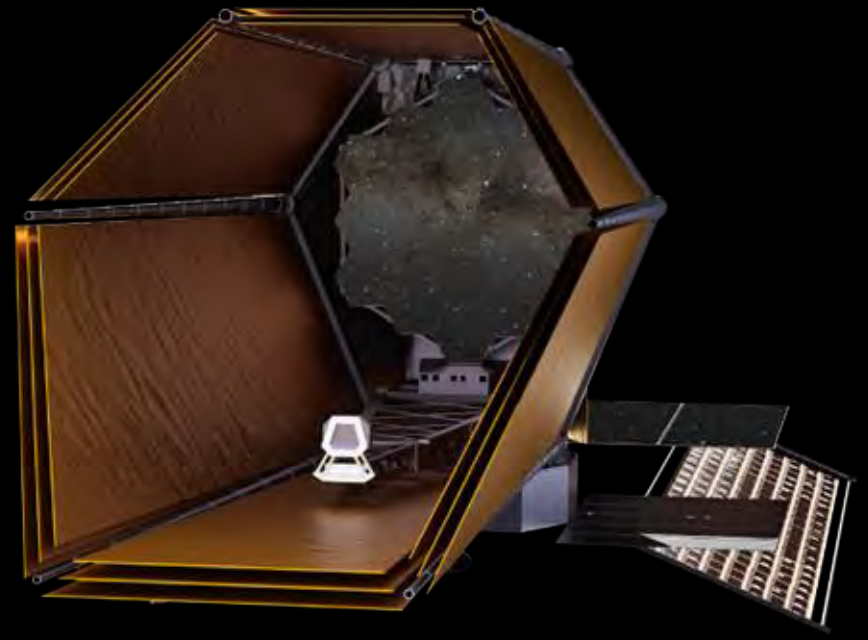
Habitable Worlds Observatory
Visible and near-infrared wavelengths
Earth-like, potentially habitable, planets

Roman provides the foundation for future missions that will search for life on exo-Earths.

The Habitable Worlds Observatory (HWO)

- NASA’s next flagship mission concept launching in ~15 years
- A large-mirror (≥6-m) ultraviolet / optical / near-infrared space observatory performing transformative astrophysics
- First telescope designed to search for signs of life on planets outside of our Solar System



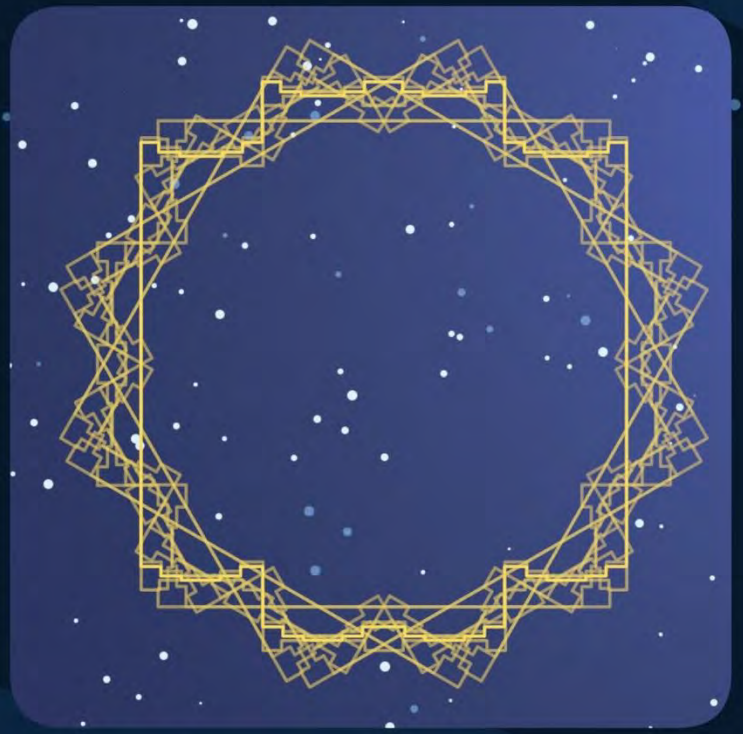


HIGH-LATITUDE TIME-DOMAIN SURVEY

The area of

90

full moons



APRIL

180 days, primarily in two years

30 hours every five days

18 square degrees

Supernovae

Transients

Galaxies

Dark Energy

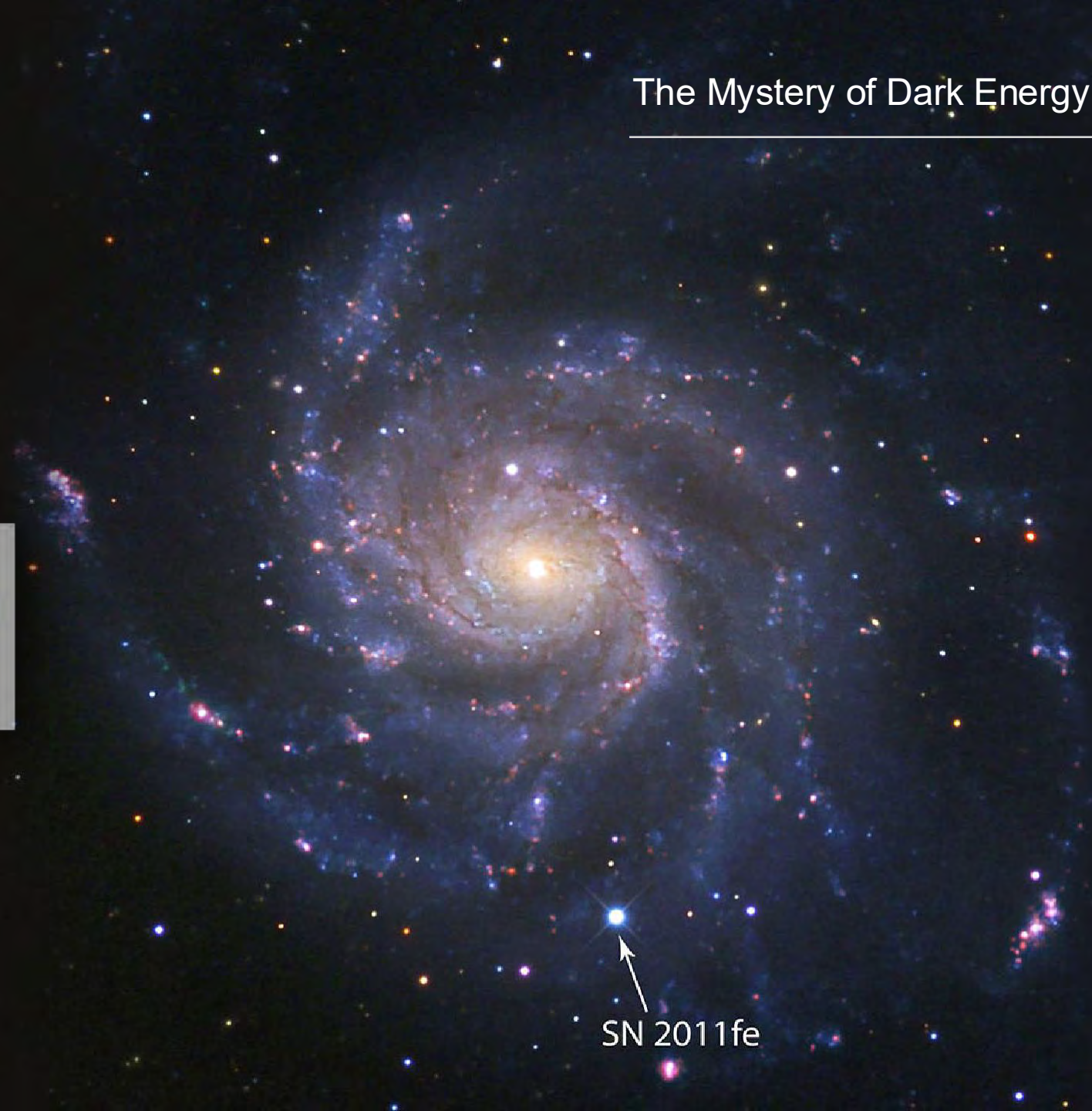
The Mystery of Dark Energy

Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics



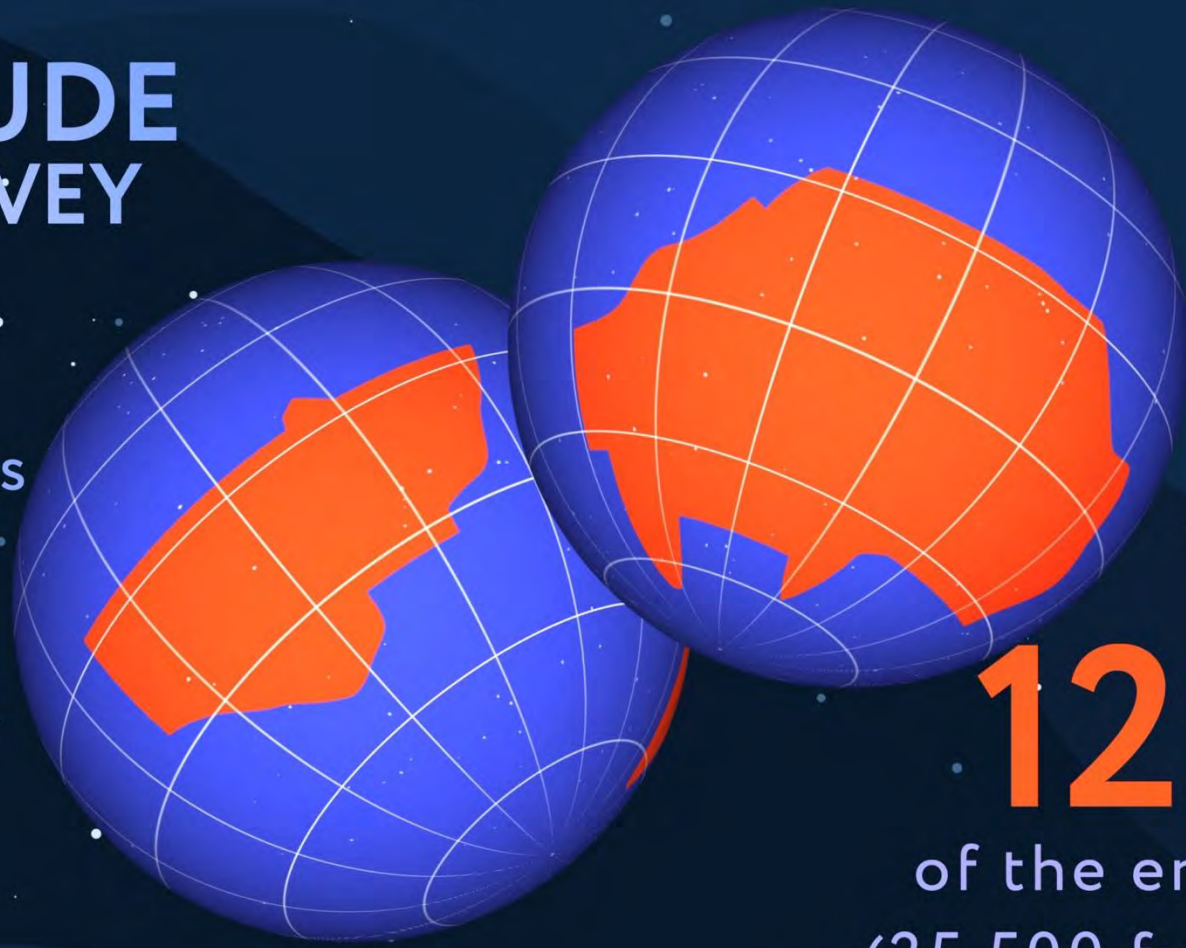
HIGH-LATITUDE WIDE-AREA SURVEY

APRIL

520 days over five years

Exposure times from 11 to 150 minutes

5,100 square degrees



12%

of the entire sky
(25,500 full moons)

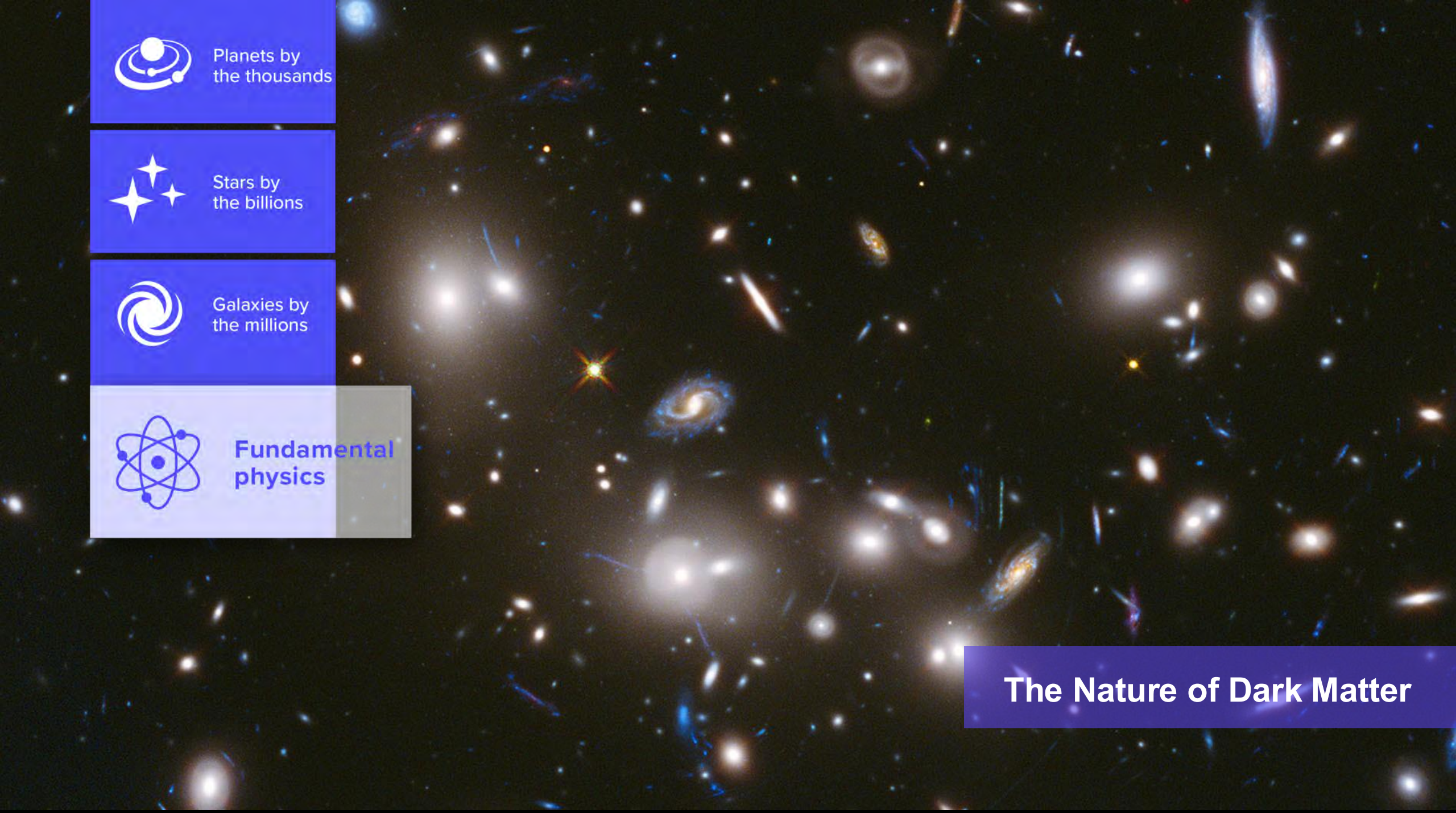
Dark Energy

Dark Matter

Galaxies

Solar System

Milky Way


Planets by the thousands
Stars by the billions
Galaxies by the millions
Fundamental physics
The Nature of Dark Matter

GALACTIC PLANE SURVEY

Studying the structure and contents of the Milky Way galaxy

Full survey covers the area of

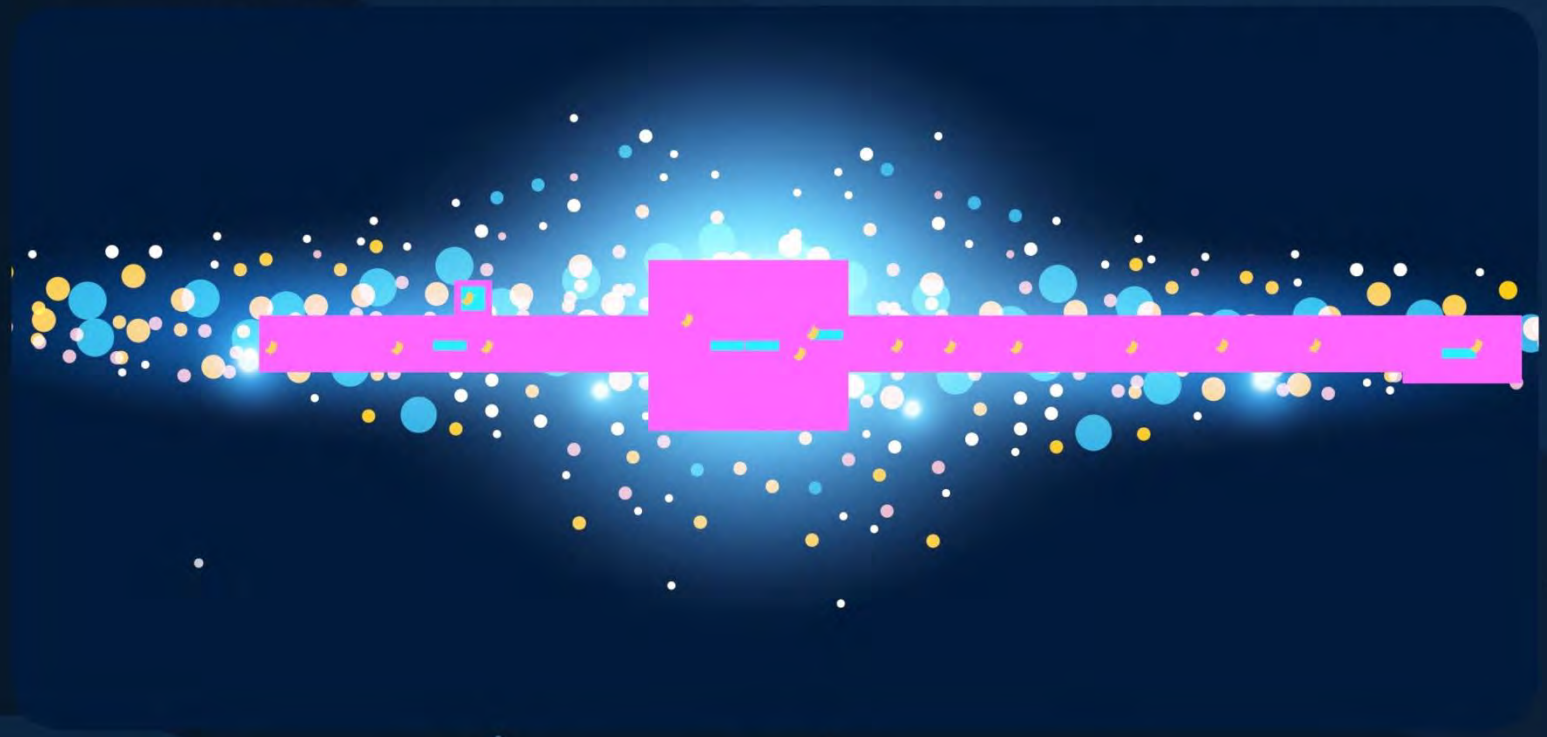
3,455

full moons

Repeat observations cover

95

full moons



APRIL

WIDE-FIELD

29.2 days over two years
to map 691 square degrees

TIME-DOMAIN

19 square degrees imaged at a
cadence of ~11 minutes to weeks

DEEP/SPECTRAL

4 square degrees with longer
exposures and spectroscopy

Transients

Exoplanets

Stars

Black Holes

Stellar Nurseries

BIG DATA

172

Terabytes

Hubble's data archive

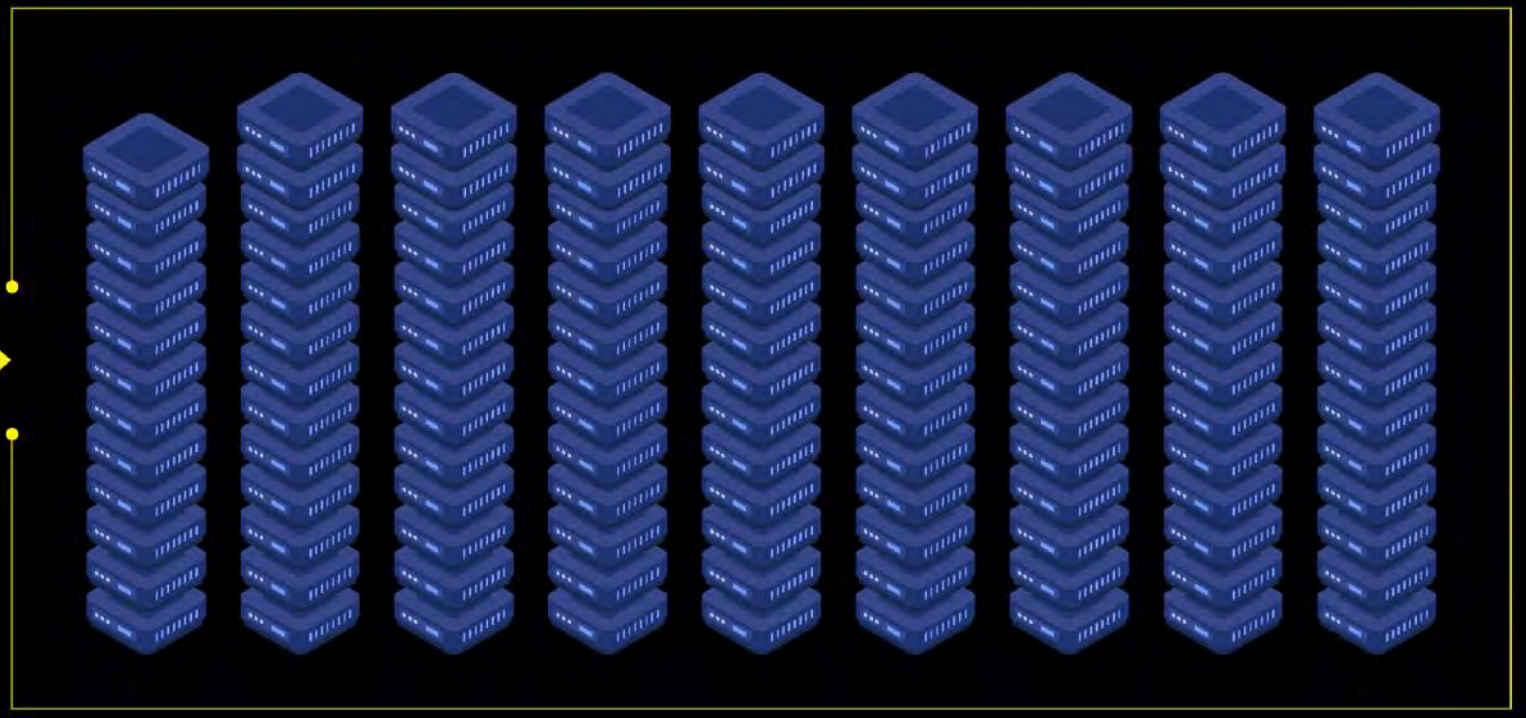
30 years (1990–2020)

20,000

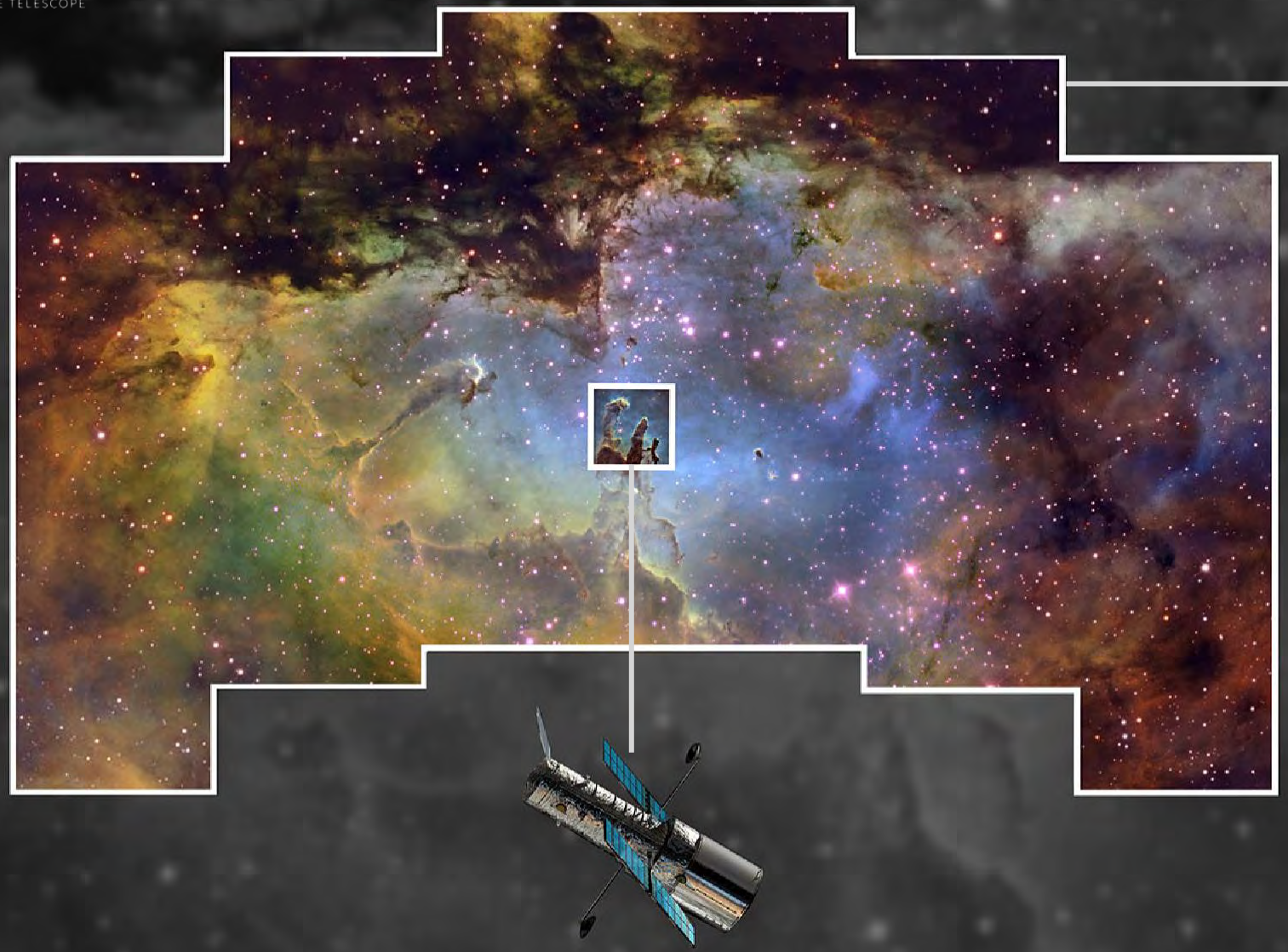
Terabytes

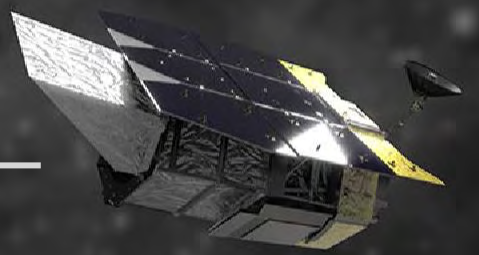
Roman's data archive

5 year primary mission
(projected)



NANCY GRACE ROMAN SPACE TELESCOPE





The Bigger Picture

with the Roman Space Telescope

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


Planets
by the thousands

The full spectrum of

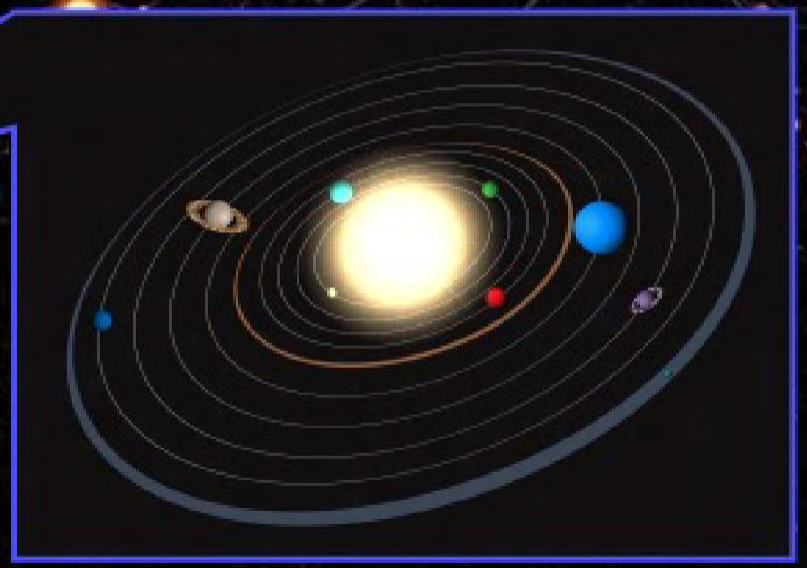
EXOPLANET DIVERSITY

Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics

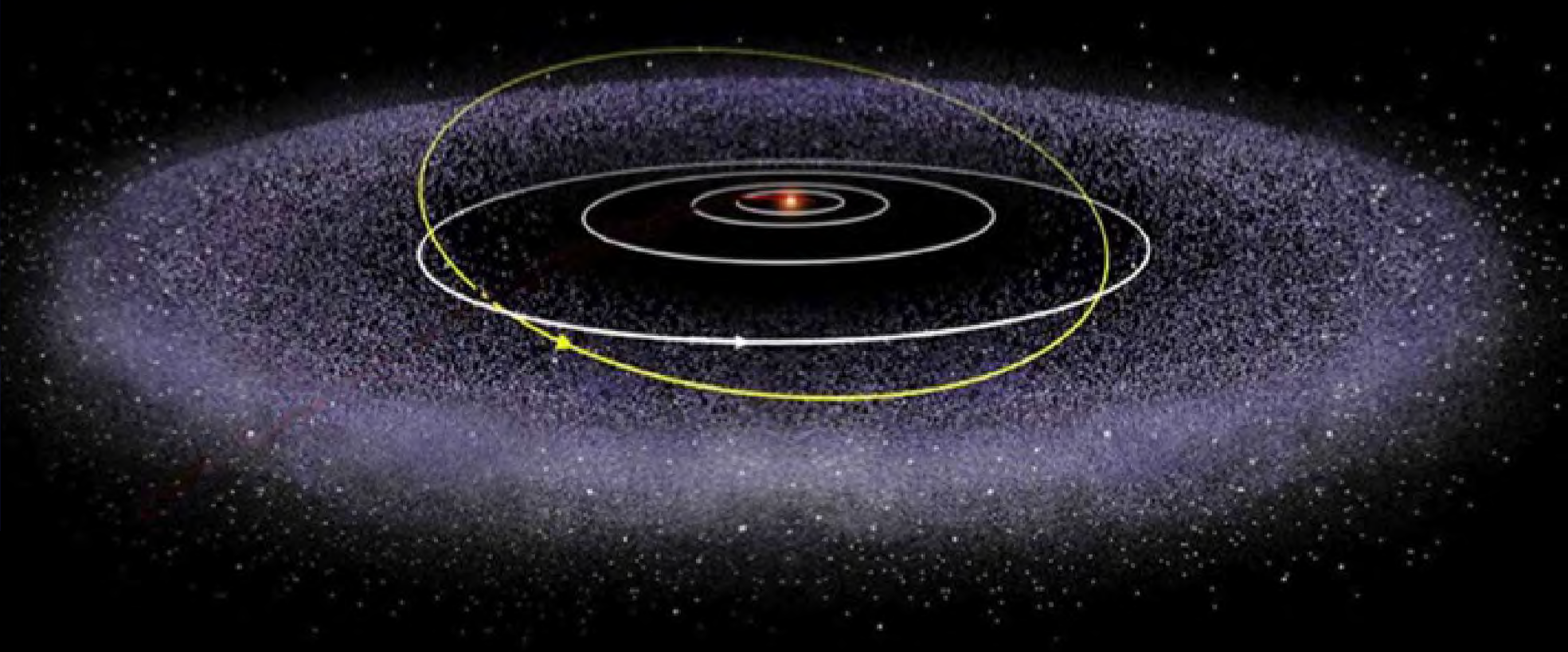


Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics



Our cosmic neighborhood


Stars
by the billions

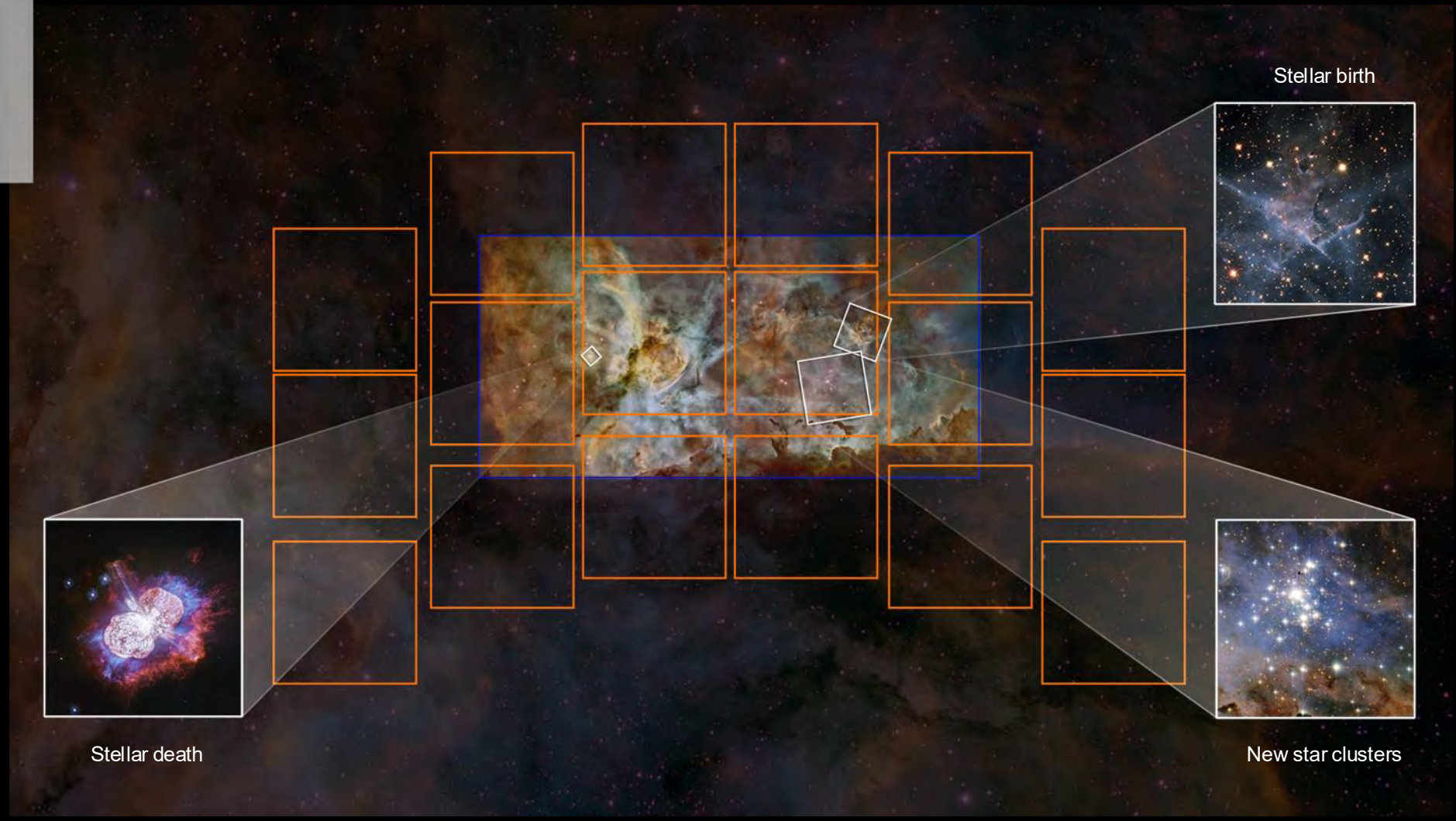
Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics

The Stellar Lifecycle in a Snapshot

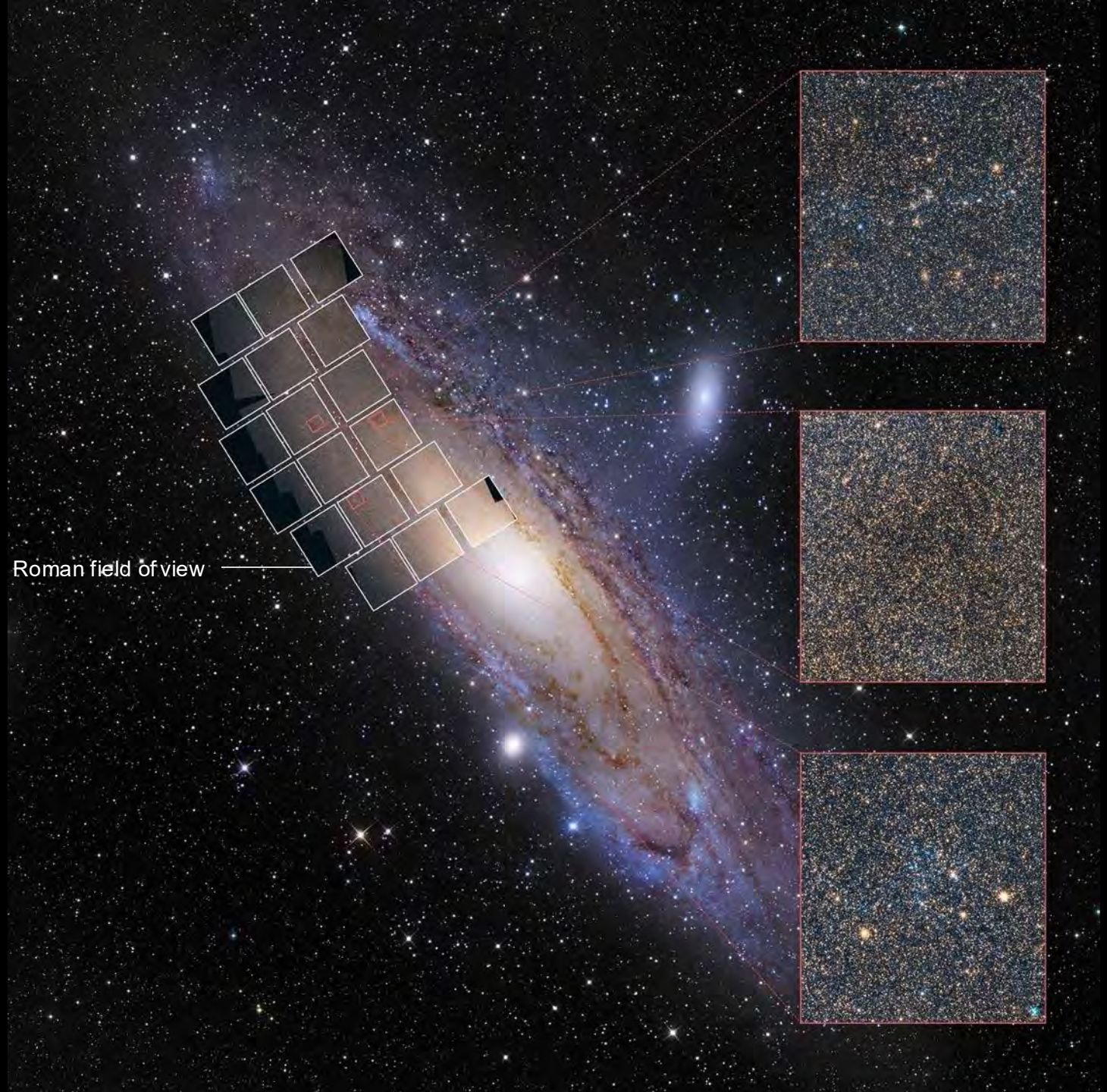


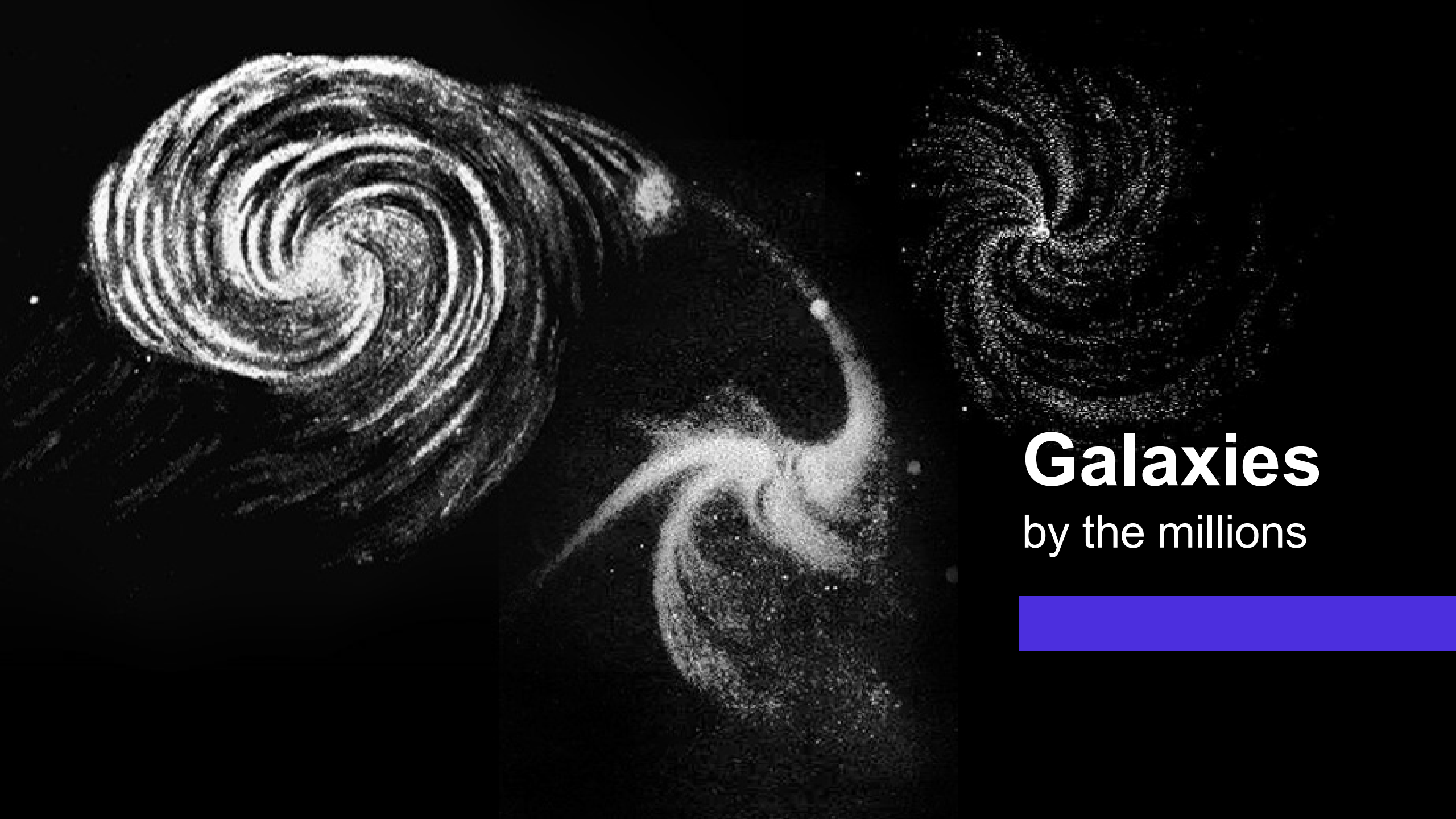
Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics





Galaxies

by the millions

Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics

Hubble’s view of Rubin's galaxy

Possible extent of Rubin's halo

Roman's Field of View

The Local Universe

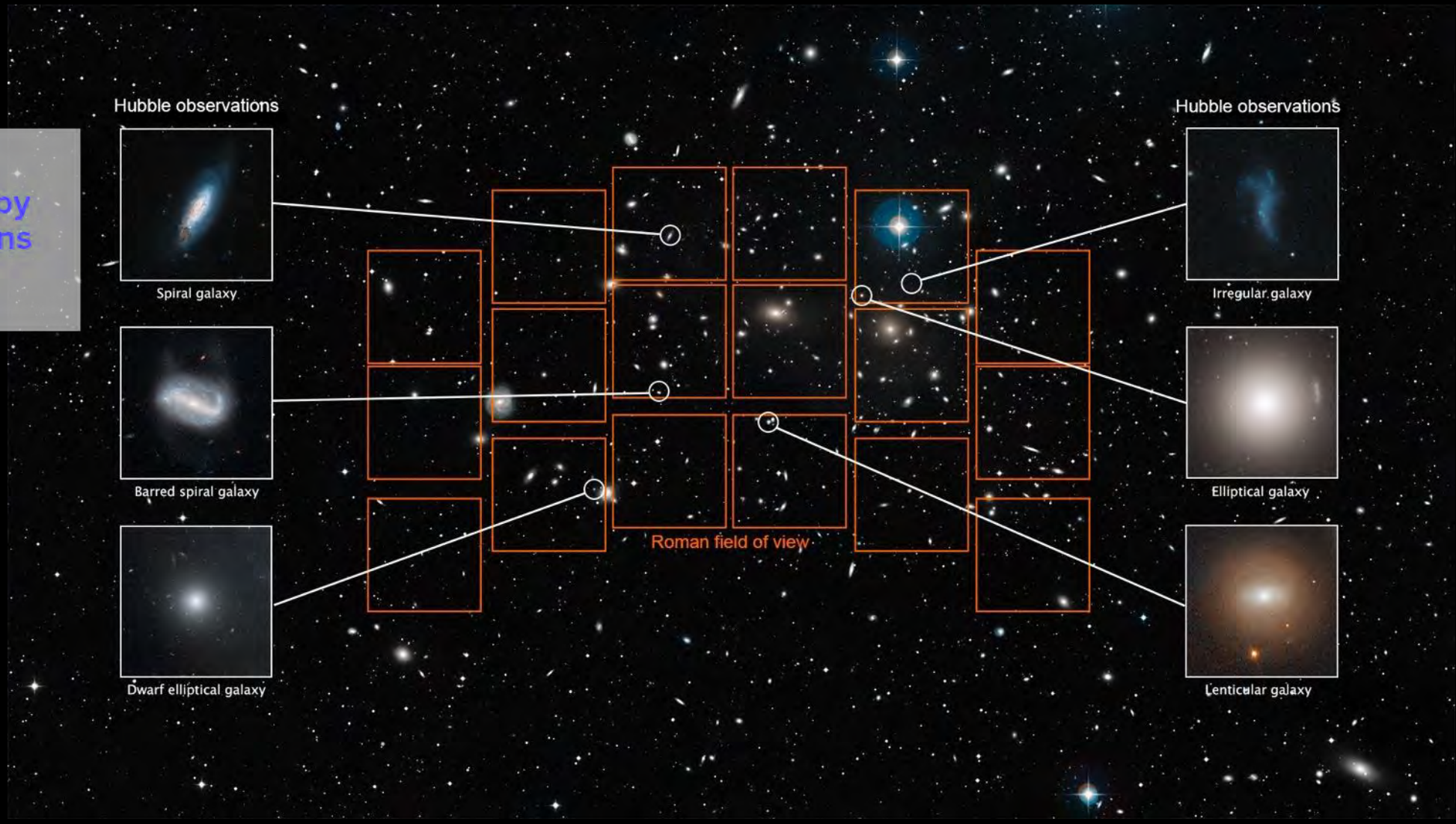
Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics

Galactic Diversity




Planets by the thousands
Stars by the billions
Galaxies by the millions
Fundamental physics
vey Area

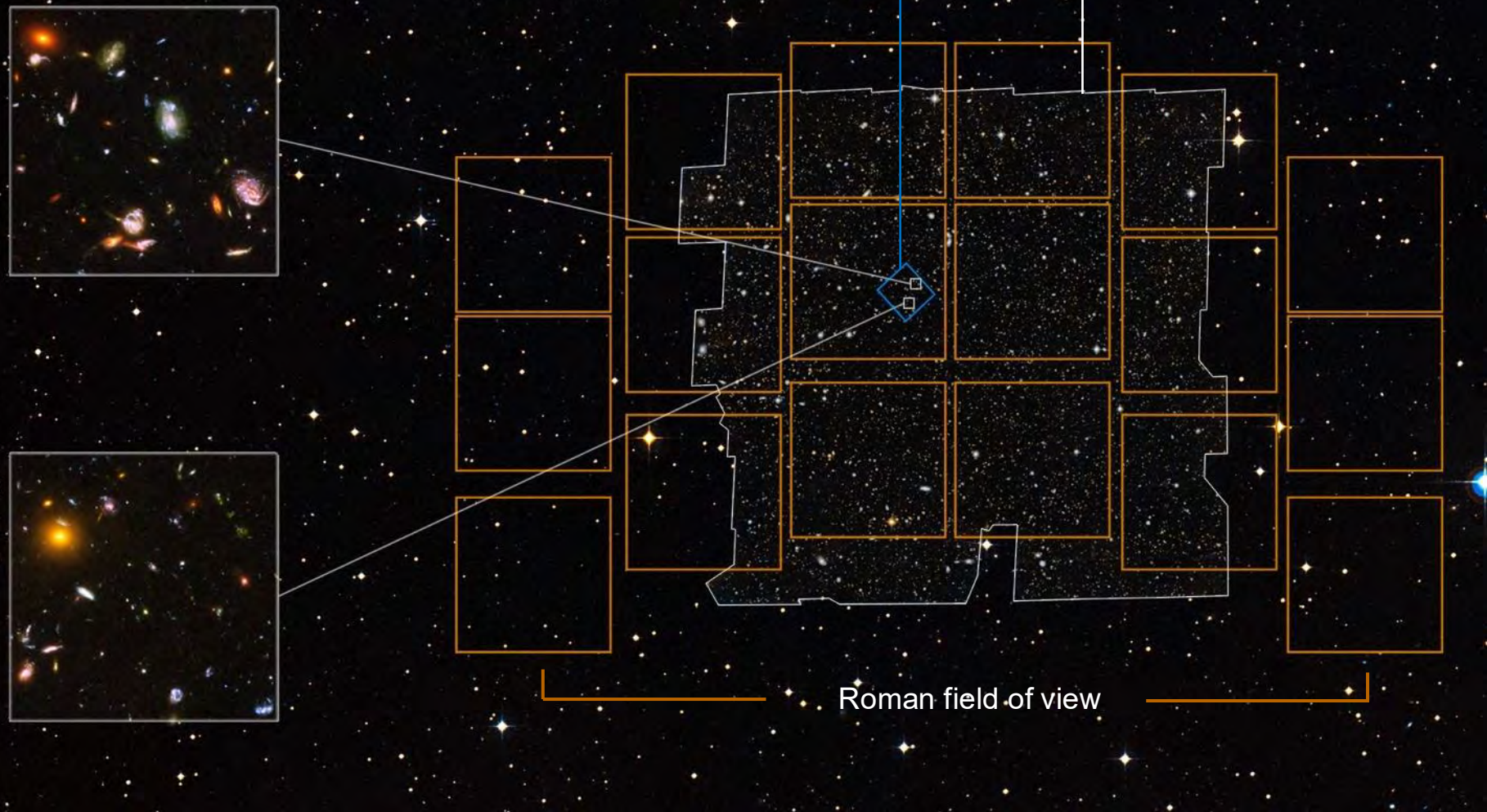
The Early Universe

Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics



Fundamental Physics

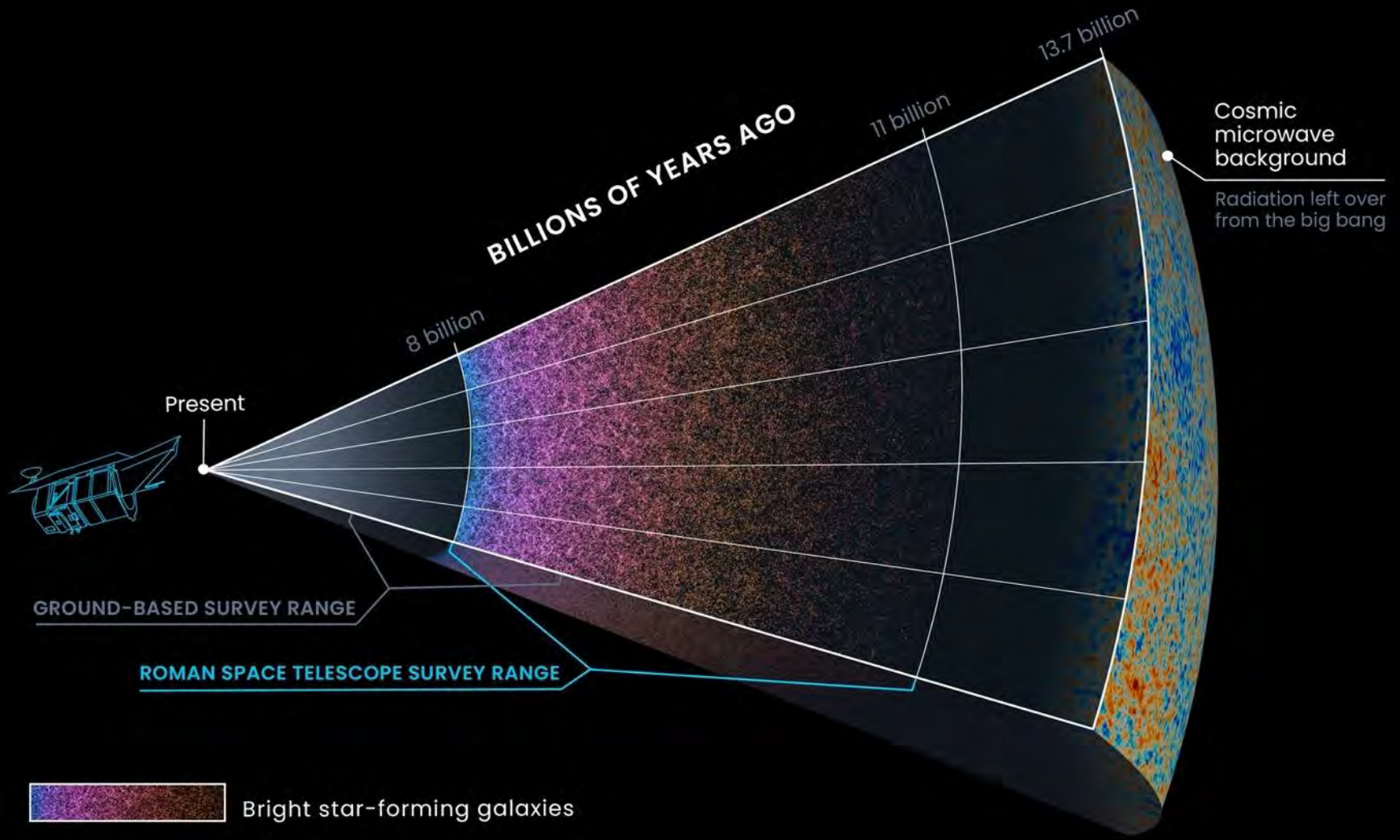
Structure of the Universe

Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics



New Physics

Expect the Unexpected

Timothy Rhue

Principal Informal Education Specialist

Space Telescope Science Institute

NASA’s Universe of Learning

Baltimore, MD

trhue@stsci.edu

NANCY GRACE ROMAN SPACE TELESCOPE

Expanding Our View

NASA’s Universe of Learning - Roman Launch Resources: universe-of-learning.org/informal-educators/roman-launch-resources

- **Customizable slide deck** (multiple versions, English & Spanish), includes script for public audiences
- **Hands-on Activities** and supporting materials (videos, Viewspace interactives, etc.)
- **Facilitator Toolkit** (program guides, accessibility tips, planning and assessment resources, and more)
- **Interactive map and list of organizations** hosting community events for Roman's launch

NANCY GRACE ROMAN SPACE TELESCOPE

How to Get Involved

Be part of the Roman story

Launch Resources

Share Roman's story and science with your community with slides, activities, and toolkits to support your needs!

https://bit.ly/roman-launch

Roman Community Events

Get involved and host your own Roman-themed event for launch and first images!

https://bit.ly/roman-events

Roman Community Event Sign Up Form

Sign up to get more information about Roman Community Events and get your event on the map!

https://bit.ly/roman-signup

Resources, Reminders and Q&A

NISE Network Related Resources

- **Roman Space Telescope resources**: nisenet.org/roman

Resources & Opportunities

Learn more and access the NISE Network's online digital resources
nisenet.org/browse-topic

NISE NETWORK NEWSLETTER

Read our monthly newsletter
nisenet.org/newsletter

NISE NETWORK ONLINE WORKSHOPS

Past Recordings of Online Workshops
nisenet.org/online-workshop-recordings

Follow NISE Net on social networking
nisenet.org/social

See you next time!
Upcoming Online Workshops…

Tuesdays; 2pm-3pm Eastern / 11am-12pm Pacific

- **September 29th: Inspiring Ideas for Interpreting Scientific Data with Artwork**

Learn more and register at nisenet.org/events

Thank You







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Arizona State University

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