The Bigger Picture

200x HUBBLE’S INFRARED VIEW
Dr. Nancy Grace Roman

NASA's First Chief of Astronomy

1925–2018
Major US Space-based Missions

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

-Nancy Grace Roman

by May 2027

ROMAN
Facts & Figures

- 300-megapixel camera
- 1 advanced coronagraph
- 5-year primary 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
- 200x Hubble’s infrared 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
Advancing planet-detection technology
Stars
by the billions
The Stellar Lifecycle in a Snapshot

Stellar birth

New star clusters

Stellar death
The crowded core of the Milky Way galaxy
Galaxies by the millions
The Local Universe
The Early Universe
Fundamental Physics
Structure of the universe

BILLIONS OF YEARS AGO

Present

Ground-based survey range

Roman space telescope survey range

Bright star-forming galaxies

Cosmic microwave background

Radiation left over from the big bang

Planets by the thousands

Stars by the billions

Galaxies by the millions

Fundamental physics
The Mystery of Dark Energy
The Nature of Dark Matter
New physics
Expect the Unexpected
BIG DATA

172 Terabytes
Hubble’s data archive
30 years (1990–2020)

20,000 Terabytes
Roman’s data archive
5 year primary mission
(projected)
Planets by the thousands
Stars by the billions
Galaxies by the millions
Fundamental Physics
The Unexpected

The Bigger Picture
with the Roman Space Telescope

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

Roman