

NANCY GRACE ROMAN SPACE TELESCOPE

The Nancy Grace Roman Space Telescope is designed to provide data that might settle some of the most enduring mysteries of the universe – dark energy, dark matter, exoplanets and undiscovered galaxies.

ROMAN SPACE TELESCOPE MISSION

When the telescope launches in late-2026, Roman will begin its five-year mission to survey wide areas of the universe with more detail than ever before. Roman's field of view is much larger than the Hubble Space Telescope or the James Webb Space Telescope. Those predecessors take detailed views of smaller areas of space, more like a zoomed-in view to Roman's panoramic.

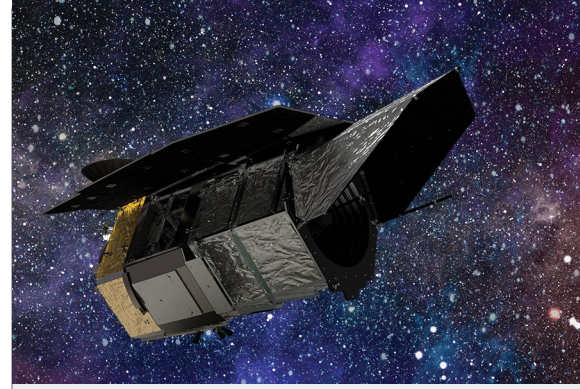
Roman will observe billions of galaxies, detailing supernovae and other cosmic phenomena. The data will fuel discoveries on dark energy and dark matter, two mysteries of the universe that science cannot fully explain. The telescope will also study exoplanets – planets outside of our solar system – with unprecedented detail. Roman will monitor 100 million stars for hundreds of days and is expected to discover about 2,500 new planets. Included in that number are rocky planets in regions that may support the existence of liquid water.

L3HARRIS' ROLE

L3Harris was responsible for the design, build, and test of the optical telescope assembly. L3Harris created the hardware to collect and condition light for the two instruments on the telescope: the Wide Field Instrument Opto-Mechanical Assembly for the mission's core science goals and the Coronagraph Instrument to demonstrate new technologies for the identification and imaging of exoplanets.

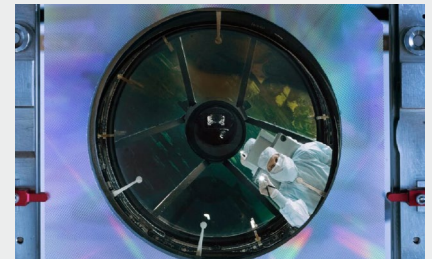
L3Harris successfully completed all testing for the telescope and delivered it to NASA in October 2024.

The telescope was initially constructed for another mission, but was transferred to NASA. L3Harris has worked with NASA and other partners to turn the hardware into a powerful astrophysics and universe-exploration tool. Using an existing telescope reduced overall mission cost and schedule risk.



ROMAN DETAILS

- > Mission duration is approximately five years
- > Launch is scheduled fall of 2026
- > Primary mirror diameter is 2.4 meters
- > Two main instruments: Wide Field Instrument Opto-Mechanical Assembly for scientific discovery and Coronagraph Instrument to demonstrate advanced technology
- > Areas of study include dark energy, dark matter, exoplanets and new galaxies



Engineer inspects the mirrors in the Nancy Grace Roman Space Telescope

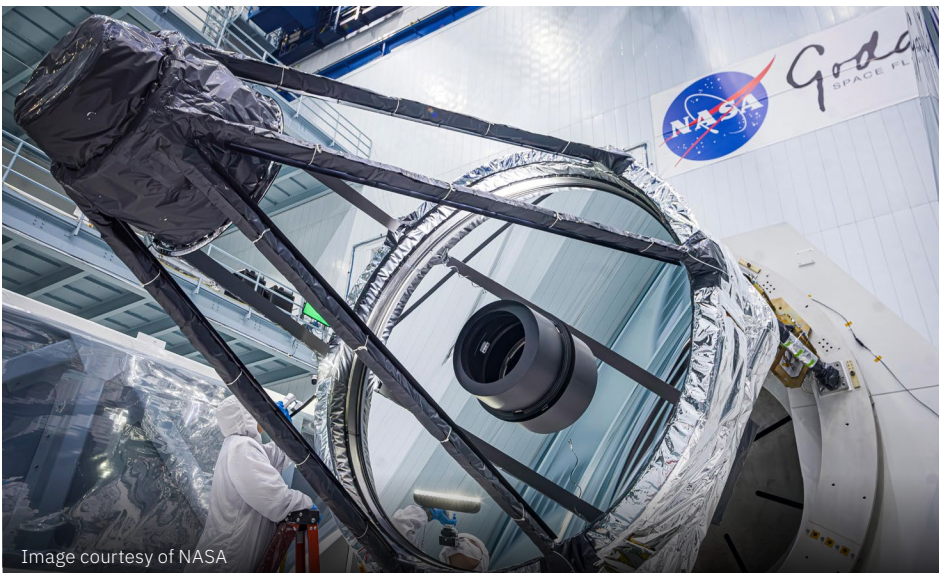


Image courtesy of NASA

Engineer inspects the surface of the primary mirror for NASA's Nancy Grace Roman Space Telescope

SCIENTIFIC TARGETS

Dark matter is an invisible substance we know is present in the universe, but cannot directly detect. Scientists estimate about 25% of the universe is dark matter. Dark energy is a force – again, with specifics unknown – that causes the expansion of the universe that began with the Big Bang, to accelerate.

Exoplanets orbiting stars, both relatively nearby and distant, hold the potential to open vast avenues of knowledge. That includes the question of whether life exists, or existed, outside of our solar system.

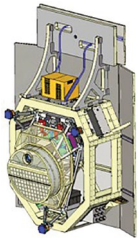
Roman's vast survey and coronagraphic details will support investigations in many subdisciplines of astrophysics and planetary science, including solar system objects, exoplanet transits, brown dwarfs and stellar remnants, stellar populations of the Milky Way and nearby galaxies. As with other Great Observatories, Roman will be available to the broad scientific community through a general observer program.

NASA BUILT THE ROMAN SPACE TELESCOPE'S SPACECRAFT AND INTEGRATED THE FOLLOWING COMPONENTS:



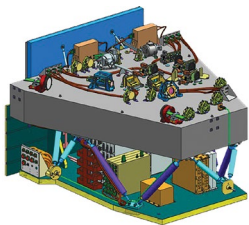
OPTICAL TELESCOPE ASSEMBLY (L3HARRIS TECHNOLOGIES)

- > Telescope featuring a 2.4-meter primary mirror, an on-axis secondary mirror, and relay optics to the instruments
- > The Optical Telescope Assembly is the eye of the telescope and the most precise monolithic mirror flown for scientific discovery



WIDE FIELD INSTRUMENT OPTO-MECHANICAL ASSEMBLY (BAE SYSTEMS)

- > Carries out dark energy, exoplanet microlensing and near-infrared surveys
- > Includes wide field imaging and slitless



CORONAGRAPH INSTRUMENT (JPL)

- > Supports exoplanet high-contrast direct imaging and spectroscopy demonstration
- > Blocks the glaring light of stars to see exoplanets and debris around nearby stars

NANCY GRACE ROMAN

The Roman telescope was known as the Wide Field Infrared Space Telescope, during its development. It is named for NASA's first Chief of Astronomy, Dr. Nancy Grace Roman, who broke ground for women in the field and created NASA's space-based astronomy program. Her work included planning a program of satellites and rockets, including space telescopes. Dr. Roman was known as the "mother of Hubble" for her role in making the famous space telescope a reality. Dr. Roman passed away in 2018.

ROMAN AND OTHER SPACE TELESCOPES

- > Roman has a field of view 100 times that of Hubble at the same depth and resolution
- > Roman's mirror is the same diameter as Hubble, but is only about one fourth the mass
- > Roman's wide field views and exoplanet detection in the visible to near infrared spectrum, coupled with the deep infrared imaging capability and sensitivity of Webb, and with the long-term monitoring and additional UV spectrum views enabled by Hubble, are expected to exponentially increase new discoveries about our Universe
- > Roman's coronagraph is a technology demonstration for future great observatories, such as NASA's proposed Habitable Worlds Observatory

Nancy Roman Grace Telescope

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