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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 it launches in the mid-2020s on a mission planned for five years, Roman will survey wide areas of space with a field of view 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.

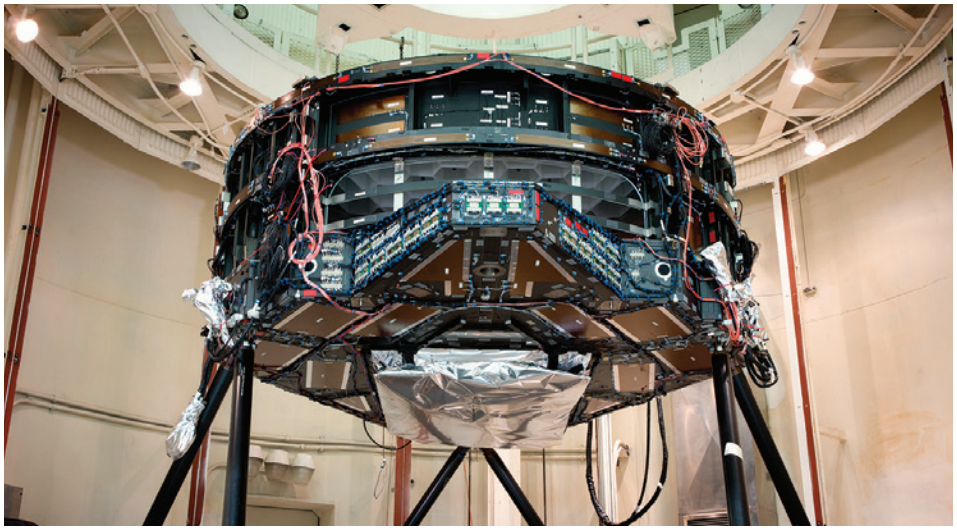
Roman will observe billions of galaxies, detailing supernovae and other cosmic phenomena. The data will fuel discoveries on dark energy and dark matter, two mysteries of the universe that science cannot fully explain. The telescope will also study exoplanets – planets outside of our solar system – with 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 is responsible for some of the most important tasks to create the telescope, including refinishing the primary mirror. L3Harris is creating hardware to accommodate and interact with the two instruments on the telescope, the Wide Field Instrument for the mission's core science goals and the Coronagraph Instrument for future exoplanet direct-imaging technology development.

L3Harris also conducted the successful test of the primary mirror to ensure it functions in the very cold temperatures found in space.

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 optical telescope assembly

ROMAN DETAILS

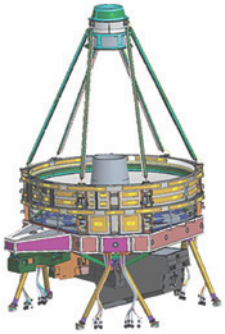
- **Mission duration is approximately five years**
- **Expected launch in the mid-2020s**
- **Primary mirror diameter 2.4 meters**
- **Two main instruments – Wide Field Instrument for scientific discovery and Coronagraph Instrument to demonstrate advanced technology**
- **Areas of study include dark energy, dark matter, exoplanets and new galaxies**

SCIENTIFIC TARGETS

Dark matter is an invisible substance we know is present in the universe, but cannot directly detect. Scientists estimate about 25 percent 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.

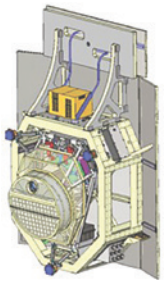
Exoplanets orbiting stars both relatively nearby and distant hold the potential to open vast avenues of knowledge. That includes the question of whether life exists, or existed, outside of our solar system.

Roman will also support additional investigations in astrophysics and planetary science, including a general observer program open to the broad scientific community. Expected areas of study through the program include solar system objects, exoplanet transits, brown dwarfs and stellar remnants, stellar populations of the Milky Way and nearby galaxies and other topics.



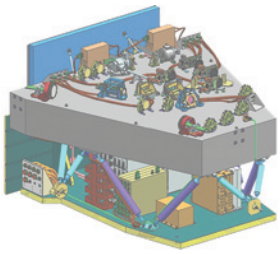
ROMAN INSTRUMENTS

- Telescope featuring a 2.4-meter primary mirror, an on-axis secondary mirror and relay optics to the instruments.
- Wide Field Instrument, featuring 18 state-of-the-art detectors and technology demonstration high-contrast Coronagraph Instrument.



Wide Field Instrument

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



Coronagraph Instrument

- 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, or WFIRST, during its development. It is named for NASA's first Chief of Astronomy 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. Roman was known as the "mother of Hubble" for her role in making the famous space telescope a reality. 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 mirror is the same diameter as Hubble, but is only about one fourth the mass.**
- **Ideally, Roman would co-fly with the James Webb Space Telescope (JWST) to couple the wide survey of Roman with the high-angular resolution and sensitivity of JWST. This would exponentially increase the scientific return.**

Nancy Grace Roman Space Telescope (NASA)

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.

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