National Aeronautics and Space Administration

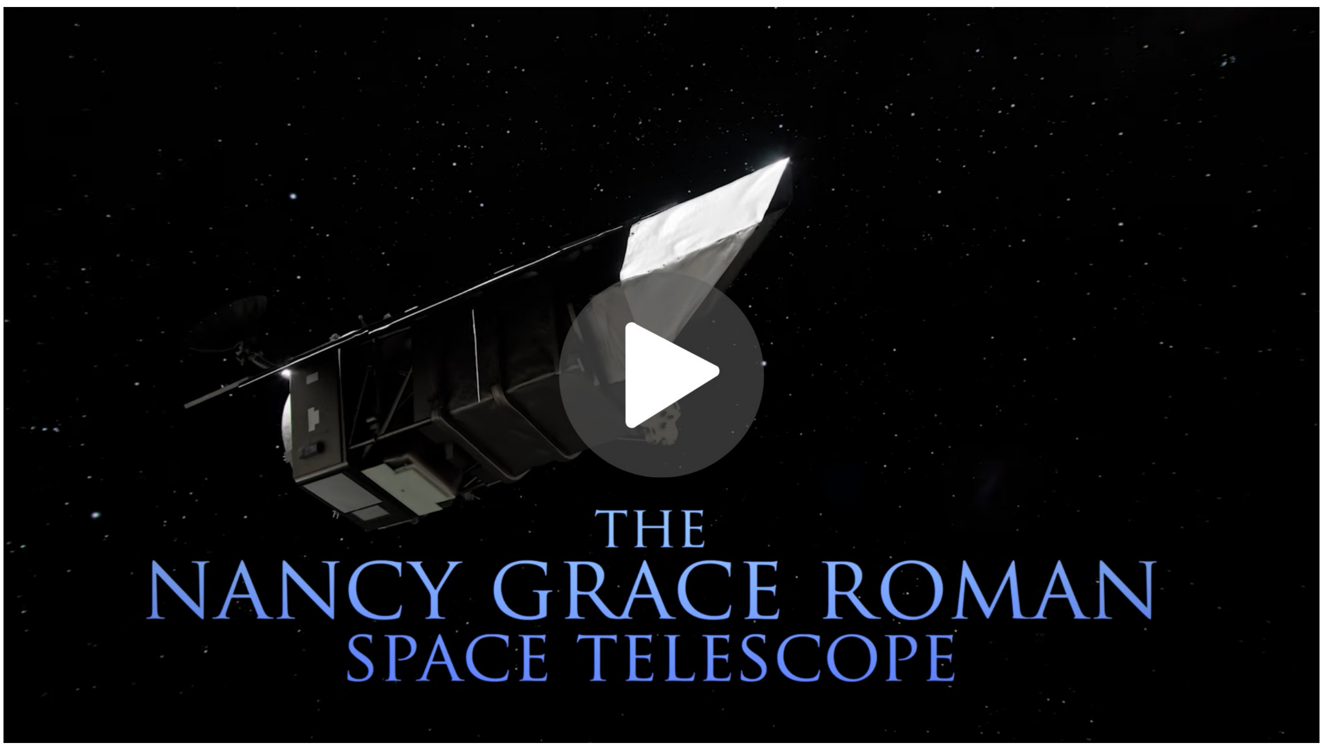
NANCY GRACE ROMAN SPACE TELESCOPE

Press Kit
June 2026

TABLE OF CONTENTS

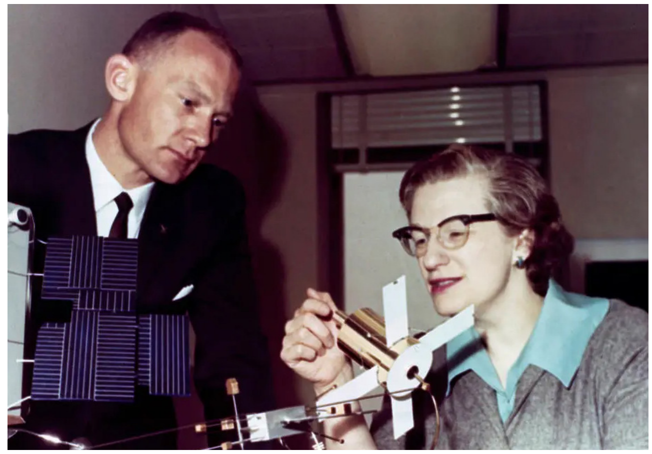
MISSION OVERVIEW

NASA's Nancy Grace Roman Space Telescope will pair a large field of view with crisp infrared vision to scan vast, deep swaths of sky. This flagship mission is designed to help astronomers explore dark matter, dark energy, and exoplanets. Since each of Roman's surveys will sample such a large volume of the cosmos, the mission will also offer practically limitless opportunities for astronomers to conduct a broad range of additional science. From objects in our outer solar system and exploding stars to growing black holes and galaxies by the billions, very little will be beyond Roman's reach. Roman's data will be made public as soon as it's processed so many teams will be able to analyze it simultaneously. The mission is targeting an Aug. 30, 2026, launch from NASA's Kennedy Space Center in Florida.



FAST FACTS

Mission Name



Roman is named after [Dr. Nancy Grace Roman] (1925-2018), NASA's first chief astronomer and one of the architects of the agency's modern science program. Dr. Roman championed space-based observatories that could study the universe above Earth's hazy atmosphere while making their data broadly available to the scientific community. While she's known as the "mother" of the Hubble Space Telescope, Dr. Roman played an even broader role as the driving force behind NASA's entire Great Observatories program, which included Hubble along with the Chandra X-ray Observatory and the retired Compton Gamma Ray Observatory and Spitzer Space Telescope. Together, these observatories transformed astronomy by allowing scientists to study the universe across much of the electromagnetic spectrum, from infrared to gamma rays. Dr. Roman's vision and leadership helped establish NASA as a world-class scientific institution and laid the foundation for generations of space telescopes that continue to expand humanity's understanding of the cosmos.

Orbit

Roman will orbit 1 million miles away at the second Sun-Earth Lagrange point (L2), the same orbit as NASA's James Webb Space Telescope. At L2, the gravity of the Sun and Earth, together with an object's motion around the Sun, let it stay lined up with Earth as they orbit, allowing Roman to have a relatively steady orbit without using much fuel. This location also offers exceptionally stable optical performance and a constant, unobstructed view of a wide swath of the sky; Earth won't block much of Roman's view since it will be so distant. And at L2, heat from Earth, the Sun, and the Moon have less effect on infrared telescopes, which "see" heat. Like Webb, Roman will trace out a large orbit around the actual L2 point — much larger than the Moon's orbit around Earth — and the two will easily be kept far apart.

Duration

Roman will have a primary mission lifetime of five years and is designed to support an additional five-year extended mission. Fuel is expected to be the mission's life-limiting resource, and while NASA does not currently have an ability to service observatories at L2, Roman is designed to be refuelable.

Ground Stations

Roman will downlink approximately 1.4 terabytes of data per day to ground stations in New Mexico, Australia, and Japan. These locations are spread out so the Roman team will consistently be able to communicate with the spacecraft.

Instruments

Roman is equipped with a primary instrument called the Wide Field Instrument and a Coronagraph Instrument technology demonstration. Many telescopes are designed to focus incoming light toward a central point, so their view is sharpest in the middle. Because of Roman’s optical design, it will instead see the most detail in a ring around the center. The detectors in Roman’s Wide Field Instrument are laid out in an arch shape to sit along part of that ring. This design helps Roman capture a much wider area with equally sharp imaging, and also lets both instruments operate simultaneously.

Wide Field Instrument

The Wide Field Instrument, or WFI, is a 300-megapixel infrared camera that will give Roman the same angular resolution as Hubble but with a field of view at least 100 times larger. Using this instrument, each Roman image will capture a patch of the sky bigger than the apparent size of a full moon. The mission will gather data up to 1,000 times faster than Hubble, adding up to 20,000 terabytes (20 petabytes) over the course of its five-year primary mission. Its sweeping cosmic surveys will help scientists discover new information about planets beyond our solar system, untangle mysteries like dark energy, and map how matter is structured and distributed throughout the cosmos. The mission’s broad, crisp view will produce an extraordinary resource for a wide range of additional investigations.

Coronagraph

The Coronagraph is a system of optics, masks, self-flexing mirrors, and sensors designed to demonstrate the most advanced technologies ever flown in space for directly imaging planets around other stars. It will block the glare from stars and make it possible for scientists to see the faint reflected light from planets in orbit around them. The Coronagraph aims to photograph worlds and dusty disks around nearby stars in visible light to help us see giant worlds that are older, colder, and in closer orbits than the hot, young super-Jupiters direct imaging has mainly revealed so far. The Coronagraph team will conduct a series of pre-planned observations for a total of three months spread across the mission’s first year-and-a-half of operations.

Collaboration

Roman will work in tandem with many other NASA-led and international missions to provide the most complete view of our universe yet.

Hubble

Roman’s images will have the same crisp infrared resolution as Hubble’s, but each one will capture a patch of the sky at least 100 times larger. Over the first five years of observations, Roman will image more than 50 times as much sky as Hubble covered in 30 years and perform surveys that would take Hubble hundreds or even thousands of years. Hubble could follow up on interesting targets within Roman’s panoramas using infrared, visible, and ultraviolet light, providing a more comprehensive view of individual objects and conducting studies that only Hubble can currently do.

Webb

Roman and Webb view the universe in different but complementary ways, like wide-angle and zoom lenses. Roman's surveys will offer a broad view of cosmic ecosystems and pinpoint rare objects. Webb can use its narrower view but more powerful vision to follow up on those uncommon objects for even more detailed observations, and Roman can view regions around objects Webb has observed to offer context. Together, the two observatories will reveal extraordinary new information about our universe such as primordial galaxies, black holes, and planets beyond our solar system.

Euclid

Euclid and Roman, which will both orbit at L2, are both designed to study dark energy and dark matter, but using complementary approaches. Both missions will make 3D maps of the universe to answer fundamental questions about the history and structure of the universe. Euclid, an ESA (European Space Agency) mission with key contributions from NASA, will observe approximately 15,000 square degrees, or about a third of the sky, in both infrared and optical wavelengths of light, but with less detail than Roman. It will peer back 10 billion years to when the universe was about 3 billion years old. Roman's largest core survey will probe the universe to a much greater depth and precision, but over a smaller area — 5,100 square degrees, or about 12% of the sky. Its sharp infrared vision will unveil the cosmos when it was 2 billion years old, revealing a larger number of fainter galaxies. Since their survey areas will overlap, scientists can use Roman's higher-quality data to apply corrections to Euclid's (and extend them over Euclid's much larger area).

Rubin

Pairing Roman's infrared data with visible-light observations from the ground-based National Science Foundation-Department of Energy Vera C. Rubin Observatory will allow scientists to try to detect the same objects in both sets of images. That's important because ground-based observations aren't always sharp enough to distinguish multiple, close sources as separate objects. Sometimes they blur together, which makes some objects and effects much harder to see. By comparing Roman and Rubin images, scientists may be able to "deblend" objects Rubin sees and inch closer to achieving Roman-like quality over Rubin's much greater sky coverage. Roman and Rubin will also both conduct repeated imaging to measure the brightness of exploding stars, and their complementary visible and infrared views will improve the value of both observatories.

Habitable Worlds Observatory

Roman will survey the stars to find planets like those in our solar system, which other telescopes typically struggle to find, and showcase technology to directly photograph Jupiter-like exoplanets. That will provide a crucial stepping stone for NASA's Habitable Worlds Observatory concept, a flagship space telescope that would be designed to photograph Earth-like planets for the first time ever. It would also look for signs of life called biosignatures by measuring atmospheric gases like oxygen and ozone that could signal the presence of living things.

Spacecraft

Weight: Roman weighs about 18,000 pounds or 8,000 kilograms (dry mass) — about the mass of a Tyrannosaurus rex.

Size: With all components fully deployed, Roman is over 42 feet (12.7 meters long) and over 14 feet (4.4 meters) wide — about the size of a tour bus.

Primary Mirror: At 7.9 feet (2.4 meters) across and 410 pounds (186 kilograms), Roman's primary mirror is the same size as the Hubble Space Telescope's main mirror, but less than one-fourth the weight thanks to major improvements in technology. Roman's primary mirror was designed and built at L3Harris Technologies in Rochester, New York.

Detectors: The detector array in Roman's Wide Field Instrument has 18 saltine cracker-sized detectors. Each has about 16.8 million tiny pixels for a total of 300 million, providing the mission with exquisite image resolution. Each detector is made of millions of mercury-cadmium-telluride photodiodes (sensors that convert light into an electrical current), one for each pixel. The detectors are secured to a silicon electronics board that will help process the light signals using indium, a soft metal that has roughly the same consistency as chewing gum. Together, these ultra-sensitive detectors can capture vast areas of sky in a single shot while still revealing incredibly fine detail, allowing Roman to map the cosmos faster and more precisely than ever before. Technicians at NASA's Goddard Space Flight Center in Greenbelt, Maryland, and Teledyne Scientific & Imaging in Camarillo, California, developed the detector array.

High-Gain Antenna: The carbon composite radio dish spans 5.6 feet (1.7 meters) in diameter, about as tall as a refrigerator, yet weighs only 24 pounds (10.9 kilograms). Its large size will help Roman send radio signals across a million miles of intervening space to Earth. The dual-band antenna, which is driven by twin high-power radio communications electronics produced by Thales Alenia in France, will use one frequency band to receive commands and send back information about the spacecraft's health and location. It will use another frequency band to transmit a deluge of data at up to 500 megabits per second. The antenna was produced by NASA's Goddard Space Flight Center and Applied Aerospace Structures Corporation (AASC) in Stockton, California.

Wiring: Roman has 1,000 pounds of electrical cabling, made up of about 32,000 wires and 900 connectors, laced throughout the observatory. If the wires were laid out end-to-end they would span 45 miles (eight times taller than Mount Everest). Functioning as Roman's "nervous system," the cabling enables different parts of the observatory to communicate with one another, provides power, and helps the central computer monitor the observatory's function via an array of sensors.

Power: Roman's six solar panels each measure about 7 by 10 feet (2 by 3 meters). Together, they will provide a total of 4 kilowatts of power, which is about the same rate that a modest rooftop solar panel system produces during the daytime. The panels are covered in a total of 3,902 solar cells that will convert sunlight directly into electricity much like plants convert sunlight to chemical energy. When tiny bits of light, called photons, strike the cells, some of their energy transfers to electrons within the material. This jolt excites the electrons, which start moving more or jump to higher energy levels. In a solar cell, excited electrons create electricity by breaking free and moving through a circuit, sort of like water flowing through a pipe. The panels are designed to channel that energy to power the observatory.

Data Volume: Roman will downlink 1.4 terabytes of raw science data — almost enough to max out the hard drive of a standard gaming computer — every day. That's the highest data volume of any NASA astrophysics mission so far. Over the course of its five-year primary mission, Roman's processed data will add up to 20,000 terabytes (20 petabytes).

Data Access: Data from all of Roman's surveys will be made public as soon as it is processed, with no periods of exclusive access. This ensures multiple scientists and teams can use data at the same time, which is important since every Roman observation will address a wealth of science cases. Due to the mission's immense data volume, most science will be done via a cloud-based computing platform called the Roman Nexus using online tools rather than via individual downloads. So instead of downloading and storing the full datasets locally, researchers will access and analyze curated data products online.

Launch

Target Launch Date: Aug. 30, 2026

Launch Vehicle: SpaceX Falcon Heavy Rocket

Site: NASA's Kennedy Space Center in Florida

Program: The total lifecycle cost to develop, launch, and operate Roman under NASA's current budget planning is approximately $4.3 billion.

SCIENCE GOALS

Strange forces are at work across the cosmos. Stars swirl around the edges of galaxies so fast that they should break away, yet they remain tethered by some invisible anchor. And all across the universe, galaxies are speeding apart from one another faster and faster when astronomers expected them to be slowing down.

Meanwhile in the search for other worlds, planetary systems like our own remain very difficult to detect. Most of the thousands of exoplanets now known are either gigantic or orbit dizzyingly close to their host star, or both. Astronomers are eager to learn how common Earth-like worlds are. Roman is designed to explore all of these mysteries, and in doing so will gather a motherlode of data that astronomers can mine for a wide variety of other purposes too.

Dark Matter

The universe is full of shadows whose silhouettes hint at the presence of a strange form of matter. It behaves somewhat like an ocean current, invisibly steering everything within it. Scientists have been on a cosmic ghost hunt to find and study it for over 80 years, following a couple of perplexing discoveries. First, Swiss-American astronomer Fritz Zwicky observed that galaxies in the Coma cluster were moving so quickly they should have been flung away into space — yet they remained gravitationally bound to the cluster by unseen matter. Then in the 1970s, American astronomer Vera Rubin discovered the same type of problem in individual spiral galaxies. Stars toward the edge of the galaxy move too fast to be held in by the galaxy's luminous matter. It's as though someone cut all the ropes in a carnival swing ride, yet the swings continued spinning like normal.

These observations suggest that there must be more matter than we can see in these galaxies and galaxy clusters to hold the stars and galaxies in orbit — much more. The trillions of stars, planets, galaxies, and other visible objects strewn throughout the cosmos only account for about one-fifth of the universe's matter. The rest is dubbed "dark matter" since we can only see it through its gravitational effects on visible matter.

This mystery matter is exposing cracks in our understanding of the cosmos. Our standard model of cosmology — a mathematical framework that describes how the universe evolves over time — can't quite bridge the gap between how the universe was when it was very young and how it is now. Tiny fluctuations in the cosmic microwave background — the afterglow of the universe's fiery birth — record how matter was distributed in the early universe, and the pattern of those fluctuations can only be explained if most of the universe's matter is invisible dark matter. The amount of dark matter inferred from the early universe agrees well with many observations today. But some discrepancies have popped up, such as differences in the measured expansion rate of the universe and how matter clusters at large scales, which could hint that new physics may be at play.

Although scientists have long seen evidence of its existence, dark matter's true nature remains one of the unsolved puzzles in modern physics. There is currently a wide range of dark matter candidates, from WIMPs (Weakly Interacting Massive Particles) — big, heavy, slow-moving hypothetical particles — to primordial black holes, which may have formed right after the universe's birth with an enormous range of masses.

Roman will help narrow down candidates by providing the most comprehensive 3D map of the distribution of galaxies and galaxy clusters across the universe. The mission will conduct the most detailed dark matter studies ever undertaken, thanks to dark matter's gravitational effects.

Roman will study how the universe's web of matter has evolved by measuring how gravity subtly bends the path of light across vast distances — a phenomenon called gravitational lensing. This effect occurs because anything that has mass warps space-time, the underlying fabric of the universe. Roman will build on previous dark matter studies by using so-called weak gravitational lensing to track how smaller dark matter clumps warp the apparent shapes of more distant galaxies.

Altogether, the mission will measure the locations and quantities of both normal matter and dark matter in hundreds of millions of galaxies. Throughout cosmic history, dark matter has driven how stars and galaxies formed and evolved. If dark matter consists of heavy, sluggish particles, it would clump together readily and Roman should see galaxy formation early in cosmic history. If dark matter is made up of lighter, faster-moving particles, it should take longer to settle into clumps and for large-scale structures to develop. If astronomers can narrow down the candidates for dark matter particles, we'll be one step closer to finally detecting them directly in experiments on Earth.

Dark Energy

Imagine you planted a flower and instead of its growth slowing as it reached its mature height, it suddenly shot up like Jack's beanstalk in the classic fairy tale instead. Or what if you threw a baseball up into the air and instead of falling back down it rocketed up even faster like it was equipped with an invisible jetpack? That's similar to what astronomers have discovered about the universe's expansion.

After the big bang sent the universe's contents hurtling apart, scientists thought the expansion would gradually slow down. But instead galaxies are racing away at an ever-increasing clip, swept apart by an unseen power dubbed dark energy.

All the stars in our galaxy, the particles in our planet, and even the atoms in our bodies would immediately fly apart if they weren't held together by stronger forces. Though weak on small scales, dark energy dominates across vast stretches of the cosmos. It makes up about 68% of the universe's total contents, but so far we don't know much more about it. In some ways, the mystery has gotten even more confusing as we've learned more — the latest and most thorough observations seem to show that the strange pressure is shifting over time, holding the fate of the universe in the balance.

When Roman opens its eyes to the cosmos, it will use several different techniques to probe dark energy. Roman will study how the universe's web of matter has evolved by measuring how gravity subtly bends the path of light across vast distances. This warping, called weak lensing, will help astronomers create a 3D dark matter map. That will also help us understand dark energy because dark matter acts as drag, countering the universe's expansion; its gravity pulls, and dark energy pushes. Astronomers will study how each force influenced cosmic evolution, which could help them figure out how and why dark energy is speeding up the universe's expansion.

Roman will also study the mystery by spotting thousands of exploding stars called supernovae across vast stretches of time and space. A special category called type Ia supernovae peak at about the same intrinsic brightness. That means scientists can find their distance with a straightforward formula.

Then astronomers compare the galaxy's distance with its recession rate. That information comes from detailed wavelength patterns called spectra. If an object is moving away from us, its light is shifted toward the red end of the spectrum, or "redshifted." The greater the degree of redshift, the faster a galaxy is moving away. Astronomers will use this phenomenon to make a 3D map of all the galaxies measured within the survey area out to about 11.5 billion light-years away. Comparing galaxies' distances with their recession rates during different cosmic epochs offers clues about how dark energy may have changed over time.

Roman will also probe dark energy by detecting vestiges of sound waves, called baryon acoustic oscillations. Long before the first stars and galaxies formed, the cosmos was filled with a sea of plasma (charged particles) that formed a dense, almost uniform fluid. It was so hot that particles couldn't stick together when they collided — they just bounced off each other. Alternating between the pull of gravity and this repelling effect created waves of pressure — sound — that propagated through the plasma. That created ripples where slightly more matter collected. More galaxies eventually formed along those ripples than elsewhere, and the rings stretched as the universe expanded. By comparing the size of the rings in different cosmic eras, astronomers can explore how the universe has expanded over time.

Each of these measurements reach into new regimes of exploration. Roman's unprecedented data will bring us closer than ever before to figuring out the unseen forces at play in the universe.

Exoplanets

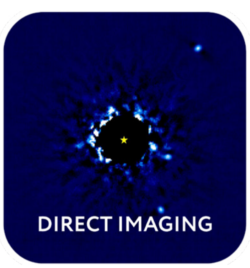
In little more than a generation, we've gone from knowing only our own solar system to finding thousands of more distant worlds, called exoplanets. As new exoplanet discoveries continue to pour in, scientists are building an ever-more-complete catalog of the worlds that grace our galaxy. Roman will use three methods (microlensing, transits, and direct imaging) in a sweeping search expected to uncover around 100,000 new exoplanets — a staggering leap compared to the nearly 6,200 currently known.

Roman will monitor hundreds of millions of stars watching for tiny surges in starlight that signal a microlensing event. This light-bending phenomenon occurs when two stars align closely from our vantage point. Light from the more distant star curves as it travels through the warped space-time caused by the nearer star's mass. If the alignment is especially close, the nearer star acts like a cosmic lens, focusing and magnifying light from the background star. Planets orbiting the foreground star may also modify the distant star's light, acting as their own tiny lenses. Astronomers see the effect as a spike in the star's brightness.

Microlensing specializes in finding planets like those in our solar system — worlds as lightweight as Mars in their star's habitable zone or farther out. Such planets are currently extremely difficult to detect, but astronomers expect to find many more soon since Roman will find more than 1,000 microlensing planets.

Scientists will also comb through the same dataset for the opposite effect — tiny dips in starlight caused by a planet crossing in front of, or transiting, its host star. The transit method is best at finding large planets orbiting very close to their host stars, since they'll block the most starlight. Roman is expected to find around 100,000 of these gargantuan, steamy worlds, dramatically increasing the catalog of known planets.

Astronomers could also study the atmospheres of perhaps a few thousand of the transiting planets Roman finds. Planetary systems with very large transiting planets can have two dimming episodes — one when the world crosses in front of the star, and second smaller one when it passes behind. By tracking how the planet's brightness changes over its orbit, Roman will measure temperature patterns and climate behavior for thousands of planets.

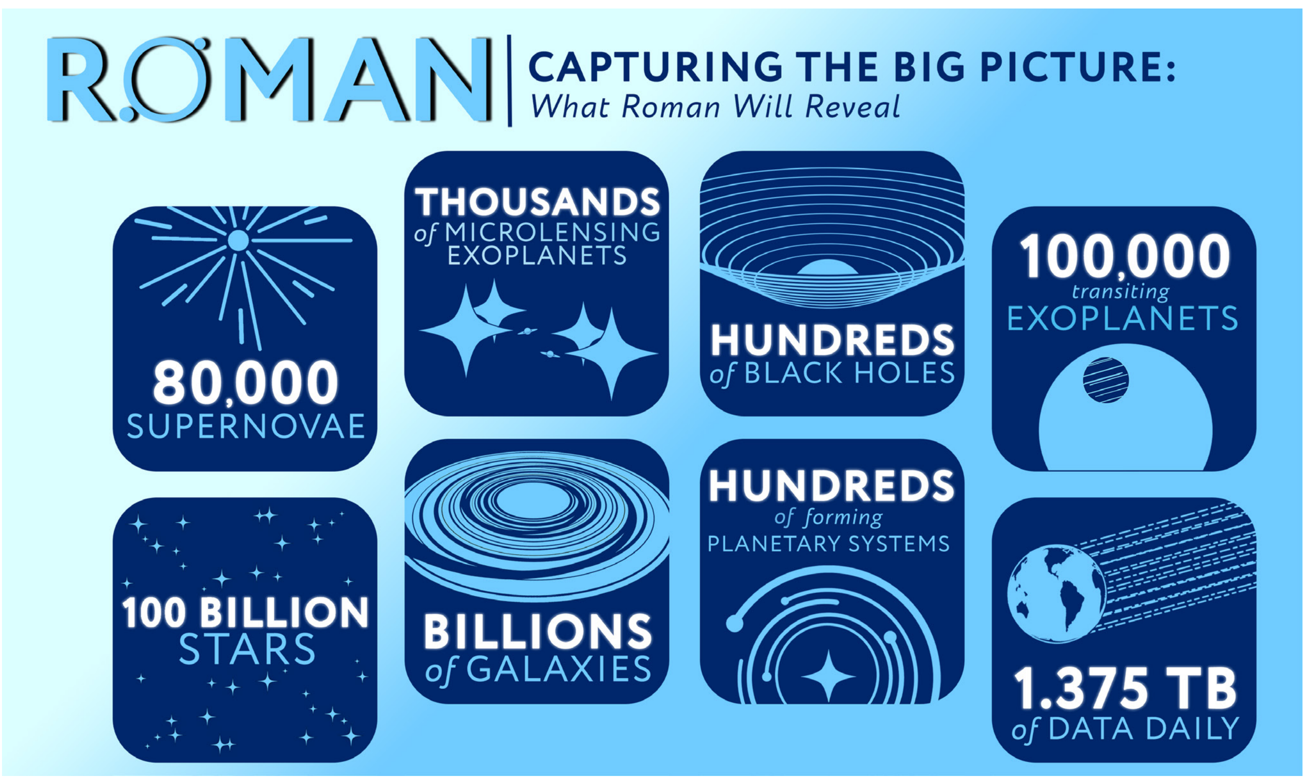


Roman will also test new direct imaging technologies to photograph worlds and dusty disks around nearby stars with sensitivity up to a thousand times better than possible with other observatories. Roman will use its Coronagraph Instrument to image worlds in visible light, which will pinpoint smaller, older, and colder planets than direct imaging usually reveals, bringing us a giant leap closer to imaging planets like Earth.

Additional Astronomy

Designing a mission that can conduct the science listed above gives us a powerful tool that can perform a wide array of additional science, too. Even just probing dark matter, dark energy, and exoplanets as thoroughly as Roman will do automatically gives astronomers a treasure trove of data they can comb through for many other purposes. That includes discovering and characterizing rogue planets, isolated black holes, starquakes, kilonova explosions, nebulae, cosmic voids, the interstellar medium, stellar streams, planet-forming disks around nearby stars, and much more.

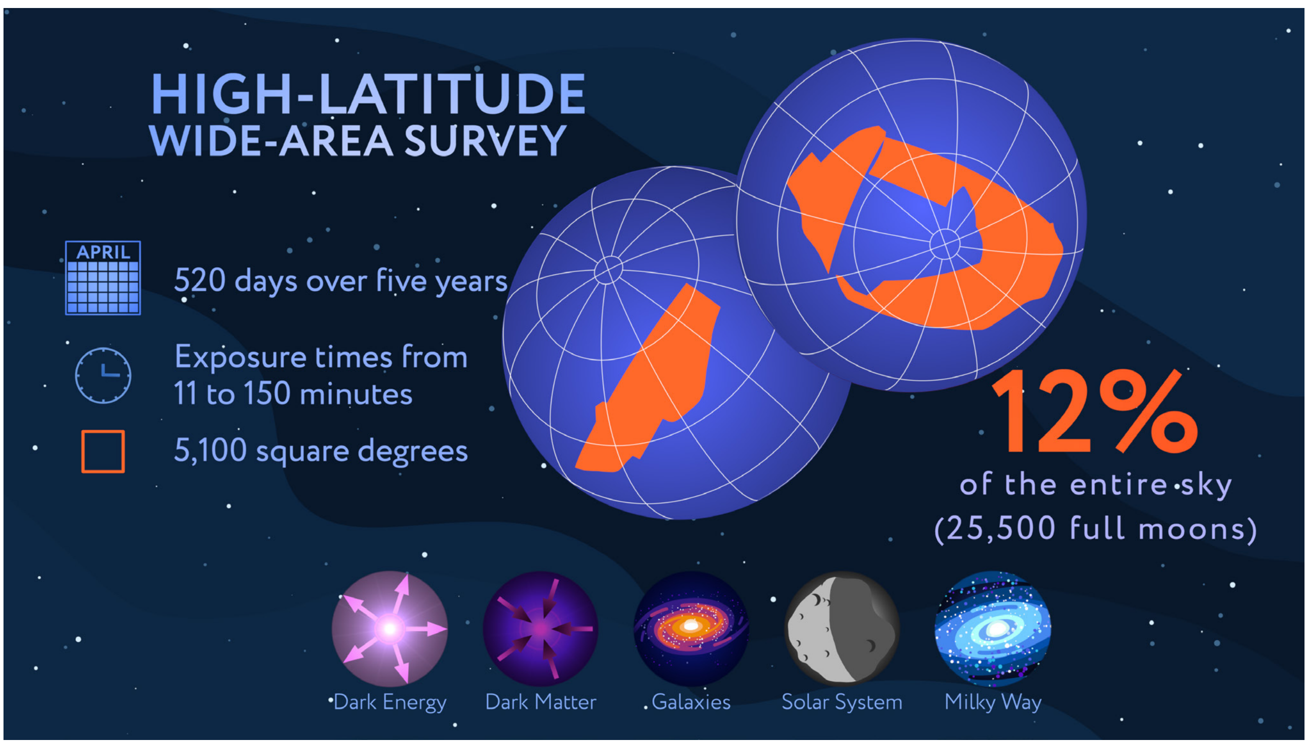
Roman will use three primary observing modes. Its **time-domain** surveys will repeatedly scan large swaths of sky, and stitching the observations together will create movies that uncover all sorts of cosmic fireworks, such as exploding or flickering stars. Astronomers will find myriads of planets and probe dark energy using time-domain data. Roman's **spectroscopy** — the study of the color information in light — will help scientists measure the distances and properties of millions of galaxies. That will reveal how the cosmos evolved when the universe was only between 2-3 billion years old — unexplored territory in large-scale cosmic structure. The mission's **astrometry** will precisely track the positions and movement of stars, especially in dust-obscured regions of our Milky Way. That will extend our galaxy map from ESA's now-retired Gaia mission much deeper into the crowded galactic center.



PLANNED OBSERVATIONS

Core Surveys

When Roman launches, it will help usher in a new era of unprecedented cosmic surveys. Its crisp, panoramic view of space combined with fast survey speeds provide the opportunity for astronomers to study the universe as never before. The mission's three core surveys — the High-Latitude Wide-Area Survey, High-Latitude Time-Domain Survey, and Galactic Bulge Time-Domain Survey — were defined through an open process driven by the scientific community and will account for no more than 75% of Roman's observation time during its five-year primary mission. Most of the remainder is allocated to additional observations, the general astrophysics surveys, which are largely still being developed by the scientific community. These observation programs are designed to investigate some of the most profound mysteries in astrophysics while enabling expansive cosmic exploration that will revolutionize our understanding of the universe.



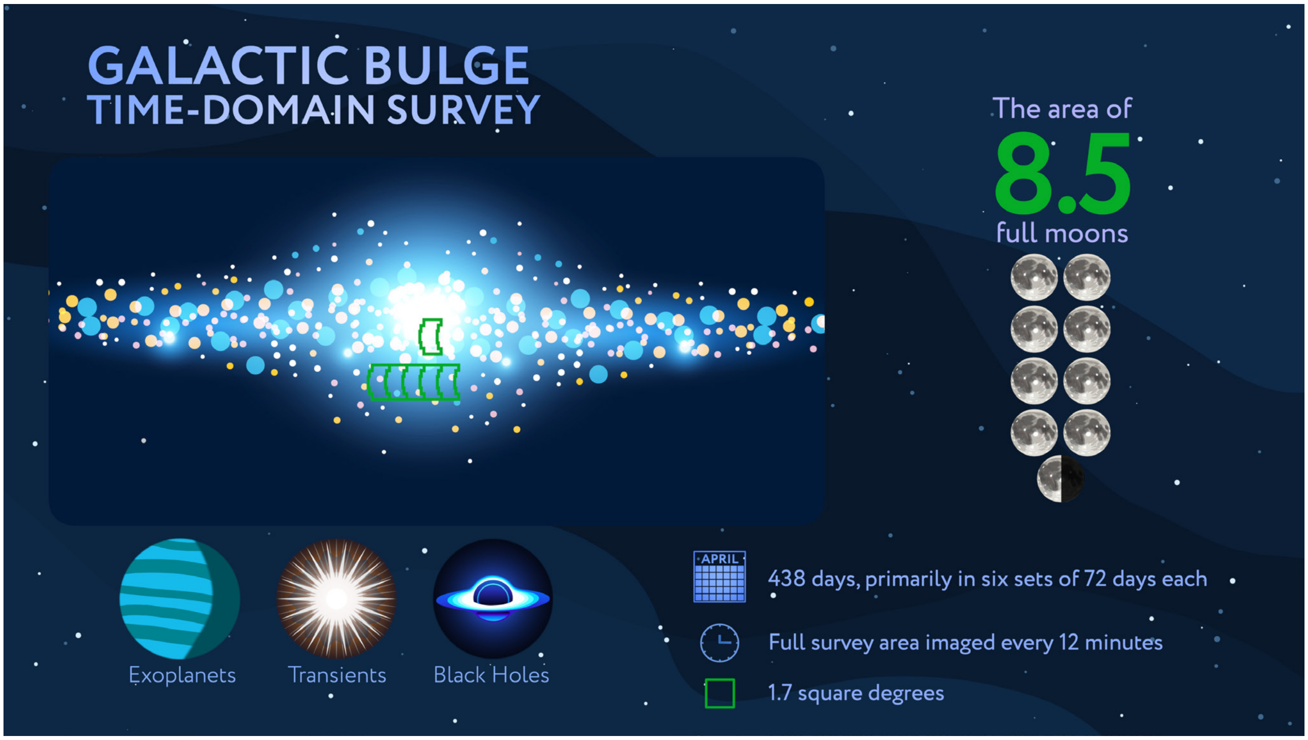
Roman's largest observation program, the High-Latitude Wide-Area Survey, will combine the powers of imaging and spectroscopy to unveil more than a billion galaxies strewn across a wide swath of cosmic time. Roman can look far from the dusty plane of our Milky Way galaxy (that's what the "high-latitude" part of the survey name means), looking up and out of the galaxy rather than through it to get the clearest view of the distant cosmos.

The distribution and shapes of galaxies in Roman's enormous, deep images will help astronomers understand the nature of dark energy and how invisible dark matter influences the evolution of structure in our universe. Researchers also spent two years discussing ways to expand the range of scientific topics that can be studied using the same dataset. That includes studying galaxy evolution, star formation, cosmic voids, the matter between galaxies, and much more.

Roman's High-Latitude Time-Domain Survey will probe our dynamic universe by observing the same region of the cosmos repeatedly. Stitching these observations together to create movies will allow scientists to study how celestial objects and phenomena change over time periods of days to years.

Scientists expect this survey to reveal around 100,000 celestial blasts, ranging from exploding stars to feeding black holes. A subset of the exploding stars, called type Ia supernovae, will help astronomers probe dark energy. These stellar cataclysms allow scientists to measure cosmic distances and trace the universe's expansion.

Staring at such a large slice of the cosmos for so long will also reveal black holes being born as neutron stars merge, and tidal disruption events — flares released by stars falling into black holes. It will also allow astronomers to explore variable objects, like active galaxies and binary systems. And it enables more open-ended cosmic exploration than most other space telescopes can do, offering a chance to answer questions no one has yet thought to ask.

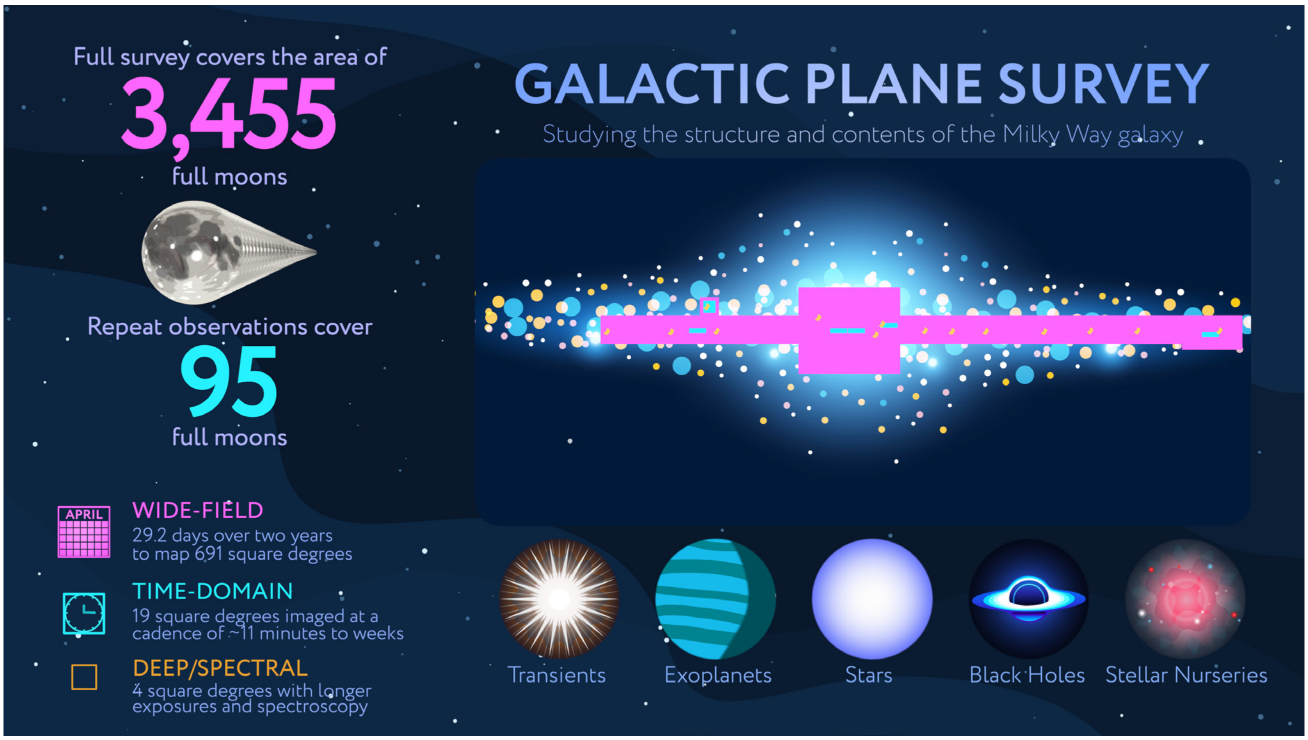


Unlike the high-latitude surveys, Roman's Galactic Bulge Time-Domain Survey will look inward to provide one of the deepest views ever of the heart of our Milky Way galaxy. Roman's crisp resolution and infrared view will allow astronomers to watch hundreds of millions of stars in search of microlensing signals — gravitational boosts of a background star's light that occur when an intervening object passes nearly in front of it. While astronomers have mainly discovered star-hugging worlds, Roman's microlensing observations can find planets in the habitable zone of their star and farther out, including analogs of every planet in our solar system except Mercury.

The same set of observations could reveal "rogue" planets that drift through the galaxy unbound to any star, brown dwarfs ("failed stars" too lightweight to power themselves by fusion the way stars do), and stellar corpses like neutron stars and white dwarfs. And scientists could discover 100,000 new worlds by seeing stars periodically get dimmer as an orbiting planet passes in front of them, events called transits. Scientists can also study the stars themselves, detecting "starquakes" on a million giant stars, the result of sound waves reverberating through their interiors that can reveal information about their structures, ages, and other properties.

General Astrophysics

Scientists can also propose tandem observations with other facilities or additional surveys dedicated to science that can't be done with the mission's core surveys. For example, astronomers could conduct a survey tuned to find things like stellar novae or other kinds of outbursts, or take a mega-exposure similar to but far larger than Hubble's celebrated Ultra Deep Field image. And when observatories like the Hubble or Webb space telescopes find something strange, Roman could follow-up to provide a big-picture view that puts the discovery into context. Astronomers from all over the world can propose cutting-edge research, such as surveys of nearby galaxies or our own, enabling the astronomical community to utilize the full potential of Roman's capabilities to conduct extraordinary science.

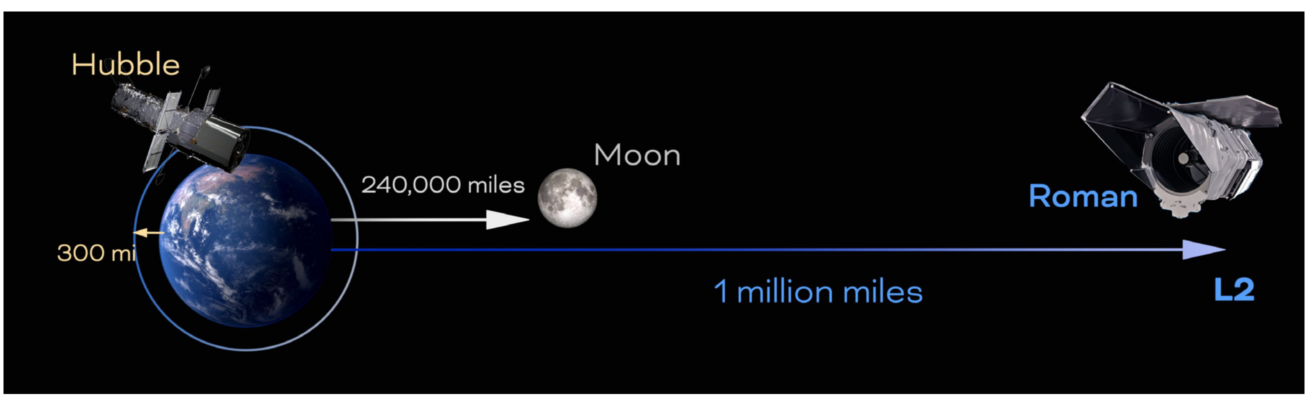


The Galactic Plane Survey is Roman's first selected general astrophysics survey. Designed to reveal our home galaxy, the Milky Way, in unprecedented detail, the survey will map up to 20 billion stars and explore previously uncharted structures. Pairing Roman's Galactic Plane Survey with other Milky Way observations will create the best portrait of the galaxy we've ever had, and it will only take 29 days spread over the course of the mission's first two years.

POST-LAUNCH TIMELINE

The Roman team will complete a carefully orchestrated series of deployments, calibrations, and tests in the three months following launch before the observatory reaches its final orbit. Science operations begin once this commissioning period is completed, starting with the release of Roman's first science images.

- L+ 5 hours: Solar panels and sunshade deploy
- L+ 2 days: High-gain antenna deploys and deployable aperture cover is released
- L+1 week: Coronagraph Instrument activates
- L+ 3 weeks: Wide Field Instrument powers on and completes initial checkout
- L+ 4 weeks: Fine guidance sensor checks out
- L+ 4 weeks: Coronagraph Instrument test
- L+ 2 months: Instruments complete alignment and focus
- L+ 2-3 months: Science commissioning and characterization, including initial on-orbit calibrations
- L+ 3 months: Observatory commissioning complete, First Look Observations released, science operations begin
- L+ 3-4 months: Orbit insertion (occurs after baseline science mission phase begins)



PARTNERS

Roman is a worldwide collaborative effort, featuring a network of both national and international partners. The Nancy Grace Roman Space Telescope is managed at NASA's Goddard Space Flight Center in Greenbelt, Maryland, with participation by NASA's Jet Propulsion Laboratory and Caltech/IPAC in Southern California, the Space Telescope Science Institute in Baltimore, and scientists from various research institutions. The primary industrial partners are BAE Systems Inc. in Boulder, Colorado; L3Harris Technologies in Rochester, New York; and Teledyne Scientific & Imaging in Thousand Oaks, California.

NASA's Goddard Space Flight Center

NASA Goddard manages the Roman mission and will be home to Roman's Mission Operations Center, the spacecraft's primary command and control room. Goddard will also lead the mission's flight dynamics along with the overall spacecraft integration and testing. Goddard also built Roman's Wide Field Instrument.

Caltech/IPAC

Caltech/IPAC is home to the Roman Science Support Center. It is responsible for Roman's Coronagraph Instrument operations, high-level data processing of spectroscopy data from the WFI, high-level data processing for WFI microlensing, and community engagement for Roman exoplanet science and wide-field spectroscopy. Caltech/IPAC will also implement the proposal solicitation and grant management for theory and archival investigations, as well as general astrophysics surveys, which include new observations outside the mission's core surveys. Caltech/IPAC also curates telescope and instrument parameters and simulation outputs, and engages the greater scientific community in preparing for science with Roman.

NASA's Jet Propulsion Laboratory

NASA JPL built Roman's Coronagraph Instrument and developed the Coronagraph's science capabilities. The Coronagraph will provide the first in-space demonstration of technologies needed for future missions to image and characterize rocky planets in the habitable zones of nearby stars.

Space Telescope Science Institute

The Space Telescope Science Institute is Roman's Science Operations Center. The Science Operations Center is responsible for the mission's observation scheduling system, WFI data processing system for the imaging mode, high-level science products for all imaging, and the mission's entire data archive. The institute has performed pre-formulation, formulation, and design activities for Roman, and continues its role in science operations system engineering, design, science research support, scientific community engagement, and public outreach.

International Partners

ESA (European Space Agency), CNES (Centre National d'Etudes Spatiales) in France, Max Planck Institute For Astronomy (Germany), and JAXA (Japan Aerospace Exploration Agency) have made key contributions including spacecraft components, ground stations, precision optics for the Coronagraph, and algorithms for the data analysis pipeline.

MEDIA RESOURCES

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Multimedia Gallery

Flickr
flickr.com/photos/nasaroman/albums

Scientific Visualization Studio
svs.gsfc.nasa.gov/gallery/roman

NASA Image and Video Library
go.nasa.gov/4v0RnYm

Social Media Links

Follow Roman's progress toward launch and beyond at the following social media sites:

Facebook
facebook.com/NASARoman

X
x.com/NASARoman

Instagram
instagram.com/NASAUniverse

YouTube
bit.ly/43io0Vh

Flickr
flickr.com/photos/nasaroman/albums

News Links

Mission Website
nasa.gov/roman

Blog
science.nasa.gov/blogs/roman