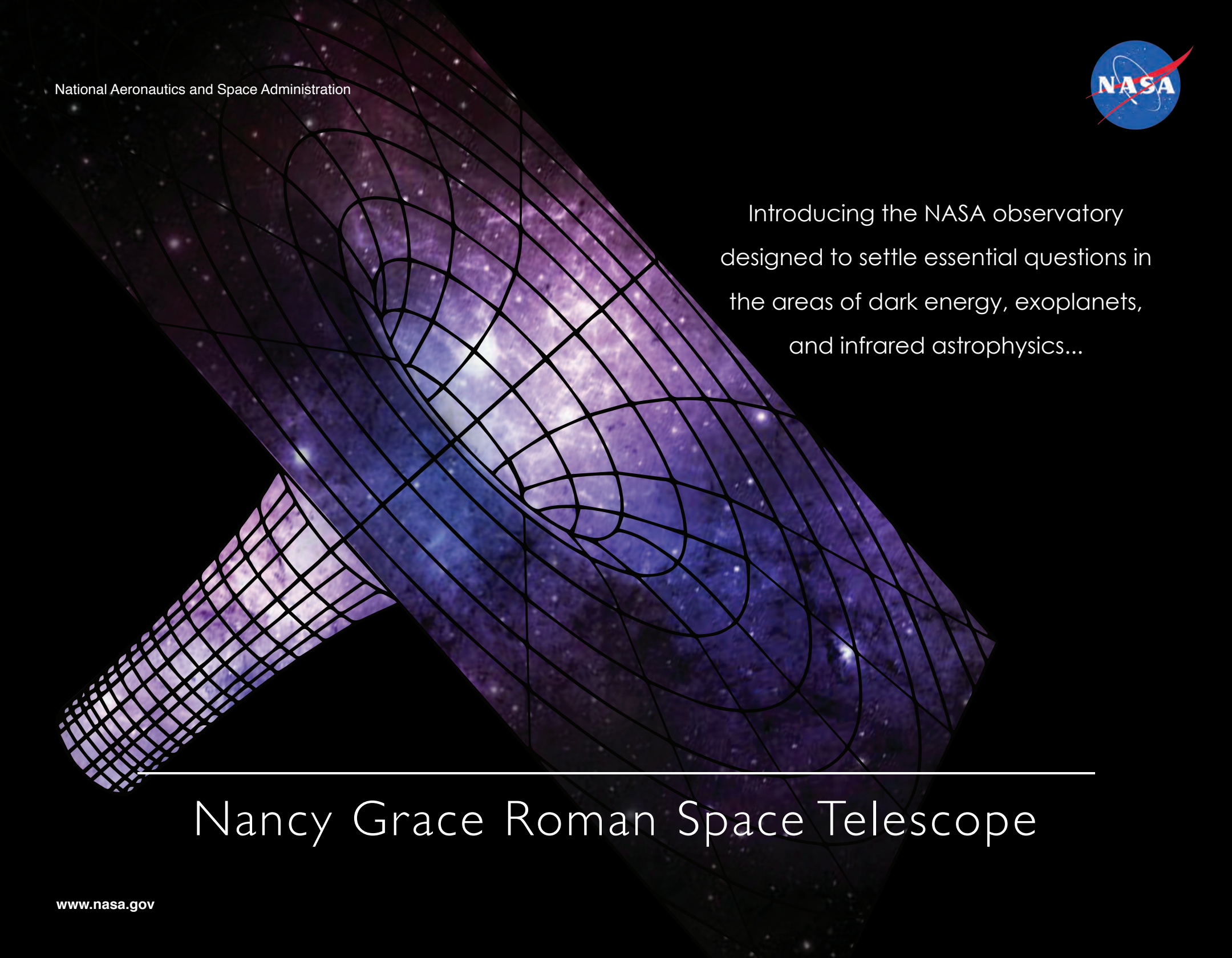
National Aeronautics and Space Administration



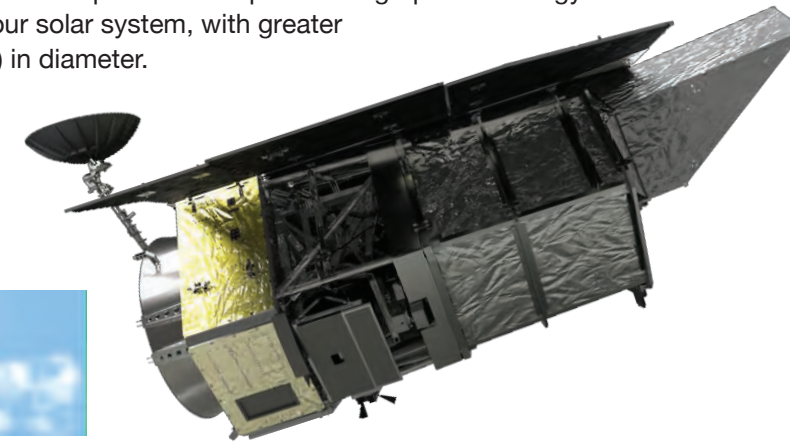
Introducing the NASA observatory designed to settle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics...

Nancy Grace Roman Space Telescope

www.nasa.gov

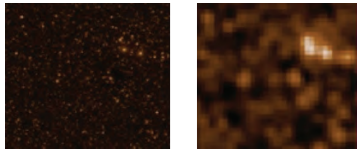
Nancy Grace Roman Space Telescope

The Roman Space Telescope is an infrared, space-based telescope that will help astronomers understand the nature of dark energy and exoplanets. Launching in the mid 2020s, it will feature the Wide Field Instrument, which will have 100 times the field of view of Hubble's wide field cameras. This will allow astronomers to image much larger portions of the sky at once. The Roman Space Telescope Coronagraph technology demonstration instrument will be used to study exoplanets, or planets orbiting stars outside our solar system, with greater contrast than has ever been flown in space. The Roman primary mirror is 2.4 meters (7.9 feet) in diameter.



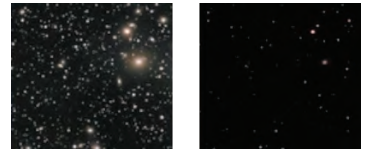
Why study infrared from space?

Water vapor in the Earth's atmosphere blocks most of the infrared light that reaches the Earth's surface. Studying infrared light from space allows us to get images with greater clarity, more brightness, and without interruptions from weather.



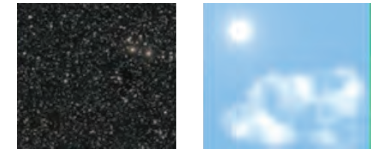
RESOLUTION

- Greater image clarity
- Better light isolation



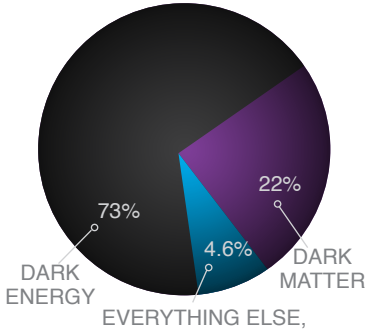
BRIGHTNESS

- Less dimming from atmosphere



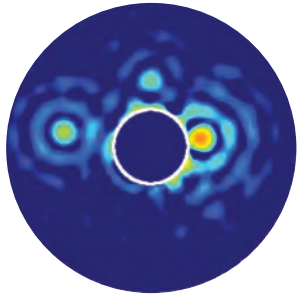
TIME COVERAGE

- Complete time coverage



What is dark energy?

Astronomers have discovered that the expansion of the universe is accelerating. That is, that all galaxies in the universe are moving away from one another at greater and greater speeds. The cause for this expansion is not well understood. Astronomers have proposed that there is an additional, previously unknown energy, or "dark energy" responsible for the observed acceleration.



How will it study exoplanets?

The Roman Space Telescope will study exoplanets two ways. First, it will use microlensing to add to our catalog of known exoplanets. Microlensing takes advantage of two stars crossing paths in our line of sight to determine whether the star closest to us has planets. Second, it will study exoplanets using a Coronagraph technology demonstration instrument. A coronagraph blocks the light of a host star to directly image an exoplanet. These two studies will add to an ever growing body of knowledge about the occurrence, locations, and physical properties of exoplanets .

How will it study dark energy?

The Roman Space Telescope will use the Wide Field Instrument, with special filters, to measure the large-scale structure of the universe. By imaging large portions of the sky all at once, Roman will be able to cover more of the sky in less time. Astronomers will study these data and try to piece together the origins and nature of dark energy.

Roman Space Telescope is managed at Goddard Space Flight Center in Greenbelt, MD, with contributions from the Jet Propulsion Laboratory in Pasadena, CA.

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