NASA's Great Observatories

Each wavelength range of the electromagnetic spectrum (gamma rays, X-rays, ultraviolet, visible, infrared, and radio) brings us unique information about the Universe. X-rays and gamma rays bring us information about high energy phenomena such as black holes, supernova remnants, hot gas, and neutron stars. Ultraviolet light reveals hot stars and quasars, while visible light shows us warmer stars, planets, nebulas and galaxies. In the infrared we see cool stars, regions of star birth, cool dusty regions of space, and the core of our galaxy. Radiation in the radio region shows us cold molecular clouds and the radiation left over from the Big Bang. If we want to better understand the Universe, we need to study it in all its light—across the electromagnetic spectrum. To achieve this goal, NASA created the Great Observatories Program—a series of four space observatories designed to gather light across the spectrum.

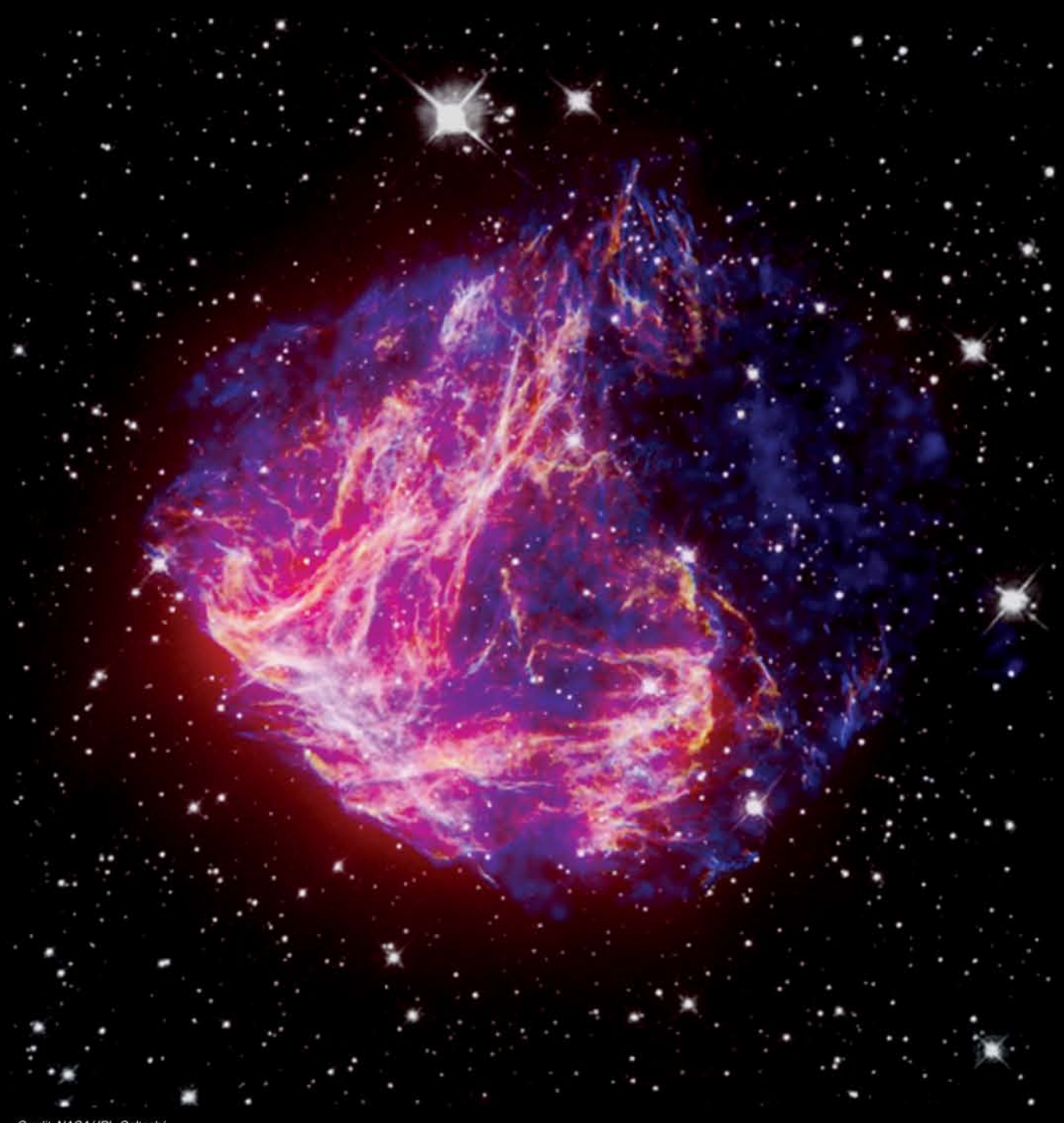
The first Great Observatory to be launched was the Hubble Space Telescope (HST). Launched in 1990, Hubble is a long-term space-based observatory designed to gather visible, ultraviolet, and near-infrared light.

The second Great Observatory, launched in 1991, was the Compton Gamma-Ray Observatory (CGRO). Designed to observe high energy gamma rays, this observatory collected information on some of the most violent processes in the Universe.

Third in the series is the Chandra X-Ray Observatory (CXO). Launched in 1999, this observatory is used to study X-rays from objects such as black holes, quasars, and regions containing high-temperature gases.

The Spitzer Space Telescope is the fourth and final mission in NASA's Great Observatories Program. Launched in 2003, Spitzer studies the infrared radiation from space. Spitzer will help us understand our cosmic roots, and how galaxies, stars and planets develop and form.

NASA's Great Observatories have made tremendous contributions to our knowledge of the universe. Their high resolution and high sensitivity observations have resulted in the discovery of thousands of new objects and have led to a much deeper understanding of astronomical phenomena.



Credit: NASA/JPL-Caltech/

This is a multi-wavelength composite of N49, the brightest supernova remnant in visible light in the Large Magellanic Cloud. This image combines an x-ray image from the Chandra X-ray Telescope (blue), an infrared image from the Spitzer Space telescope (red), and a visible light image from the Hubble space Telescope (white and yellow).