

Dr. Nancy Grace Roman



Image: Dr. Nancy Grace Roman with a model of the Orbiting Solar Observatory (OSO) in 1962.

Image Credit: NASA [4]

Dr. Nancy Grace Roman was a pivotal figure in the NASA space program. She was the first Chief of Astronomy in the Office of Space Science at NASA Headquarters, as well as the first woman to hold an executive position at NASA. During her time at NASA, she had oversight for the planning and development of several programs, including the Cosmic Background Explorer and the Hubble Space Telescope, earning her the nickname "Mother of Hubble". Dr. Roman's career as a distinguished American astronomer has been a rich one, ranging from scientific research; to establishing the first NASA astronomical program; to working with today's teachers and students in order to assure that the field of astronomy maintains a bright future, making her an inspiration to many interested in following a similar career path.

Nancy Grace Roman was born in Nashville, Tennessee to parents with a penchant for science, who she credits as her main source of inspiration. Her scientist father answered her frequent questions about the nature of the universe, while her mother took her on walks to show

her various species of birds and plants; young Nancy was also taken out at night by her parents to be shown the constellations and aurora that would spark her interest in space exploration. From there, she organized an astronomy club for her friends at the age of eleven. By the age of twenty-four, Nancy had received her PhD in astronomy from the University of Chicago. She then worked at the Naval Research Laboratory (NRL) occasionally from 1955 to 1959, but her greatest achievements in astronomy would come with the formation of the National Aeronautics and Space Administration, better known as NASA.

Dr. Roman joined NASA in 1959, an opportunity that was rare for female scientists like herself at the time. In an interview with PBS, she recalls her initial difficulty finding work, stating, “I started out in Optical Astronomy and Spectroscopy, but as a woman in my generation, I could not get tenure at a research institution” [3]. Nevertheless, a few months after NASA was formed, one of the men employed there asked if she knew anyone who would like to set up a program in space astronomy. In another interview, Roman fondly mentioned, “I knew that taking on this responsibility would mean that I could no longer do research, but the challenge of formulating a program from scratch that I believed would influence astronomy for decades to come was too great to resist” [2]. Roman worked on design and development for several NASA projects for over 20 years, with her most famous work being that on the Hubble Space Telescope, for which she was a key proponent. In spite of the technology of the time, which was the late 1960s, was not yet up to the task of launching Hubble into space, Roman persevered in her campaigns to prove, both fiscally and scientifically, why such a telescope was worth creating; she was the force that pushed the vision of the Hubble Telescope forward, and the product of her labor still provides countless resources for astronomers today. Additionally, Dr.

Roman was the first chief of NASA's Astronomy and Relativity Programs, also being the first female to hold the position. In this position, Roman was involved with planning a program of satellites and rockets with the advice of a wide sample of the nation's astronomical community, while also administering an important grant program that would support NASA's astronomy program in both its execution and the comprehension of its results. However, while these positions of leadership made Dr. Roman a woman far ahead of her time, she found just as much joy in doing the occasional astronomical research that she could fit into her already busy schedule. When speaking about her career with a current NASA employee, she reflected on what pleased her most, saying:

One of my favorite moments in my career was when I realized that I had discovered something important that no one had ever suspected. Upon careful inspection of low dispersion spectra of bright stars similar to the sun, I noticed that compared to the strength of the hydrogen lines, the strengths of the lines of other elements varied from star to star. When I divided the stars into two groups on the basis of line strengths I noticed that the stars with the stronger lines moved around the center of the Milky Way in circular orbits similar to that of the sun. The others tended to move in more elliptical orbits and to stray farther from the plane of the galaxy. This was the first indication that common stars were not all the same age. These other elements are made in stars and hence increase in abundance as stars die. [2]

Overall, in a highly prodigious career, Dr. Nancy Grace Roman worked to advance astronomical research on both the administrative and investigative fronts.

Dr. Roman finished her NASA career at Goddard Space Flight Center, where she served as the manager of the Astronomical Data Center. After retiring from NASA in 1979, she continued working as a contractor at Goddard, until eventually, she retired from all NASA projects. However, she still lives in the Washington, D.C. area, now spending her time attending lectures on a wide variety of subjects, as well as concerts and plays. She is also active in the American Association of University Women, having been a spokesperson and advocate of women in the sciences throughout her career. When asked about what she would tell a student interested in science and math or engineering, Roman had this advice to offer:

If you enjoy puzzles, science or engineering may be the field for you, because scientific research and engineering is a continuous series of solving puzzles. It is also a continuous process of learning new things, whether you discover them or study the work of others.

Science, like all jobs, has its share of drudgery and boredom, but basically it is fun. [2]

Dr. Roman has garnered many honors throughout her life, including the NASA Exceptional Scientific Achievement Award; the NASA Outstanding Scientific Leadership Award; the American Astronautical Society's William Randolph Lovelace II Award; American Astronomical Society Fellow; American Association for the Advancement of Science Fellow; and the Women in Aerospace's Lifetime Achievement Award. Additionally, the Roman Technology Fellowship in Astrophysics program is named after her [1]. Both during her time in NASA and afterward, Dr. Roman has retained a strong presence in the scientific community.

Thus, Dr. Nancy Grace Roman is truly an inspiration to aspiring scientists and leaders alike. Raised and at work during a time when women were discouraged from pursuing a career in

the sciences, she succeeded beyond anyone's wildest expectations, leaving a rich legacy for the astronomers of the future. It is evident that the "Mother of Hubble's" illustrious career has paved the way for great and enduring achievements by both men and women in scientific fields.

References

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