



# Robert W. Wilson

GRFP Recipient: 1958

*Undergraduate Institution:*  
B.A. 1957, Rice University

*Graduate Institution:*  
Ph.D. 1962, California Institute of  
Technology

*Graduate Field of Study:* Physics

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*Current Position:*  
Senior Scientist, Harvard  
Smithsonian Center for  
Astrophysics

## RESEARCH INTERESTS //

His early work was in the fields of Galactic radio astronomy and precision measurement of radio source strengths. He is best known for his part in the discovery, with Arno Penzias, of the 2.7°K Cosmic Microwave Background Radiation in 1964. The CMBR is a critical corroboration of the big bang - the most recognized theory for the beginning of the universe. Many parameters of the universe have been determined from the small spatial fluctuations in the CMBR.

In 1970 he, with Arno Penzias and Keith Jefferts, extended radio spectroscopy of the interstellar medium to short millimeter wavelengths where they discovered a number of interstellar molecules including Carbon Monoxide. The resulting field of molecular astronomy has greatly increased our knowledge of how stars and planets form out of interstellar gas. The SMA on which he is currently working and the international ALMA array, now coming online in Northern Chile are examples of instruments built to exploit this discovery. At Bell Labs he also used astronomical techniques to measure earth-space propagation for satellite communication at centimeter and infrared wavelengths, made infrared propagation measurements along a terrestrial path and did patentable work in wireless communications and optical networking.

## AWARDS/ HONORS //

- Henry Draper Medal (1977)
- Herschel Medal (1977)
- Nobel Prize in physics (1978)
- Rice University Distinguished Alumni Award 1979
- Caltech Distinguished Alumni Award 1979
- Jansky Lectureship NRAO 1984

## POSITION PROFILE //

- 1962 -1963 - Research fellow, Caltech
- 1963-1976 - Member of technical staff, Bell Laboratories
- 1976 -1994 Head, Radio physics research department, Bell Laboratories
- 1987 - Sherman Fairchild Distinguished Scholar, California Institute of Technology (March - May)
- 1994 – Present, Senior Scientist, Smithsonian Astrophysical Observatory

