

**Institute for Astronomy**

**University of Hawaii**

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**640 N AOHOKU PLACE  
HILO, HI 96720-2700**

**BIO SHEET**

**on**

**Donald N. B. Hall**

Donald N. B. Hall was born in Sydney, Australia and received his B.Sc. in Physics from the University of Sydney in 1966. He undertook graduate studies at Harvard University and was awarded a Ph.D. in Astronomy in 1970. His dissertation involved infrared studies of sunspots.

Dr. Hall was a member of the scientific staff of Kitt Peak National Observatory (KPNO) from 1970 to 1981. During this period he developed advanced infrared spectroscopic instrumentation and detectors for the McMath Solar Telescope and later, the Mayall 4-meter telescope. Over this period his scientific interest shifted from studies of the Sun to studies of star formation, variable stars, violent phenomena at the center of our own galaxy, and of external galaxies. In 1973, he was a member of an international team which observed the solar eclipse of June 30 for more than an hour from the French Concorde Supersonic aircraft. In 1977, he was awarded the Newton Lacy Pierce Price of the American Astronomical Society. In the late 1970's Dr. Hall served as project scientist for the KPNO Next Generation Telescope study of concepts to achieve a 25-meter ground based telescope. This facilitated the wave of development of 8 -10 meter class telescopes at the turn of the century and anticipated the coming generation of thirty meter class telescopes in the decade to come.

In 1982, Dr. Hall moved to Baltimore as Deputy Director of NASA's Space Telescope Science Institute. From 1982-1984, he played a major role in establishing the Space Telescope Science Institute as a research institute and in preparing it to conduct the science program of the Hubble Space Telescope.

In 1984, Dr. Hall took up the Directorship of the Institute for Astronomy at the University of Hawaii. Over the thirteen years he served in this position, he led the growth of the Institute into one of the leading astronomical research institutes and graduate programs in the world and guided the development of the University of Hawaii's astronomical sites on Haleakala, Maui, and Mauna Kea, Hawaii. Mauna Kea is now generally regarded as the best site known for optical, infrared, and sub-millimeter astronomy; it is home to the world's leading telescopes in each of these areas.

Since returning to his research career in 1997 as a member of the tenured faculty, Dr. Hall has concentrated on development of very large array detectors for infrared astronomy from both the ground and in space. He pioneered the initial use of MBE HgCdTe for astronomy; it is now the detector of choice in the 1 to 5 micron region. The first such class of sensors, the 1 megapixel HAWAII-1R, flew successfully on the “Deep Impact” comet rendezvous and was successfully deployed to the Hubble Space Telescope during the May 2009 servicing mission. It has achieved a forty-fold improvement over its predecessor in discovery efficiency in the infrared and has detected the oldest, most distant objects in the universe. A University of Hawaii- Rockwell Scientific Company team led by Dr. Hall developed the near infrared HAWAII-2RG 4 megapixel array detectors and also the ASIC on-chip controller selected by NASA for the James Webb Space Telescope that will succeed Hubble. For this work Dr. Hall and his team were honored with a NASA Congressional Space Act award and Dr. Hall was designated “partner of the year” by Rockwell Scientific (now Teledyne Scientific and Imaging). In 2008 Dr. Hall was awarded funds under the NASA “Research Opportunities in Space and Earth Sciences” initiative to develop infrared photon counting arrays. He was recently awarded nearly \$7 million by the National Science Foundation to develop the 16 megapixel HAWAII-4RG-15. These chips will be tiled into mosaics containing up to a billion pixels – a gigapixel mosaic.

Dr. Hall is a member of the American Astronomical Society, the International Astronomical Union, the Society of Photo Instrumentation Engineers, and the Minerals, Metals and Materials Society. He has served as a member of many national committees, including the Space Science Board of the National Academy of Sciences, the Astronomy Advisory Committee to the National Science Foundation, and the Astrophysics Council of the National Aeronautics and Space Administration. He also served as the Hawaii member of the Association of Universities for Research in Astronomy and chaired the University of Hawaii Advisory Committee on Space Research. He recently successfully concluded his duties as chair of the Infrared Detector Subcommittee of the Scientific Oversight Committee for the final camera, Wide Field Camera 3, on the Hubble Space Telescope; it was successfully installed during the May 2009 refurbishment mission. He is a member of the science team for the Near Infrared Camera being built for the James Webb Space Telescope and currently serves on the Detector Degradation Failure Review Board.

Dr. Hall was recently awarded the American Astronomical Society’s 2010 Weber Award for Astronomical Instrumentation “for the design, invention or significant improvement of instrumentation leading to advances in astronomy”.

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