

Curriculum Vitae

Robert T. Rood

Updated 10 June, 2008

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Born: 30 March, 1942

Raleigh, North Carolina

Education:

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|---------------------------------------|---------------|------|
| North Carolina State University | B.S. Physics | 1964 |
| Massachusetts Institute of Technology | Ph.D. Physics | 1969 |

Family:

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| Wife | Martha E. Snell | |
| Daughter | Emilie Catherine | Born 24 June, 1980 |
| Daughter | Claire Natalie | Born 25 June, 1982 |

Fellowships:

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|---|------------------------|
| National Science Foundation Graduate Fellowship | 1964–1969 |
| Sesquicentennial Fellowship, University of Virginia | 1978, 1986, 1992, 2007 |

Societies:

American Astronomical Society
International Astronomical Union
Royal Astronomical Society

Positions Held:

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| Professor of Astronomy | University of Virginia | 1992–present |
| | Department Chair | 1999–2006 |
| Associate Professor of Astronomy | University of Virginia | 1978–1992 |
| Assistant Professor of Astronomy | University of Virginia | 1973–1978 |
| Research Fellow | California Institute of Technology | 1971–1973 |
| Research Associate | Massachusetts Institute of Technology | 1969–1971 |
| Visiting Fellow | Institute of Astronomy, Cambridge | Summer 1974 |
| Visiting Fellow | Max Planck Institut für Radioastronomie, Bonn | June 1977 |
| Visiting Fellow | Institut d’Astrophysique, Paris | June 1979 |
| Visiting Scientist | National Radio Astronomy Observa- tory | 1986–87 |

Grants 2000–2008:

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|--|---|-------------|-------------|
| Space Telescope Science Inst. (STScI) HST-GO-10524 | Blue Stragglers: a key stellar population to probe internal cluster dynamics | 2005–07 | \$36,393 |
| Space Telescope Science Inst. (STScI) HST-GO-10845 | Hunting for Optical Companions to Binary Millisecond Pulsars in Terzan 5 and NGC6266 | 2006–07 | \$31,705 |
| Spitzer Science Center | Exploring the Unknown Physics of Mass Loss in First Ascent Population II Red Giants | 2006–08 | \$34,403 |
| Frank Levinson Foundation (administered by Peninsula Community Foundation) | UVa Astronomy Dept. Enhancement Grant* | 2000–2006 | \$6,000,000 |
| NSF AST-0098449 | The 3-Helium Problem | 07/01–06/04 | \$94,031 |
| STScI, HST-GO8709 | UV Light from Old Stellar Populations: A Census of UV Bright Stars in ‘Blue Tail’ Globular Clusters | 09/00–08/03 | \$41,718 |
| NASA—Long Term Space Astrophysics NAG5-6403 | Critical Tests of Stellar Evolution & Applications to High Redshift Systems (RTR is CoI; PI, R. W. O’Connell) | 09/97–08/02 | \$400,797 |
| NSF AST-9731445 | The 3-Helium Problem | 05/98–04/01 | \$64,643 |
| Space Telescope Science Inst. (STScI) HF-01105 | Hubble Fellowship for Marcio Catelan | 09/00–8/01 | \$66,463 |
| NASA Astrophysics ADP NAG5-7104 | Ultraviolet Spectral Diagnostics for Old Stellar Populations (RTR was administrative PI for CoI Ben Dorman) | 01/98–03/01 | \$41,875 |
| STScI, HST-GO6607 | The Origin and Nature of UV Bright Stars in Globular Clusters, II | 04/97–03/01 | \$26,074 |

Research Interests:

I started my career as a stellar structure and evolution theorist. A few years after arriving at UVa it became obvious to me that the problems I was facing (stellar mass loss; the behavior of convective/radiative interfaces) were not amenable to a theoretical frontal assault, so my interests evolved in a more observational direction. Also the proximity of NRAO’s Green Bank facilities tempted me to give radio astronomy a try. Now I would classify myself as someone who straddles the theory/observation interface. I have been involved in projects using HST, UIT, Spitzer, KPNO 2.2-m & 4-m, CTIO 4-m, ESO VLT & 2.2-m WFI, NRAO 140 Foot, GBT, & VLA & MPIFR 100m.

Current Research Projects:

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|---|--------------------|
| Mass Loss from First Ascent Red Giants in Globular Clusters | Spitzer |
| Hot Stars in Globular Clusters: Blue Stragglers & Hot Horizontal Branch Stars | HST & ground based |
| The Abundance Gradient in Galactic H II Regions | GBT |
| The Abundance and Evolution of 3-Helium | GBT & EVLA |

Teaching:

In the past I have taught: for non-majors *The Naked Eye Sky and Solar System; Stars, Galaxies, and the Universe; Observational Astronomy;* for majors *Introduction to Astronomy I;* and for graduate students *Stellar Interiors; Stellar Evolution and Nucleosynthesis; Astrophysics I, II.*

In the past few years the only course I have taught is called *Life Beyond the Earth*. This course covers extraterrestrial life—basically an in depth look at each of the factors in the Drake Equation, *SETI*, and space colonization. The target audience is 3rd and 4th year non-science majors. Taught since 1978, *Life Beyond the Earth* was one of the first courses in the US to deal with this subject matter. The course web page is <http://www.astro.virginia.edu/class/rood/astr342/>

Service:

I was Chair of the Department from 1999–2006. During that time the Department experienced considerable growth fueled by a \$10M gift from UVa PhD Astronomy alumnus Frank Levinson. The Postdoc number doubled to roughly 10; graduate student numbers have increased by 50%; there are 3 new faculty members and 5 new research scientists. The Department has joined the Large Binocular Telescope project, entered in a partnership with Steward Observatory, and joined the Astrophysical Research Consortium (ARC). We have established an infrared astronomy instrumentation effort led by Mike Skrutskie. We have entered a partnership with HBUC Norfolk State.

In 2007–08 I have served on: Visiting Committee to Osservatorio Astronomico di Bologna (Chair), Jansky Fellowship Committee, NSF Grant Proposal Panel, Agenzia Spaziale Italiana reviewer.

Hobbies:

Cooking (especially Italian); Wines; Gardening; Photography; Classical Music (listening).

Future Plans

During the time I was Chair my research productivity dropped. While Chair I accrued three semesters leave. I took two of these Fall 2006 and 2007, and will take the third in Fall 2008. I hoped to reinvigorate my research during that time. Unfortunately, chair related activities hung over through most of Fall 2006. All in all, I have found recovery from my time as chair much more difficult than I had imagined.

I plan to retire in May 2009. I intend to remain active in research and some departmental activities.

Plans for Teaching and Instruction

I plan to teach my lecture course ASTR342—*Life Beyond the Earth* for the last time in the Spring Term of 2009. In my mind ASTR342 has been a very successful course. I am updating it more aggressively since I am no longer Chair. I have established extensive course web pages and partially revised the book, *Are We Alone?*, by myself and Jim Trefil.

- **Independent Study:** I have typically had 3 or 4 students in Tutorials or Senior Thesis; I expect to maintain this level. I currently have no UVa PhD students; I would welcome another. I am actively involved in the thesis research of several PhD students from Bologna.

Research Plans

- **Hubble Space Telescope Observations of Globular Clusters:** My collaboration with astronomers from the University of Bologna is going very well. We are flooded with data and more observations are still scheduled. We are producing a paper every few months and should continue to do so for several years.
- **Fundamental Tests of Stellar Evolution:** At present this mainly involves trying to develop novel ways of comparing observations with computer models of stellar evolution. Within the next year I hope to make progress in understanding gaps in the distribution of stars along the hot part of the horizontal branch. My hypothesis is that these are related to the fundamental problem of stellar mass loss. A second project is related to the observed versus theoretical distribution of stars along globular cluster subgiant branches. This is a probe for a the sort of breakdown in the standard stellar model assumptions which could affect cluster age determinations.
- **3-Helium:** The origin and evolution of the light isotope of ^3He is a fundamental long-term problem in astrophysics with consequences for cosmology, stellar evolution and chemical evolution of the Galaxy. I have been working on this problem since 1976. Currently we are pursuing ^3He observations of planetary nebulae with the upgraded Arecibo telescope with more observations scheduled in July, 2008. The

relatively new radio telescope in Green Bank (the “GBT”) has many design innovations, suggested by our experiment among others, which should lead to vastly expanded possibilities for this experiment. We have used the GBT to observe planetary nebulae in 2004, 2005, and have more observations scheduled in 2008.

- **The Abundance Gradient in the Milky Way:** Originally a spin-off of the 3-helium project, we are using observations of radio recombination lines and the radio continuum to determine the abundances in ionized nebulae throughout the Milky Way. We obtained new observations in January and February of 2008 and are now reducing the data.