

CURRICULUM VITAE

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Education: A.B., Physics, Brown University (1971)
M.Sc., Astronomy, University of Virginia (1973)
Ph.D., Astronomy, University of Virginia (1977)

Thesis: “*Carbon Monoxide in the Galactic Center and Other Studies in Galactic Structure*”, Professor W.B. Burton, Advisor

Areas of Specialization: Radiospectroscopy; Galactic Structure; Interstellar Medium

Languages: German

Computer Languages: UNIX, FORTRAN, C, IDL

Employment:

Teaching Assistant, University of Virginia, 1971-1973.

Participant, N.R.A.O. Summer Student Research Program, 1973-1974.

Junior Research Associate, National Radio Astronomy Observatory (N.R.A.O.), 1975-1976.

Research Associate, Arecibo Observatory, National Astronomy and Ionosphere Center (N.A.I.C.), 1976-1978.

Research Associate and Lecturer, Astronomy Department, Cornell University, 1978-1980.

Visiting Assistant Professor, Department of Astronomy, University of Virginia, 1980-1981.

Navy/A.S.E.E. Summer Faculty Research Fellow, Naval Research Laboratory, 1982.

Assistant Professor, Department of Astronomy, Boston University, 1981-1987.

Visiting Associate Scientist, National Radio Astronomy Observatory, 1985.

Associate Professor, Department of Astronomy, Boston University, 1987–1993.

Visiting Senior Scientist, National Astronomy and Ionosphere Center, 1988.

Harlow Shapley Lecturer, American Astronomical Society, 1988–

Visiting Senior Scientist, Sterrewacht Leiden, 1989.

Trustee, Northeast Radio Observatory Corporation (NEROC), 1989–

Acting Chairman, Department of Astronomy, Boston University, 1990–1991.

Professor, Department of Astronomy, Boston University, 1993–

Member of Visiting Committee, Associated Universities, Inc., National Radio Astronomy Observatory, 1997–2000.

Professional Societies:

International Astronomical Union

International Union of Radio Science

American Astronomical Society

American Association for the Advancement of Science

Consulting:

- Consultant, IBM Thomas J. Watson Research Center, 1981–1982. Participated in a Joint Agreement with IBM entitled “Numerical Simulations of the Interstellar Medium (ISM)”.
- Telescope Referee, National Radio Astronomy Observatory, 1983–
- Member, National Astronomy and Ionosphere Center Arecibo Scientific Advisory Committee (ASAC), 1984–1986.
- Selection Committee, Jefferson Scholars Program, University of Virginia, Charlottesville, VA, 15 February 1985.
- Member, National Radio Astronomy Observatory Committee Studying the Requirements for a New Spectral Processor for the NRAO 43-meter Telescope, 1985–92.
- National Radio Astronomy Observatory Millimeter Array Committee Member (Low-Z Extragalactic Working Group), 1985–1992
- Member, National Radio Astronomy Observatory Users’ Committee, 1986–1988.
- Member, Staff Selection Committee, American Museum-Hayden Planetarium, New York, NY, 1987-95.
- Five College Radio Astronomy Observatory Telescope Allocation Committee, 1989–1991.
- Boston University Trustee of Northeast Radio Observatory Consortium (NEROC), 1989–
- Member of National Science Foundation Site Visit Committee which evaluated the millimeter-wave interferometers operated by the California Institute of Technology and the University of California at Berkeley, July 1990.
- Member of Proposal Review Committee for NASA Exobiology Program for the Search for Extraterrestrial Intelligence (SETI), November 1990.
- Member, Technical/Scientific Advisory Group, Arecibo Observatory Upgrading Project, 1990–1995
- Member, Green Bank Telescope Scientific Advisory Committee, 1990–2002
- Member, N.R.A.O. Millimeter Array Advisor Group, 1994–1998
- Member, N.A.I.C. Arecibo Observatory, AOSAC (Arecibo Observatory Scientific Advisory Committee), 1996–1998
- Member, N.R.A.O. Visiting Committee, 1997-2000. Chairman (2000).
- Chair, NSF Distinguished Astrophysical Postdoctoral Fellowship Panel, January 2005
- Chair, NSF University Radio Observatories (URO) Panel, August 2005

Theses and Dissertations:**Undergraduate Senior Theses for Distinction:**

- Mr. David Barnaby, “*Modelling of 21cm HI Galactic Spectra*”, May 1981, unpublished.
- Ms. Christine Duke, “*Open Clusters and the Galactic Disk of the Milky Way*”, April 1986, unpublished.
- Mr. Michael Abegg, “*Astrophysical Studies of Cool Atomic Hydrogen Clouds in the Milky Way*”, May 1987, unpublished.
- Mr. Stanley Howe, “*Theoretical Models of the HI Distribution in the Milky Way*”, May 1987, unpublished.
- Mr. James Ingalls, “*Numerical Modelling of Interstellar Plasmas*”, May 1991, unpublished.
- Mr. Ronak Y. Shah, “*Pressure Constraints on Photodissociation Region Models via Carbon Radio Recombination Lines*”, unpublished.

Master's Theses:

- Mr. Joel Gendler, “*Astronomical Interpretation of Events in Homer’s Iliad and Odyssey*”, February 1985, unpublished.
- Mr. Marc Pound, “*A Two-Color CCD Photometric Study of the Globular Cluster NGC 288*”, 1987, *Astron. J.*, **94**, 1185.
- Ms. Maureen L. Savage, “*The Nature of the Submillimeter Emission from the Barnard 5 Molecular Cloud*”, 1996.
- Ms. Valerie Coffey, “*Properties of Hydrogen Self-Absorption Features Detected by the Boston University-Arecibo Galactic HI Survey*”, 1998.

Ph. D. Dissertations:

- Mr. Thomas Kuchar, “*The Boston University–Arecibo Galactic HI Survey: The Galaxy at 4 Arcminute Resolution*”, 1 July 1992.
- Mr. Dana Balsler, “*The Abundance of 3-He in the Interstellar Medium*”, 29 July 1994.
- Mr. James Ingalls, “*Atomic Carbon Studies of Galactic High Latitude Clouds*”, 17 November 1998.
- Mr. Maohai Huang, “*Atomic Carbon Studies of Southern Hemisphere Galactic HII Regions*”, 13 December 2000.
- Mr. Loren Anderson, “*Galactic H II Regions: Evolution and Galactic Structure*”, August 2009.

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- Burton, W.B., Gordon, M.A., Bania, T.M., & Lockman, F.J. 1975, *Ap. J.*, **202**, 30: Observations of Carbon Monoxide in the Plane of the Galaxy.
- Sanders, R.H., & Bania, T.M. 1976, *Ap. J.*, **204**, 341: The Observational Effects of Explosions in the Nuclei of Spiral Galaxies.
- Bania, T.M. 1977, *Ap. J.*, **216**, 381: Carbon Monoxide in the Inner Galaxy.
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- Bania, T.M. 1979, “Carbon Monoxide and the 3 kpc Arm Feature”, in **The Large-Scale Characteristics of the Galaxy**, ed. W.B. Burton, *Proc. I.A.U. Symposium No. 84*, D. Reidel, Dordrecht, North-Holland, p. 351.
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- Giguere, P.T., Huebner, W.F., & Bania, T.M. 1980, *Astron. J.*, **85**, 1276: Radio Observations of Comet Meier (1978f) in 18-cm OH Lines.
- Bania, T.M. 1980, *Ap. J.*, **242**, 95: Carbon Monoxide in the Inner Galaxy: The 3 kpc Arm & Other Expanding Features.
- Liszt, H.S., Burton, W.B., & Bania, T.M. 1981, *Ap. J.*, **246**, 74–85: Some Observational Consequences of Residual HI in Galactic Molecular Clouds.
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- Kolpak, M., Simon, R., Jackson, J.M., Clemens, D.P., Bania, T.M., Heyer, M.H., Egan, M.P., & Price, S.D. 1999, *Bull. American Astr. Soc.*, **31**, 970–971: *The BU-FCRAO Milky Way Galactic Ring Survey II. Kinematics and Correlation with the Optical and Infrared* at 194th AAS Meeting, Chicago, IL, 30 May – 3 June 1999.
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- Simon, R., Jackson, J.M., Bania, T.M., Clemens, D.P., & Heyer, M.H. 2000, *Bull. American Astr. Soc.*, **32**, 708: “The BU-FCRAO Galactic Ring Survey: Structure and Equilibrium of four Molecular Clouds”
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- Kolpak, M., Simon, R., Bania, T.M., Clemens, D.P., Jackson, J.M., Law, C.J., Heyer, M.H., Egan, M.P., & Price, S.D. 2000, *Bull. American Astr. Soc.*, **32**, 709: “The BU-FCRAO Galactic Ring Survey: Determining the Distances to Infrared Point Sources”
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- Kolpak, M. A., Jackson, J. M., Bania, T. M., Clemens, D. P., Simon, R., Heyer, M. H., & Dickey, J. M. 2000, *Bull. American Astr. Soc.*, 197, 0509: “The BU-FCRAO Galactic Ring Survey: Breaking the Near-Far Kinematic Distance Ambiguity”
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- Bania, T. M., Rood, R. T., & Balser, D. S. 2001, *Bull. American Astr. Soc.*, **33**, 842: “Stalking the Cosmic 3-He Abundance: The 3-Helium Plateau”
- Kolpak, M., Jackson, J.M., & Bania, T.M. 2001, *Bull. American Astr. Soc.*, **33**, 1390: “The Radial Distribution of Cold HI in the Galaxy”
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- Simon, R., Jackson, J. M., Bania, T. M., Clemens, D. P., & Heyer, M. H. 2002, *Bull. American Astr. Soc.*, **34**, 1282: *MSX Infrared Dark Clouds in the BU-FCRAO Galactic Ring Survey: A Galactic Ring Population*
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- Jackson, J. M., Clemens, D. P., Bania, T. M., & Tollestrup, E. V. 2003, *Astronomy in Antarctica, 25th meeting of the IAU, Special Session 2, 18 July, 2003 in Sydney, Australia*, **2**: “AIRO: the Antarctic Infrared Observatory”
- Bania, T.M., Rood, R.T., Balser, D.S., & Quireza Campos, C. 2004, *Chemical Abundances and Mixing in Stars in the Milky Way and its Satellites, September 13-17 2004, Castiglione*

- della Pescaia (Grosseto), Tuscany, Italy, Jointly organized by INAF-Osservatorio Astrofisico di Arcetri and ESO, "First Epoch Observations of ^3He with the Green Bank Telescope"
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- Simon, R., Jackson, J.M., Shah, R., Rathborne, J., Bania, T.M., Clemens, D.P., & Heyer, M.H. 2004, *The Dense Interstellar Medium in Galaxies, "The BU-FCRAO Galactic Ring Survey"*, 199
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- Jackson, J.M., Simon, R., Shah, R., Rathborne, J., Heyer, M.H., Clemens, D.P., & Bania, T.M. 2004, *AASP Conf. Ser. 317: Milky Way Surveys: The Structure and Evolution of our Galaxy*, 317, 49: "The Boston University-FCRAO Galactic Ring Survey"
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- Simon, R., Shah, R.Y., Rathborne, J., Jackson, J.M., Bania, T.M., Clemens, D.P., & Heyer, M.H. 2004, *ASP Conf. Ser. 317: Milky Way Surveys: The Structure and Evolution of our Galaxy*, 317, 159: "MSX Infrared Dark Clouds in the BU-FCRAO Galactic Ring Survey: A Galactic Ring Population"
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- Jackson, J.M., Rathborne, J.M., Shah, R.Y., Simon, R., Bania, T.M., *et al.* (11 total co-authors) 2005, *Bull. American Astr. Soc.*, **207**,1 page: “The Boston University-Five College Radio Astronomy Observatory Galactic Ring Survey”
- Simon, R., Jackson, J., Bania, T.M., Clemens, D.P. & Heyer, M.H. 2005, *Astronomische Nachrichten*, **326**,668: “The Distribution of MSX Infrared Dark Clouds in the inner Milky Way”
- Anderson, L.A., & Bania, T.M. 2008, *Bull. American Astr. Soc.*, **40**,212: “Milky Way H II Regions: From a GLIMPSE to a Stare”
- Anderson, L.A., & Bania, T.M. 2008, *Bull. American Astr. Soc.*, **40**,212: “Resolution of the Distance Ambiguity for Inner Galaxy H II Regions”
- Anderson, L.A., & Bania, T.M. 2009, *Bull. American Astr. Soc.*, **213**,604.09: “Discovering New Galactic H II Regions”
- Ingalls, J.G., & Bania, T.M., 2009, at *Reionization to Exoplanets: Spitzer’s Growing Legacy*, 26-28 Oct. 2009, Pasadena, CA: “Molecular Hydrogen Emission from Translucent Galactic Clouds”
- Shitanish, J., Balser, D.S., Bania, T.M., Rood, R.T., & Roshi, D.A. 2010, *Bull. American Astr. Soc.*, **41**,263: “Magnetic Fields in Photo-dissociation Regions”
- Bania, T.M., Anderson, L.D., Balser, D.S., & Rood, R.T. 2010, AAS Abstracts, **216**,309.02: “The Green Bank Telescope Galactic HII Region Discovery Survey”
- Anderson, L.D., Bania, T.M., Balser, D.S., & Rood, R.T. 2010, AAS Abstracts, **216**,424.02: “First Results from the Green Bank Telescope HII Region Discovery Survey”
- Koo, B-C., Gibson, S.J., Kang, J-h., Douglas, K.A., Park, G., Peek, J.E.G., Korpela, E.J., Heiles, C.E. & Bania, T.M., 2010, *Highlights of Astronomy*, **15**,788: : “I-GALFA: The Inner-Galaxy ALFA Low-Latitute H I Survey”
- Bania, T.M., Anderson, L.D., Balser, D.S., & Rood, R.T. 2011, BAAS, **43**,13203: “The GBT Galactic HII Region Discovery Survey Source Catalog”
- Anderson, L.D., Bania, T.M., Balser, D.S., & Rood, R.T. 2011, BAAS, **43**,13202: “Galactic Structure as Probed by the GBT HRDS”
- Balser, D.S., Rood, R.T., Bania, T.M., & Anderson, L.D. 2011, BAAS, **43**,13203: M “Metallicity Distribution in the Milky Way Disk”
- Montet, B., Balser, D.S., Roshi, D.A., Shitanishi, J., Bania, T.M., & Rood, R.T. 2011, BAAS, **43**,25102: “Magnetic Fields in Photodissociation Regions”
- Anderson, L.D., Bania, T.M., & Balser, D.S. 2012, AAS Meeting Abstracts, **219**,#349.13: “Locating New Sites of Massive Star Formation with WISE”
- Anderson, L.D., Balser, D.S., Bania, T.M., & Wenger, T.V. 2013, AAS Meeting Abstracts, **221**,#413.01: “A WISE Extension of the GBT HRDS”
- Wenger, T.V., Bania, T.M., Balser, D.S., & Anderson, L.D. 2013, AAS Meeting Abstracts, **221**,#413.02: “The Green Bank Telescope Discovery Survey. IV. Helium and Carbon Recombination Lines”

- Balser, D.S., Anderson, L.D., Bania, T.M., & Wenger, T.V. 2013, AAS Meeting Abstracts, **221**,#413.03: *“Probing Metallicity Across the Galactic Disk with the GBT”*
- Bania, T.M., Anderson, L.D., & Balser, D.S. 2013, AAS Meeting Abstracts, **221**,#413.04: *“The Arecibo H II Region Discovery Survey”*

INVITED TALKS AT MEETINGS, CONFERENCES, AND UNIVERSITIES

- Bania, T.M. (1976), “*Distribution of CO within 10° of the Galactic Center*” at Symposium sponsored by NASA’s Goddard Space Flight Center: **The Structure and Content of the Galaxy and Galactic Gamma Rays**, Greenbelt, MD, 2-4 June 1976.
- Received National Academy of Science grant to attend the XVIth General Assembly of the International Astronomical Union, Grenoble, France, 24 Aug. - 3 Sept. 1976.
- Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, Nov. 1976: “Carbon Monoxide in the Inner Galaxy” (Dissertation Seminar)
- Colloquium, Five College Radio Astronomy Observatory, University of Massachusetts, Amherst, MA, March 1977: “The Distribution of Carbon Monoxide Near the Galactic Center”
- Colloquium, Center for Radiophysics and Space Research (CRSR) and Department of Astronomy, Cornell University, Ithaca, NY, April 1977: “Carbon Monoxide in the Inner Galaxy”
- Invited Paper: “*Theoretical Models of Interaction of Stars with the Interstellar Medium*” at Invitational Meeting on Self-Propagating Star Formation, IBM Thomas J. Watson Research Center, Yorktown Heights, New York, 15 Dec. 1978.
- Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, Feb. 1979: “OB Stars and the Structure of the Interstellar Medium”
- Colloquium, CRSR, Cornell University, Ithaca, NY, March 1979: “The Structure of the Interstellar Medium”
- Bania, T. M. (1979), “*OB Stars and the Formation of Diffuse HI Clouds*” at XVII General Assembly of the International Astronomical Union, Montreal, Quebec, Canada, 14-23 Aug. 1979.
- Colloquium, Department of Physics and Astronomy, University of Minnesota, Minneapolis, MN, Dec. 1979: “The Ionization of the Interstellar Medium by Star Clusters”
- Colloquium, Department of Astronomy, University of Chicago, Chicago, IL, Apr. 1980: “Numerical Simulations of the Interstellar Medium”
- Colloquium, Department of Physics, University of North Carolina, Chapel Hill, NC, May 1980: “Hot Stars and the Structure of the Interstellar Medium”
- Attended Workshop on Giant Molecular Clouds at the Institute for Advanced Study, Princeton, NJ, Sept. 1980.
- Colloquium, Department of Astronomy, University of Virginia, Charlottesville, VA, March 1981: “Carbon Monoxide in the 3 Kpc Arm”
- Colloquium, Department of Astronomy, Indiana University, Bloomington, IN, Apr. 1981: “Numerical Simulations of the Effects of OB Stars on the Interstellar Medium”
- Colloquium, Physics Department, University of Cincinnati, Cincinnati, OH, Apr. 1981: “Numerical Simulations of the Interstellar Medium”
- Invited Speaker at NRAO Green Bank Workshop: “*Phases of the Interstellar Medium*”, Green Bank, WV, 10-13 May 1981: “Numerical Simulations of the Interstellar Medium”

- Bania, T. M. (1982), “A New Survey of the Latitude Distribution of Carbon Monoxide Emission in the Inner Galaxy” at University of British Columbia Workshop: “**The Milky Way: Structure, Kinematics, and Dynamics**”, Vancouver, BC, Canada, June 1982.
- Colloquium, CRSR, Cornell University, Ithaca, NY, May 1983: “Measurements of 3-He in the Milky Way”
- Colloquium, Max Planck Institut für Radioastronomie, Bonn, West Germany, June 1983; “The 3-He Abundance in the Interstellar Medium”
- Colloquium, Sterrewacht, Leiden University, Leiden, The Netherlands, June 1983: “The Arecibo-Green Bank Survey of HI in the First Galactic Quadrant”
- Colloquium, Physics Department, Northeastern University, Boston, MA, Oct. 1983: “The Measurement of 3-He Abundances in the Interstellar Medium”
- Colloquium, Department of Astronomy, University of Texas at Austin, Austin, TX, Nov. 1983: “The Abundance of Low Mass Helium in the Galaxy: Cosmological Consequences”
- Colloquium, Star Formation Working Group, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, Nov. 1983: “HI Self-Absorption toward an Anonymous OB Association”
- Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, Dec. 1983: “The Detection of 3-He+ Emission in Galactic HII Regions”
- Member, Local Organizing Committee for IAU Symposium No. **112: Search For Extraterrestrial Life – Recent Developments**, Boston, MA, 18-21 June 1984.
- Colloquium, Chemistry Department, Boston University, Boston, MA, Oct. 1984: “Molecules and Ions in the Interstellar Medium”
- NRAO User’s Committee Meeting, Charlottesville, VA, Nov. 1984.
- NAIC ASAC Meeting, San Juan, PR, Nov. 1984.
- Colloquium, Yerkes Observatory of the University of Chicago, Williams Bay, WI, Dec. 1984: “The Abundance of 3-He in the Interstellar Medium”
- Colloquium, National Radio Astronomy Observatory, Green Bank, WV, Mar. 1985: “Why Make Another HI Survey of the Milky Way?”
- Colloquium, Star Formation Working Group, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, March, 1985: “The Arecibo Survey of Galactic HI”
- Invited talk at the 25th Anniversary Workshop on the Search for Extraterrestrial Intelligence, National Radio Astronomy Observatory, Green Bank, WV, May 1985: “A Symbiotic SETI Search”
- Lectures on the Interstellar Medium, NRAO Summer Student Program, Charlottesville, VA, June 1985: “The Interstellar Medium” and “Kinematics of Galactic Structure”
- Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, July, 1985: “Why Make Another HI Survey of the Milky Way?”
- Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, Aug. 1985: “Clump 1: A Unique Giant Molecular Cloud”

- Invited Participant at Millimeter Array Workshop held by the National Radio Astronomy Observatory in Green Bank, WV, 1–3 Oct. 1985. (Member of the “Low-Z Extragalactic Working Group”)
- Colloquium, National Astronomy and Ionosphere Center, Arecibo Observatory, Arecibo, PR, Oct. 1985: “Tidally Disrupted Giant Molecular Clouds Near the Galactic Center”.
- NAIC Arecibo Scientific Advisory Committee (ASAC) Meeting, San Juan, PR, Oct. 1985.
- Colloquium, Five College Radio Astronomy Observatory, University of Massachusetts, Amherst, MA, Oct. 1985: “Clump 1: A Unique Molecular Cloud Near the Galactic Center”.
- Colloquium, NAIC Arecibo Observatory, Arecibo, PR, 1 July 1986: “Clump 1 Revisited via Clump 2”.
- Colloquium, NAIC Arecibo Observatory, Arecibo, PR, 3 July 1986: “Why Make Another Galactic HI Survey?”
- Invited Speaker, at “The Galaxy” a NATO Advanced Study Institute, Institute of Astronomy, Cambridge, UK, 4–15 Aug. 1986: “Molecular Cloud Complexes Towards the Centre” and “Measuring the 3-Helium Abundance in the Interstellar Medium”.
- Invited Speaker, at “Arecibo Gregorian Upgrading Program Science Workshop”, Cornell University, Ithaca, NY, 13–15 Oct. 1986: “Mapping the Galaxy at 21 cm Wavelength” and “Measuring the ^3He Abundance in the Interstellar Medium”.
- Colloquium, Boston University, Boston, MA, Sept. 1986: “The Boston University-Arecibo Galactic HI Survey”.
- NRAO User’s Committee Meeting, Green Bank, WV, 22–23 Oct. 1986.
- NAIC Arecibo Scientific Advisory Committee (ASAC) Meeting, Arecibo, PR, 10–12 Nov. 1986.
- Colloquium, Boston University, Boston, MA, Mar., 1987: “Star Formation and the Structure of the Interstellar Medium”.
- NRAO User’s Committee Meeting, Socorro, NM, 7–9 April 1987.
- Invited Speaker, at “The Outer Galaxy” A Symposium to honor the work of Frank Kerr, College Park, MD, 19–29 May 1987: “The Boston-Arecibo Galactic HI Survey”
- Attended “Interstellar Matter – A Symposium on Interstellar Molecules and Grains in Honor of Alan H. Barrett”, Cambridge, MA, 10–12 June 1987.
- Attended “Summer School on Millimetre and Submillimetre Astronomy”, Stirling, Scotland, UK, 21–27 June 1987: “The Boston University-Arecibo Survey: The CO Connection”
- Guest Lecturer at Green Bank Summer School for High School Science Teachers, Green Bank, WV, 27 July–7 August 1987: I gave a complete 3 credit course on introductory astronomy.
- Invited Speaker, at “Large-Scale Galactic Surveys”, a NRAO Workshop, Green Bank, WV, 28–30 Sept. 1987: “The Arecibo Spectral Mapping Pipeline”
- Participant, “Molecular Clouds in the Milky Way”, Symposium held at FCRAO, Univ. Massachusetts, Amherst, MA, 2-4 Nov. 1987.
- Participant, Cornell Astronomical Scientific Symposium, Cornell Univ., Ithaca, NY, 28-30 Apr. 1988.

Chairman, NRAO User's Committee Meeting, Tucson, AZ, 23-25 May 1988.

Attended NRAO Committee for Long-Range Planning Meeting, AUI Offices, Washington, DC, 2 August 1988.

Guest Lecturer at Green Bank Summer School for High School Science Teachers, Green Bank, WV, 14-27 August 1988: I gave a complete 3 credit course on introductory astronomy.

Seminar, Center for Astrophysics, Cambridge, MA, 21 Nov. 1988: "ASTRO: Antarctic Submillimeter Telescope and Remote Observatory"

Harlow Shapley Lecturer, High Point College, High Point, NC, 5-6 Dec. 1988: "Limits to Growth: Interstellar Migration"

Colloquium, NRAO Green Bank, 21 Dec. 1988: "ASTRO: Antarctic Submillimeter Telescope and Remote Observatory"

Colloquium, University of Maryland, College Park, MD, 29 Mar. 1989: "ASTRO: Antarctic Submillimeter Telescope and Remote Observatory"

Attended NEROC Visiting Committee Meeting as Boston University NEROC Trustee, Westford, MA, 17 May 1989.

Guest Public Lecturer, American Museum-Hayden Planetarium, New York, NY, 6 June 1989: "Molecules in Space-The New Milky Way"

Attended Symposium at Bartol Research Foundation, Newark, DL, 8-11 June 1989: "Astrophysics in Antarctica"

Attended Symposium at Institute d'Astrophysique, Paris, France, 26-30 June 1989: "Interstellar Ages and Datations"

Colloquium, Sterrewacht Leiden, Leiden, The Netherlands, 20 July 1989: "New HI and CO Studies of the Interstellar Medium"

Colloquium, Sterrewacht Groningen, Groningen, The Netherlands, 24 July 1989: "What Do We REALLY Know About the Interstellar Medium?"

Colloquium, Sterrewacht Leiden, Leiden, The Netherlands, 27 July 1989: "The AST/RO Project"

Colloquium, Max Planck Institut fur Radioastronomie, Bonn, Federal Republic of Germany, 21 Aug. 1989: "What Do We REALLY Know About the Interstellar Medium?"

Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, 6 Mar. 1990: "AST/RO and CARA: Astronomy at the South Pole"

Colloquium, National Radio Astronomy Observatory, Charlottesville, VA, 8 Mar. 1990: "MBM-12: The Nearest Molecular Cloud"

Invited talk at the National Science Foundation, Washington, DC, 11 Apr. 1990: "Gas in Space: The New Milky Way"

Colloquium, Astronomy Department, University of Wisconsin, Madison, WI, 25 Apr. 1990: "MBM-12: The Nearest Molecular Cloud"

Harlow Shapley Lecture Visit, Lawrence University, Appleton, WI, 26-27 Apr. 1990: "Limits to Growth: Interstellar Colonization" (public lecture); "Molecules in Space: The New Milky Way" (seminar for undergraduate Physics majors)

- Harlow Shapley Lecture Visit, Randolph-Macon College, Ashland, VA, 2–4 Apr. 1991: “Limits to Growth: Interstellar Colonization” (public lecture); “Molecules in Space: The New Milky Way” (seminar for undergraduate Physics majors); “E. E. Barnard and the Discovery of Interstellar Matter” (class for undergraduate physics students).
- Invited Lecture to the American Chemical Society, Pensacola, FL, 9 Apr. 1991: “Limits to Growth: The Colonization of the Milky Way”
- Invited Lecture at USA-USSR Joint Conference on The Search for Extraterrestrial Intelligent Life, University of California, Santa Cruz, 6 Aug. 1991: “Search for Interstellar Beacons at the $^3\text{He}^+$ Hyperfine Transition Frequency”
- Colloquium, Max Planck Institut fur Radioastronomie, Bonn, Germany, 7 Nov. 1991: “OB Stars and the Interstellar Medium: The Effects of Star Clusters”
- Invited Presentation at NSF Site Visit Evaluation of the CARA (Center for Astrophysical Research in Antarctica) Science and Technology Center, Yerkes Observatory, Williams Bay, WI, 17 Feb. 1992: “The AST/RO Test Site at Boston University”
- Seminar, Boston University Astronomy Department, Boston, MA, 27 Apr. 1992: “Steps toward the Cosmic Abundance of 3-Helium: Discovery of a 3-He Source in the Planetary Nebula NGC 3242
- Invited Public Lecturer, Charles Hayden Planetarium at the Museum of Science, Boston, MA, 9 May 1992: “Limits to Growth: The Colonization of the Milky Way Galaxy”
- Seminar, International Symposium for the 60th Birthday of Hubert Reeves, *Origin and Evolution of the Elements*, Institut d’ Astrophysique de Paris, 22–25 June 1992: “The He-3 Abundance in H II Regions and Planetary Nebulae”
- Seminar, Workshop on Databases for Galactic Structure, Swarthmore College, PA, May 17–19, 1993: “Galactic Scale Surveys at Centimeter through Submillimeter Wavelengths”
- Seminar, Harvard/Smithsonian Center for Astrophysics, Cambridge, MA, 11 Feb. 1994: “Improved 3-Helium Abundances in the Interstellar Medium”
- Invited Talk at the ESO/EIPC Workshop on “The Light Element Abundances” held at the Elba International Physics Center, Marciana Marina, Elba, Italy, 22–28 May 1994: “Measurements of the 3-Helium Abundances in the Milky Way”
- Invited Lecture at the CSIC Workshop “The Formation of the Milky Way” held at the Palacio de Congresos, Grenada, Spain, 5–10 September 1994: “The Galactic Interstellar Medium”
- Colloquium, University of Canterbury, Christchurch, New Zealand “Installation of the AST/RO Instrument at the South Pole”, 17 February 1995.
- Colloquium, National Radio Astronomy Observatory, Green Bank, WV “Antarctic Submillimeter Telescope and Remote Observatory: Deployment of AST/RO at the South Pole — System Performance and Initial Scientific Results”, 17 August 1995.
- Invited Lecture at Thirtieth Anniversary Workshop for the 140 ft Telescope “The Saga of 3-Helium”, 28–29 September 1995.
- Colloquium, Cornell University, Ithaca, NY “First Scientific Results from the Antarctic Submillimeter Telescope and Remote Observatory” 12 October 1995.

- Invited Lecture, “Quest for the 3 cm Spectral Limit: High Sensitivity Measurements of the $^3\text{He}^+$ Emission from Galactic H II Regions” at “High Sensitivity Radio Astronomy—A Conference to Celebrate the 50-th Anniversary of the First Radio Observations at Jodrell Bank”, Jodrell Bank, UK, 22-26 January 1996.
- Colloquium, National Radio Astronomy Observatory, Charlottesville, VA “First Scientific Results from the Antarctic Submillimeter Telescope and Remote Observatory”, 9 May 1996
- Colloquium, National Radio Astronomy Observatory, Green Bank, WV “Limits to Growth: The Colonization of the Milky Way”, 15 August 1996.
- Invited Talk, “The Future of Galactic HI Studies with the Upgraded Arecibo Telescope” at Workshop on “Hydrogen Spectroscopy With the Upgraded Arecibo”, National Astronomy and Ionosphere Center, Arecibo, PR, 23-24 August 1996.
- Colloquium, University of Puerto Rico, Mayaguez, PR “The Antarctic Submillimeter Telescope and Remote Observatory Project”, 27 August 1996.
- Colloquium, National Astronomy and Ionosphere Center, Arecibo, PR, “First Scientific Results from the Antarctic Submillimeter Telescope and Remote Observatory”, 28 August 1996
- Harlow Shapley Lecture Visit, Grenfell College of the Memorial University of Newfoundland, Corner Brook, Newfoundland, CA, 8–10 March 1997: “Limits to Growth: Interstellar Colonization” and “Astronomy from the South Pole” (public lecture).
- Colloquium, Queen Mary University, Halifax, Nova Scotia, CA, “Astronomy at -50C : Antarctic Submillimeter Telescope and Remote Observatory”, 11 March 1997
- Harlow Shapley Lecture Visit, Westfield State College, Westfield, MA, 5–7 May 1997: “Limits to Growth: Interstellar Colonization” (public lecture); Plus 2 lectures for undergraduate Physics & Astronomy Majors and 4 talks at Westfield High School.
- Invited Talk, European Center for Theoretical Studies (ECT*), Trento, Italy, 21 June – 4 July 1997, “The Abundance of 3-Helium in Galactic HII Regions”
- Colloquium, Arcetri Observatory, Florence, Italy, “The Abundance of 3-Helium in the Milky Way”, 7 July 1997.
- Paper, 1997 IEEE AP-S International Symposium and URSI North American Radio Science Meeting, Montreal, Quebec, CA, “Antarctic Submillimeter Telescope and Remote Observatory”, 18 July 1997.
- Invited Talk, Astronomical Society of Long Island, Five Towns College, Dix Hills, Long Island, NY, “Limits to Growth: Colonization of the Milky Way”, 20 Sept. 1997.
- Colloquium, University of Groningen, Groningen, The Netherlands, “The Cosmic Abundance of 3-Helium”, 11 March 1998.
- Colloquium, University of Leiden, Leiden, The Netherlands, “The Cosmic Abundance of 3-Helium”, 12 March 1998.
- Colloquium, University of Minnesota, Minneapolis, MN, “The Cosmic Abundance of 3-Helium”, 22 May 1998.
- Training Lecture, Science Teacher Workshop (Rare CATS), National Radio Astronomy Observatory, Green Bank, WV, “3-Helium”, 19 Aug. 1998.

- Shell Seminar Speaker, National Science Teacher's Association 1999 National Convention, Boston, MA, "Astronomy at 175 Kelvin: A Day in the Life of a South Pole Astronomer", 26 March 1999.
- Harlow Shapley Lecture Visit, Rowan University, Glassboro, NJ, 8-9 April 1999: "Limits to Growth: Interstellar Colonization" (public lecture) and "Astronomy from the South Pole" (class for non-science majors).
- Colloquium, National Radio Astronomy Observatory, Socorro, NM, 16 April 1999: "The BU—FCRAO Galactic Ring Survey"
- Invited Lecture, Silverlake Regional High School, Silverlake, MA, 19 May 1999: "Astronomy at 175 Kelvin: A Day in the Life of a South Pole Astronomer"
- Invited Lecture, "Imaging99 Conference", National Radio Astronomy Observatory, Tucson, AZ, 5 to 9 June 1999: "AST/RO: Antarctic Submillimeter Telescope and Remote Observatory"
- Invited Public Lecture at UNIVERSE '99, the weekend public event of the 111th Annual Meeting of the Astronomical Society of the Pacific, Toronto, Canada, 3 July 1999: "Astronomy at 175 Kelvin: A Day in the Life of a South Pole Astronomer"
- Lecture, Science Teacher Workshop (Rare CATS), National Radio Astronomy Observatory, Green Bank, WV, "Limits to Growth: The Colonization of the Milky Way", 10 July 1999
- Radio Interview/Discussion for "Mountain RadioAstronomy", WVMR radio, Frost, WV, "Astrophysics in Antarctica", 15 July 1999
- Colloquium, National Radio Astronomy Observatory, Green Bank, WV, 29 July 1999: "The BU—FCRAO Galactic Ring Survey"
- Colloquium, Institute for Astrophysical Research, Boston University, Boston, MA, 13 Sept. 1999: "The 3-Helium Problem"
- Invited Talk at IAU Symposium 198: "The Light Elements and Their Evolution" held in Natal, Brazil, 20 through 28 Nov. 1999: "The 3-Helium Plateau"
- Augur Scientific Lecture, The Hotchkiss School, Lakeville, Ct, 16 Nov. 1999: "Astronomy at 175 Kelvin: A Day in the Life of a South Pole Astronomer"
- Invited Talk at 60th Birthday Festschrift for Frank Drake, Charles Hotel, Cambridge, MA, 6 May 2000: "Frank Drake and SETI at Green Bank"
- Seminar at NSF Astronomy, Washington, DC, 11 July 2000: "The Galactic Ring Survey"
- Radio Interview/Discussion for "Mountain RadioAstronomy", WVMR radio, Frost, WV, 15 August 2000: "Astrophysics in Antarctica"
- Gave Invited Paper at an international conference on "Cosmic Evolution" honoring J. Audouze and J. Truran at the Institut d'Astrophysique in Paris, France, 14 through 17 November 2000.
- Invited attendee at a Workshop "21cm HI Surveys of the Milky Way" held at NRAO in Green Bank, WV, 20 May through 24 May 2001.

- Delivered a paper at the American Astronomical Society Meeting held in Pasadena, CA, 3 through 6 June 2001.
- Gave Invited Paper at an international conference on “Gaseous Matter in Galaxies and Intergalactic Space” held at the Institut d’Astrophysique in Paris, France, 15 through 23 June 2001.
- Invited attendee at an international conference, “Third International Workshop on Astrophysics at Dome C”, held in Hobart, Tasmania, 28 - 29 June 2001.
- Presented a poster at the University of California at Santa Cruz, CA, scientific workshop, ”Star Formation in the Galactic Context,” 14 through 19 July 2001: ”Small Scale Structure in the Nearest Molecular Cloud” by J.G. Ingalls, W.T. Reach, T.M. Bania, & J.M. Carpenter.
- Attended Infrared Astronomy from Antarctica Workshop, Boston University, Boston, MA, 5–6 March 2002.
- Gave an invited paper at an international conference on “The Cosmological Model” at the 37-th Moriond Workshop held in Les Arcs 1800, Savoie, France, 16–23 March 2002: “The Cosmic Helium-3 Abundance: Implications for Big Bang Nucleosynthesis, Stellar Evolution, and Galactic Chemical Evolution”
- Invited Talk at “Astrobiology/Search for Life Beyond Earth” Symposium, Tarrant County College Northeast Campus, Hurst, TX, 25–26 Apr. 2002: “Limits to Growth: The Colonization of the Milky Way”
- AAS Shapley Lecture, Sullivan County Community College, Loch Sheldrake, NY.
- Attended the 2002 Union of Radio Science International (URSI) General Assembly, Maastricht, Netherlands. 18–22 Aug. 2002 as an official representative of Commission J of the U.S. URSI organization. I was thus sent to the General Assembly by the U.S. National Academy of Science.
- Gave Invited Paper at Workshop on Pulsar Research with the ALFA Array, NAIC Arecibo Observatory, Arecibo, PR, 31 Oct. – 3 Nov. 2002: “Galactic HI Science Surveys with ALFA”
- Gave Invited Paper at Workshop on Galactic HI Research with the ALFA Array at first Galactic ALFA (GALFA) consortium meeting, Arecibo, PR, 20 Mar. – 23 Mar. 2003: “First Quadrant HI Surveys”
- Chair, Scientific Organizing Committee, “Milky Way Surveys: The Structure and Evolution of Our Galaxy, The 5th Boston University Astrophysics Conference”, 15 – 17 June 2003.
- Chair, Second GALFA Consortium Workshop, Boston University, 18 June 2003.
- Gave Invited paper at international conference: “How does the Galaxy work? A galactic tertulia with Don Cox and Ron Reynolds”, Grenada, Spain, 22 – 27 June 2003: “The BU-FCRAO Milky Way Galactic Ring Survey”
- Gave Invited talk at Second NRAO/NAIC Single Dish Summer School, Green Bank, WV, 21 – 23 August 2003: “Single Dish Radio Astronomy: Past, Present, and Future”
- Gave Invited paper at third GALFA consortium workshop, National Astronomy and Ionosphere Center, Arecibo, PR, 27 Aug 2004: ”Low latitude HI Surveys with ALFA”

- Gave Invited paper at "Diffuse Matter in the Galaxy: Observations Confront Theory. A Meeting in Honor of the 65th Birthday of Carl Heiles", 28 August – 3 September 2004: "Resolving the Kinematic Distance Ambiguity with HI Self-Absorption"
- Consulted and gave demonstration of my GBT IDL software package at NRAO workshop for GBT data analysis, 29 April – 2 May 2005. Chaired the external advisory panel and wrote a summary report.
- Gave Invited paper at international conference: *Chemical Abundances and Mixing in Stars in the Milky Way and its Satellites*, September 13-17 2004, Castiglione della Pescaia (Grosseto), Tuscany, Italy, Jointly organized by INAF-Osservatorio Astrofisico di Arcetri and ESO: "First Epoch Observations of 3-He with the Green Bank Telescope"
- Consulted with NRAO, Green Bank, software group anent IDL data reduction package for the Green Bank Telescope, 14–17 October 2005.
- Shapley Lecture visit to Yeshiva University, New York, New York, 22–24 February 2005. Visit included giving an AAS Shapley Public Lecture, teaching an undergraduate class, and consulting with Yeshiva Provost.
- Gave Invited Paper at international conference: "Local Late Galactic Evolution", held at the International Space Science Institute (ISSI) in Bern, Switzerland, 20-21 October 2005: "New Determinations of the D and ^3He Abundance in the Galactic Interstellar Medium"
- Gave Colloquium at University of Massachusetts, Amherst, MA, 30 March 2006: "The 3-Helium Problem: Constraining the Chemical Evolution of the Milky Way"
- Gave Invited Talk at international conference: *Symposium on the Composition of Matter: Honoring Johanness Geiss on the occasion of his 80-th birthday*, Grindelwald, Switzerland, 11-15 September 2006: "The Milky Way 3-Helium Abundance"
- Gave Colloquium at Boston University, 28 November 2006: "The Cosmic Abundance of 3-Helium"
- Gave invited review talk at International Astronomical Union (IAU) Symposium. *Light Elements in the Universe*, Geneva, Switzerland, 6-15 November 2009: "Measurements of 3-He in Galactic H II Regions and Planetary Nebulae"
- Invited participant at international conference: "SETI@50: Celebrating the Search for ET" held at NRAO in Green Bank, WV, 11-15 Sept 2010. The conference celebrated the 50-th anniversary of Frank Drake's pioneering OZMA SETI search. I Chaired the panel "SETI and the Popular Imagination"
- Invited review at ESO Workshop: "The Spiral Structure of the Milky Way: Confronting Observations and Theory," 7-10 November 2010. The talk was to be "HII Region Radio Recombination Lines and Galactic Structure." At the last minute I could not attend the conference as I was under a "do not fly order" from my PCP. This order has since been rescinded and all is now well.
- Colloquium, USRA SOFIA group, NASA Ames Research Center, Mt. View, CA, 1 June 2011: "The GBT H II Region Discovery Survey"
- Colloquium, The School of Astrophysics and Optics, University of New South Wales, Sydney, Australia, 16 August 2011: "The GBT H II Region Discovery Survey"

Colloquium, CSIRO Astralian Telescope National Facility (ATNF), Sydney, Australia, 17 August 2011: “The GBT H II Region Discovery Survey”

Colloquium, Department of Physics and Mathematics, University of Tasmania, Hobart, Tasmania, 22 August 2011: “The GBT H II Region Discovery Survey”

Colloquium, Insititute for the Study of Earth, Oceans, and Space, University of New Hampshire, Durham, NH, 12 September 2011: “The GBT H II Region Discovery Survey”

Colloquium, Department of Physics, University of Maine, Orono, ME, 19 October 2011: “The GBT H II Region Discovery Survey”