

## Dr. Brian L. Rachford – Curriculum Vitae

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### Post-graduate Employment

2011 – Present: Associate Professor of Physics (tenured), Embry-Riddle Aeronautical University  
2005 – 2011: Assistant Professor of Physics, Embry-Riddle Aeronautical University  
2004 – 2005: Visiting Assistant Professor of Astronomy, Carleton College  
1999 – 2004: Research Associate, University of Colorado, Boulder  
1998 – 1999: Lecturer (full-time), University of Wyoming

### Education

1991 – 1998: Ph.D., Physics (specialization in Astronomy), University of Wyoming (Dissertation: “A Study of Chromospheric Activity in Late A- and Early F-type Stars”) 1987 – 1991: B.S., Physics and Astronomy, University of Iowa (with Honors)

### Courses taught as instructor of record (21 semesters as a full-time faculty member)

Introductory physics (algebra-based and calculus-based for a variety of majors)  
Introductory physics laboratories (variety of majors)  
Modern Physics (sophomore physics and engineering majors)  
Thermodynamics and Statistical Mechanics (senior physics majors)  
Introductory astronomy (descriptive for non-majors and calculus-based for physics majors)  
Junior-level astrophysics (overview for physics majors)  
Senior-level astrophysics (radiative transfer in stellar atmospheres and nebulae)  
Senior Research Thesis (two-semester sequence; 19 students in past 8 years at ERAU)

### Additional educational/mentoring activities

2012 – Present: Astronomy Program Chair (one of 19 undergraduate degree programs on campus)  
2009 – 2014: Co-PI NSF S-STEM Grant “Preparing Underrepresented NSF-STEM Scholars for Careers in Space Physics” (DUE #0806973 – \$598,000)  
2005 – Present: Supervision of student researchers, Embry-Riddle Aeronautical University  
2004 – 2005: Supervision of student researchers, Carleton College  
2000 – 2004: Supervision of student researchers, University of Colorado  
2000 – 2003: Mentor, Boulder Valley School District Science Research Seminar program

### Public outreach

2006 – Present: Director, Embry-Riddle Astronomical Observatory (Public open houses, events for current and prospective students and their families, local organizations; about 6 total events per year)  
2011: Instructor for NASA Educator Resource Center’s “Teacher Academy in Aerospace Education” (one-week summer class for Arizona middle-school teachers)  
2008 and 2009: Public library talks for Prescott Astronomy Club’s “Third Thursday” series  
2004 – 2005: Monthly public observatory open houses at Carleton College  
2002: Public talk for Northern Colorado Astronomical Society, Fort Collins, CO

### **Research Interests**

*Interstellar Medium:* Molecular hydrogen and chemical abundances in interstellar clouds; Dust extinction; Diffuse Interstellar Bands

*Other:* Activity and abundances in warm stars (A and F spectral types); Stellar variability; Exoplanet transits

### **Successful post-graduate research proposals**

2010–2014: NSF Division of Astronomical Sciences, “Collaborative Research: Carriers, Charge State and Diagnostic Use of the Long-Mysterious Diffuse Interstellar Bands,” (AST #1008801 – \$53,632; one of 6 funded Collaborators; lead PI Don York, University of Chicago)

2011: Hubble Space Telescope Cycle 19, Co-I, (\$3941; PI: T. Snow, CU-Boulder)

2010: Hubble Space Telescope Cycle 18, Co-I, (PI: D. Welty, University of Illinois)

2004: Hubble Space Telescope Cycle 13, Co-I, (PI: D. Welty, University of Chicago)

2004: Far Ultraviolet Spectroscopic Explorer Cycle 5, Co-I (PI: E. Jenkins, Princeton Univ.)

2002: NASA Astrophysics Data Analysis Program, Co-I (PI: G. Clayton, Louisiana State Univ.)

### **Awards, affiliations, and professional service**

2003–Present: Article referee for *Science*, *The Astrophysical Journal*, *Publications of the Astronomical Society of the Pacific*, and *Astronomy & Astrophysics*

1995–Present: Member, American Astronomical Society

1993–Present: Member, Astronomical Society of the Pacific

May 1998: Recipient, Outstanding Graduate Research Assistant Award, Department of Physics and Astronomy, University of Wyoming

### **Selected major institutional service**

2011: Developed successful proposal for new Astronomy degree program (including curriculum and financial plan)

2010–2011: Member of University committee to develop Quality Enhancement Plan (QEP) requirement for SACS re-accreditation (QEP is roughly half of the process required by SACS)

2009–2011: Chaired Faculty Senate committee (Academic Computing Faculty Advisory Committee)