

# CURRICULUM VITAE - BRIAN SHARPEE

## Personal Information:

Date/Place of Birth 1 December 1971, West Bend, WI, USA

## Address:

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## Education:

2003 Ph.D. in Astronomy and Astrophysics, Michigan State University

1999 M.S. in Physics, Michigan State University

1995 B.S. in Physics, University of Wisconsin-Whitewater

## Research Interests:

- Terrestrial night airglow processes. The adaptation of high resolution astronomical sky spectra for the study of the night airglow. The discovery and categorization of weak night airglow emission features.
- Abundance determination and evolution of planetary nebulae and H II regions. The processes that give rise to weak individual emission lines in their spectra.
- Developing software to automate the reduction and processing of high resolution spectra and for identifying atomic and molecular emission lines in such spectra.
- The calculation of fundamental atomic parameters used to determine emission-line region abundances and physical attributes.

## Research Experience:

- 2003- present Postdoctoral Fellow - Astronomy (SRI International)  
Creation of a database of night airglow line emission data to be used to construct a virtual observatory for night airglow studies.  
The measurement of atomic parameters from night airglow line emission data. (with Dr. David Huestis and Dr. Tom Slanger-SRI International)
- 2000- 2003 Abundance analyses of planetary nebulae from high resolution echelle spectra. Development of automated tools/software to reduce and identify lines in such spectra. (with Prof. Jack Baldwin-MSU and Prof. Robert Williams-STScI)
- 1999-2000 Analysis of a group of variable stars in an outer arm of the Small Magellanic Cloud. Study of the Blazhko-effect star XZ Cygni. (with Prof. Horace Smith-MSU)

**Teaching Experience:**

- 2003-2006 Supervision of Research Experience for Undergraduates (REU) students, Molecular Physics Lab., SRI International
- 1997-2000 Graduate Teaching Assistant Supervisor, Competency Based Instruction Program (CBI)-Physics, Department of Physics and Astronomy, Michigan State University
- 1997-2000 Teaching Assistant - CBI Physics, College of Natural Science - Michigan State University, Summer Physics Courses, Birmingham, MI
- 1997 Teaching Assistant, Physics - Course: Experiencing Our World (ISP 205), Department of Physics and Astronomy, Michigan State University
- 1996 Teaching Assistant, Physics - Course: Physics for Majors (PHY 251), Department of Physics and Astronomy, Michigan State University
- 1991-1995 Observatory and Teaching Assistant, University of Wisconsin-Whitewater Observatory, Department of Physics University of Wisconsin-Whitewater

**Professional Organizations:** American Astronomical Society  
American Geophysical Union

**Awards:**

- 2002 College of Natural Science Dissertation Completion Fellowship

**Service:**

- 2001 Volunteer-Science Olympiad.
- 1997-1999 Physics/Astronomy Representative, MSU Council of Graduate Students,
- 1994-1995 Vice-President, Society of Physics Students, University of Wisconsin-Whitewater,

## References:

Dr. David Huestis,  
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## List of Publications:

### Thesis

“An Abundance Study of the Planetary Nebula IC 418 Using High Resolution, Signal-to-Noise Emission Spectra” (adviser Prof. Jack Baldwin)

### Refereed Papers

1. T.G. Slanger, E. O’Neill, **B.D. Sharpee**, P.C. Cosby, “Ground-based Measurements of the I(777.4 nm)/I(844.6 nm) Intensity Ratio in the Nightglow; Evidence for Bowen Fluorescence of the 844.6 nm transition”, in preparation
2. **B.D. Sharpee**, Y. Zhang, R. Williams, E. Pellegrini, K. Cavagnolo, J.A. Baldwin, M. Phillips, and X.-W. Liu, “ s-Process Abundances in Planetary Nebulae,” *Astrophys. J. Supp.*, submitted.
3. P.C. Cosby, **B.D. Sharpee**, T.G. Slanger, D.L. Huestis, R. Hanuschik, “High-Resolution Terrestrial Nightglow Emission Line Atlas from UVES/VLT: Positions, Intensities, and Identifications for 2808 Lines at 314-1043 nm,” *J. Geophys. Res.*, in press, 2006.

4. T.G. Slanger, P.C. Cosby, **B.D. Sharpee**, K.R. Minschwaner, D.E. Siskind, “The O( $^1S \rightarrow ^1D, ^3P$ ) Branching Ratio”, *J. Geophys. Res.*, *J. Geophys. Res.*, in press, 2006.
5. T.G. Slanger, P.C. Cosby, D.L. Huestis, **B.D. Sharpee**, “Review of Tropical Nightglow Studies with Astronomical Instruments,” *J. Atmos. Solar Terr. Phys.*, 68, 1426, 2006.
6. **B.D. Sharpee**, T.G. Slanger, “The O( $^1D_2 \rightarrow ^3P_{210}$ ) 630.0, 636.4, and 639.2 nm Forbidden Emission Line Intensity Ratios in the Terrestrial Nightglow”, *J. Phys. Chem. A*, 21, 6707, doi:10.1021/jp056163x, 2006.
7. **B.D. Sharpee**, T.G. Slanger, P.C. Cosby, D.L. Huestis, “The N( $^2D^\circ \rightarrow ^4S^\circ$ ) Forbidden Doublet in the Nightglow: An Experimental Test of the Theoretical Intensity Ratio,” *Geophys. Res. Lett.*, 32, L12106, doi:10.1029/2005GL023044, 2005.
8. **B. Sharpee**, J. Baldwin, R. Williams, “Identification and Characterization of Faint Emission Lines in the Spectrum of the Planetary Nebula IC 418,” *Astrophys. J.*, 615, 323, 2004.
9. **B.D. Sharpee**, T.G. Slanger, D.L. Huestis, P.C. Cosby, “Measurements of the Singly Ionized Oxygen Auroral Doublet Lines  $\lambda\lambda 7320, 7330$  Using High Resolution Sky Spectra,” *Astrophys. J.*, 606, 605, 2004.
10. A. LaCluyze, H.A. Smith, E.-M. Gill, A. Hedden, K. Kinemuchi, A.M. Rosas, B.J. Pritzl, **B. Sharpee**, C. Wilkinson, K.W. Robinson, M.E. Baldwin, G. Samolyk, “The Changing Blazhko Effect of XZ Cygni,” *Astron. J.*, 127, 1653, 2004.
11. **B. Sharpee**, R. Williams, J. Baldwin, P.A.M. van Hoof, “Introducing EMILI: Computer Aided Emission Line Identification,” *Astrophys. J. Supp.*, 149, 157, 2003.
12. R. Williams, E.B. Jenkins, J.A. Baldwin, **B. Sharpee**, “Comparative Abundances From Absorption and Emission Analyses of IC 418,” *Pub. Astron. Soc. Pacific*, 115, 178, 2003.
13. **B. Sharpee**, M. Stark, B. Pritzl, N. Silberman, R. Wilhelm, H.A. Smith, A. Walker, “B,V Photometry of Variable Stars in the Northeast Arm of the Small Magellanic Cloud,” *Astron. J.*, 123, 3216, 2002.

#### Conference Proceedings (+15 conference abstracts)

1. **B.D. Sharpee**, T.G. Slanger, D.L. Huestis, P.C. Cosby, “Studying Atomic Physics via the Laboratory of the Nighttime Atmosphere”, Proceedings of the NASA Laboratory Astrophysics Workshop, ed. P.F. Week, V.H.S. Kwong, & F. Salama, pp.264, 2006.
2. J.R. Walsh, D. Pequignot, **B. Sharpee**, J. Baldwin, C. Morisset, P.J. Storey, P. van Hoof, R.E. Williams, “A Deep Blue-UV Planetary Nebulae Template Spectrum from NGC 7027,” IAU Symp. 209, Planetary Nebulae: Their Evolution and Role in the Universe, ed. S. Kwok, M. Dopita, & R. Sutherland (San Francisco: ASP), pp.337, 2003.

3. **B. Sharpee**, R.E. Williams, J. Baldwin, P.A.M. van Hoof, "EMILI - An Aid to Emission Line Identification in Emission-Line Regions," Proceedings of the NASA Laboratory Astrophysics Workshop, ed. F. Salama, pp.85, 2002.
4. H.A. Smith, A. LaCluyze, E.-M. Gill, A. Hedden, K. Kinemuchi, A.M. Rosas, B.J. Pritzl, **B. Sharpee**, K. Robinson, M. Baldwin, G. Samolyk, "The Changing Blazhko Effect of XZ Cygni," ASP Conference Proceedings, Vol. 259, Radial and Nonradial Pulsations as Probes of Stellar Physics, ed. C. Aerts, T.R. Bedding, & J. Christensen-Dalsgaard. ISBN: 1-58381-099-4. Also IAU Colloquium 185. (San Francisco: ASP), pp.64, 2002.

### **Invited Talks**

1. "Absolute Intensity Calibration Using Standard Stars", CEDAR Workshop, Santa Fe, NM, June 2005.
2. "Closer To Home: Using Astronomical Instruments to Study the Terrestrial Atmosphere", SRI International, September 2004.  
Florida Atlantic University, November 2004.
3. "Absolute Flux Calibration of Sky Spectra Using Spectrophotometric Standard Stars", CEDAR Workshop, Santa Fe, NM, June 2004.