CURRICULUM VITAE - BRIAN D. SHARPEE

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Stanford Research Institute (SRI) International,
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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 (*magna cum laude*), University of Wisconsin-Whitewater

Research Interests:

- Abundance determination in Galactic planetary nebulae and the physical processes that give rise to extremely weak emission lines in their spectra. Calculations of fundamental atomic parameters necessary for abundance determination.
- The development of software for the automated reduction and processing of high resolution astronomical spectra and for the accurate identification of atomic and molecular emission lines within such spectra.
- The kinetics and chemistry of the predominant atomic and molecular species in the terrestrial mesopause, lower thermosphere, and ionosphere, as determined from high resolution spectroscopy of the night airglow during quiescent and geomagnetically disturbed conditions. Night airglow studies of the other terrestrial planets.

Research Experience:

2003- Postdoctoral Fellow/Astronomer (SRI International)
Using astronomical spectra to determine collisional quenching rates, collisional partners, and the general kinetics and chemistry of the primary components of the middle and upper atmosphere.
The measurement of atomic parameters of night airglow transitions.
(with Dr. Tom Slanger and Dr. David Huestis-SRI International)

2000- Abundance analyses of planetary nebulae from high resolution echelle spectra.
Development of automated tools/software to reduce and identify emission lines in these 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:

2008- Adjunct Instructor, ASTR 109: "Astronomy Laboratory"
Physical Sciences Department, Southwestern College, Chula Vista, CA

2007- Adjunct Instructor, AST 100: "Principles of Astronomy",
AST 105L: "Astronomy Laboratory"
Earth Sciences Department, Palomar College, San Marcos, CA

2003-2006 Supervision of Research Experience for Undergraduates (REU) students,
Molecular Physics Laboratory, SRI International

1996-1999 Student Consultant, Consultant Supervisor, and Records Manager,
Competency Based Instruction (CBI) Program in Physics,
Department of Physics and Astronomy, Michigan State University

1996-1999 Student Consultant (CBI Physics),
College of Natural Science - Michigan State University,
summer physics courses in Birmingham, MI and West Bloomfield, MI

1997 Teaching Assistant,
Course ISP 209L: "The Mystery of the Physical World Laboratory" (two sections),
Department of Physics and Astronomy, Michigan State University

1996 Teaching Assistant,
Course PHY 231: "Introductory Physics I" ,
Department of Physics and Astronomy, Michigan State University

1991-1995 Observatory and Teaching Assistant,
Department of Physics, University of Wisconsin-Whitewater

Professional Organizations:

2003- American Geophysical Union

2001- American Astronomical Society

Service:

2004- Peer Reviewer: Astrophysical Journal,
Journal of Quantitative Spectroscopy and Radiative Transfer,
Journal of Geophysical Research-Planets

1997-1999 Department of Physics and Astronomy Representative,
MSU Council of Graduate Students,

List of Publications:

Thesis: "An Abundance Study of the Planetary Nebula IC 418 Using High Resolution, Signal-to-Noise Emission Spectra", adviser Professor Jack Baldwin, Michigan State University, 2003.

Peer Reviewed Journals

1. **B.D. Sharpee**, E.R. O'Neill, and T.G. Slanger, "Astronomical Sky Spectra from the 29–31 October 2003 Geomagnetic Superstorms: Observations of $O^+(^2D^o–^4S^o)$ and Other Emissions", *J. Geophys. Res.*, in press.

2. R. Williams, E. Jenkins, J. Baldwin, Y. Zhang, **B. Sharpee**, E. Pellegrini, and M. Phillips, "Independent Emission and Absorption Abundances for Planetary Nebulae", *Astrophys. J.*, 677, 1100, 2008.

3. **B. 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.*, 659, 1265, 2007.

4. 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.*, 111, A12307, doi:10.1029/2006JA012023, 2006.

5. 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.*, 111, A12318, doi:10.1029/JA011972, 2006.

6. 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.

7. **B.D. Sharpee**, T.G. Slanger, "The $O(^1D_2–^3P_{210})$ 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.

8. **B.D. Sharpee**, T.G. Slanger, P.C. Cosby, D.L. Huestis, "The $N(^2D^o–^4S^o)$ Forbidden Doublet in the Nightglow: An Experimental Test of the Theoretical Intensity Ratio," *Geophys. Res. Lett.*, 32, L12106, doi:10.1029/2005GL023044, 2005.

9. **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.

10. **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.

11. 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.

12. **B. Sharpee**, R. Williams, J. Baldwin, P.A.M. van Hoof, "Introducing EMILI: Computer Aided Emission Line Identification," *Astrophys. J. Supp.*, 149, 157, 2003.

13. 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.

14. **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

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.