

Jana Bilíková

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Department of Astronomy

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Research Interests

White Dwarfs, Central Stars of Planetary Nebulae, Dust and Debris Disks, Planetary System Evolution past the Main Sequence, Infrared Astronomy, Optical Astronomy, X-ray Astronomy, Binary Central Stars of Planetary Nebulae, Post-AGB Stellar Evolution

Education

- ◇ **University of Illinois at Urbana-Champaign** Urbana, Illinois
Ph.D. in Astronomy, GPA: 3.59/4.00 May 2012
Dissertation Title: Dust Disks around Hot White Dwarfs and Central Stars of Planetary Nebulae
Dissertation Advisor: You-Hua Chu
- ◇ **Franklin and Marshall College** Lancaster, Pennsylvania
B.A. in Physics, minor in Astronomy GPA: 3.83/4.00 May 2004
Magna Cum Laude
- ◇ **Australian National University** Canberra, Australia
Study Abroad, Fall 2002

Research Experience

- ◇ **Graduate Research Assistant** January 2005 - present
Department of Astronomy University of Illinois
Supervisor: Prof. You-Hua Chu
 - . Search for dust disks around hot white dwarfs and central stars of planetary nebulae through observations and archival search, and multiwavelength spectroscopic follow-up and analysis of these systems
 - . Modeling the dust disks around hot white dwarfs and central stars of planetary nebulae
 - . Search for white dwarfs with hard X-ray emission and their spectral fitting
 - . Multi-wavelength investigation of the physical conditions and kinematics of the supernova remnant N49
- ◇ **Independent Study** January 2003 - May 2004
Department of Physics and Astronomy Franklin and Marshall College
Supervisor: Dr. Andrea Lommen
 - . Simulating the effect of gravitational radiation from globular cluster black hole binaries on the timing of millisecond pulsars
- ◇ **Summer Research Scholar** May 2003 - August 2003
Department of Physics and Astronomy Franklin and Marshall College
Supervisor: Dr. Elizabeth Praton
 - . Investigating ways to quantify the Bull's Eye Effect in surveys of galaxy redshifts

Observation Experience

- ◇ **Kitt Peak National Observatory** December 27, 2011- January 2, 2012
2.1m telescope
near-IR imaging/photometry
Kitt Peak, Arizona
- ◇ **Kitt Peak National Observatory** December 28, 2009 - January 3, 2010
4m Blanco telescope
optical echelle spectroscopy
Kitt Peak, Arizona
- ◇ **Gemini Observatory** September 19, 2009
Gemini North, Michelle
mid-IR spectroscopy
Mauna Kea, Hawaii
- ◇ **Gemini Observatory** July 5 - 6, 2009
Gemini North, NIRI
near-IR spectroscopy
Mauna Kea, Hawaii
- ◇ **Lulin Observatory** July - August 2008
1-m telescope
optical broad- and narrow-band imaging
Lulin, Taiwan
- ◇ **Arecibo Observatory** Spring 2004
radio observations of pulsars
Arecibo, Puerto Rico
- ◇ **Lowell Observatory** January 2003
31" NURO telescope
optical imaging/photometry
Anderson Mesa, Arizona

Teaching Experience

- ◇ **Graduate Teaching Assistant** 2004 - 2009
Department of Astronomy University of Illinois
 - . Courses Taught: ASTR 121 The Solar System (Spring 2005) ASTR 122, Stars & Galaxies (Fall 2004, Fall 2005, Spring 2006, Spring 2008) ASTR 230 Extraterrestrial Life (Fall 2004) ASTR 100 Perspectives in Astronomy (Fall 2006, Spring 2007, Summer 2007) ASTR 210 General Astronomy (Spring 2009)
 - . Duties: teaching discussion sections, holding office hours, creating and grading homework (both regular and online), assisting with/carrying out solar and night observing sessions, and substituting the lectures
- ◇ **Undergraduate Lab Assistant and Tutor** 2003 - 2004
Department of Physics and Astronomy Franklin and Marshall College
 - . Physics Lab Assistant - helping set up and conduct physics laboratory classes
 - . Astronomy Lab Assistant - helping set up and conduct astronomy laboratory classes
 - . Physics Tutor - tutoring and homework help for physics and astronomy students
 - . Grader - grading homeworks

Awards and Honors

- ◇ **The Chambliss Astronomy Achievement Student Award** January 2011
217th AAS Meeting - 9-13 January 2011, Seattle, WA
- ◇ **Excellent Teachers Award** Spring 2006
University of Illinois at Urbana-Champaign
- ◇ **Physics & Astronomy Departmental Honors** April 2004
“Detecting Black Hole Binaries in Globular Clusters”
Franklin and Marshall College
- ◇ **Phi Beta Kappa Honor Society** April 2004
- ◇ **Pi Mu Epsilon Mathematics Honor Society** April 2004
- ◇ **Frank Durrell Enck Memorial Prize in Physics** April 2004
Franklin and Marshall College
- ◇ **The Michael J Mumma Prize in Physics and Astronomy** April 2004
Franklin and Marshall College
- ◇ **The Joseph R Holzinger Astronomy Award** April 2004
Franklin and Marshall College
- ◇ **The John Kerschner Scholar in Physics and Astronomy** April 2004
Franklin and Marshall College
- ◇ **The John Kerschner Scholar in Physics and Astronomy** April 2003
Franklin and Marshall College
- ◇ **Sigma Pi Sigma National Physics Honor Society** April 2003
Franklin and Marshall College

Grants and Telescope Time Awarded

- ◇ **Principal Investigator**
 - . High-Dispersion Spectroscopic Investigation of Hot White Dwarfs with IR Excesses 2009
KPNO Blanco 4m Telescope
 - . The Nature of IR Excess of CSPN NGC 6804 2009
Gemini-North Telescope
 - . IR Excesses of Central Stars of Planetary Nebulae 2009
Gemini-North Telescope
 - . IR Excesses of Central Stars of Planetary Nebulae 2008
Spitzer Space Telescope time and grant
- ◇ **Co-Investigator**
 - . Completing the SEDs of Faint White Dwarfs with Mid-IR Excesses 2011
KPNO 2.1m Telescope
 - . Dusty Disks around Hot WDs: Debris Disks or Remnant of post-AGB Binary Disks? 2011
Herschel Space Telescope
 - . X-ray Investigation of Origin of Dust Disks around Hot White Dwarfs 2010
XMM-Newton Telescope
 - . The Nature of the 24 Micron Excess Emission from Hot White Dwarfs 2008
Spitzer Space Telescope

Refereed Publications

- ◇ *Spitzer Search for Dust Disks around Central Stars of Planetary Nebulae*
Bilíková J., Chu, Y.-H., Gruendl, R. A., Su, K. Y. L., De Marco, O., *The Astrophysical Journal Supplement*, 198:1, 2012
- ◇ *Spitzer 24 μ m Survey for Dust Disks around Hot White Dwarfs*
Chu, Y.-H., Su, K. Y. L., **Bilikova, J.**, Gruendl, R. A., De Marco, O., Guerrero, M. A., Updike, A. C., Volk, K., & Rauch, T., 2011, *The Astronomical Journal*, 142, 75
- ◇ *Hard X-ray Emission Associated with White Dwarfs. III.*
Bilíková, Jana, Chu, Y.-H., Gruendl, R. A., & Maddox, L. A., 2010, *The Astronomical Journal*, 140, 1433
- ◇ *Spitzer 24 μ m Images of Planetary Nebulae*
Chu, Y.-H., Gruendl, R. A., Guerrero, M. A., Su, K. Y. L., **Bilikova, J.**, Cohen, M., Parker, Q. A., Volk, K., Caulet, A., Chen, W.-P., Hora, J. L., & Rauch, T., 2009, *The Astronomical Journal*, 138, 691
- ◇ *Supernova Remnants in the Magellanic Clouds. IX. Multiwavelength Analysis of the Physical Structure of N49*
Bilikova, J., Williams, R. N. M., Chu, Y.-H., Gruendl, R. A., & Lundgren, B. F., 2007, *The Astronomical Journal*, 134, 2308

Conference Proceedings

- ◇ *Spectral Analysis of Mid-IR Excesses of CSPNs*
Bilíková, J., Chu, You-Hua, Su, Kate, Gruendl, Robert A., in press
- ◇ *The Nature of the Infrared Excess around WD 0950+139*
Su, K., **Bilíková, J.**, Chu, Y.-H., Jura, M., Rieke, G., Marengo, M., Misselt, K., Bond, H. E., & Liebert, J. 2011, *Asymmetrical Planetary Nebulae V*, A. A. Zijlstra, F. Lykou, I. McDonald, and E. Lagadec, eds. (2011) Jodrell Bank Centre for Astrophysics
- ◇ *Spitzer Surveys of IR Excesses of White Dwarfs*
Chu, You-Hua, Gruendl, Robert A., **Bilíková, J.**, Riddle, Andrew, & Su, Kate Y.-L. 2011, *American Institute of Physics Conference Series*, 1331, 230
- ◇ *Spectral Analysis of Mid-IR Excesses of White Dwarfs*
Bilíková, J., Chu, You-Hua, Su, Kate, Gruendl, Robert A., & Rauch, Thomas 2011, *American Institute of Physics Conference Series*, 1331, 215
- ◇ *IR Excesses of Central Stars of Planetary Nebulae*
Bilíková, J., Chu, Y.-H., Gruendl, R., Su, K., & Rauch, T. 2011, *Asymmetrical Planetary Nebulae V*, A. A. Zijlstra, F. Lykou, I. McDonald, and E. Lagadec, eds. (2011) Jodrell Bank Centre for Astrophysics
- ◇ *Spitzer Surveys of Infrared Excesses of White Dwarfs*
Chu, Y.-H., Gruendl, R. A., **Bilíková, J.**, Riddle, A., & Su, K. Y.-L. 2010, *American Institute of Physics Conference Series*, 1273, 461
- ◇ *Spectral Analysis of Mid-IR Excesses of WDs*
Bilíková, J., Chu, Y.-H., Su, K., Gruendl, R. A., & Rauch, T. 2010, *American Institute of Physics Conference Series*, 1273, 467

- ◇ *Hard X-ray Emission Associated with WDs*
Bilíková, J., Chu, Y.-H., Gruendl, R. A., & Maddox, L. 2010, American Institute of Physics Conference Series, 1273, 109
- ◇ *24 μ m excesses of hot WDs - Evidence of dust disks?*
Bilíková, J., Chu, You-Hua, Su, Kate, Gruendl, Robert, Rauch, Thomas, De Marco, Orsola, & Volk, Kevin 2009, Journal of Physics Conference Series Journal of Physics Conference Series, 172, 012055
- ◇ *Using Pulsars to Detect Black Hole Binaries in Globular Clusters*
Lommen, A. N., **Bilíková, J.**, Jenet, F. A., Portegies Zwart, S., & Stappers, B. W. 2005, Binary Radio Pulsars, 328, 225

Presentations

- ◇ *Dust Disks Around CSPNs: Subplanetary, Circumbinary, or Other?*
Contributed Talk, Planets around Stellar Remnants, Arecibo, Puerto Rico, January 23 - 27, 2012
- ◇ *Dust Disks Around Hot White Dwarfs and Central Stars of Planetary Nebulae*
PhD Defense, University of Illinois at Urbana-Champaign, January 19, 2012
- ◇ *Spectral Analysis of Mid-IR Excesses of CSPNs*
Poster Presentation, Planetary Nebulae: An Eye to the Future, IAU Symposium #283, Puerto De La Cruz, Tenerife, Spain, July 25 - 29, 2011
- ◇ *Spectral Analysis of Mid-IR Excesses of WDs*
Poster Presentation, 217th American Astronomical Society Meeting, Seattle, WA, 9 - 13 January, 2011
- ◇ *Spectral Analysis of Mid-IR Excesses of WDs*
Contributed Talk, 17th European White Dwarf Workshop, Tübingen, Germany, August 16 - 20, 2010
- ◇ *Hard X-ray Emission Associated with WDs*
Poster Presentation, 17th European White Dwarf Workshop, Tübingen, Germany, August 16 - 20, 2010
- ◇ *Spectral Analysis of Mid-IR Excesses of WDs*
Contributed Talk, Planetary Systems beyond the Main Sequence, Bamberg, Germany, 11 - 14 August 2010
- ◇ *IR Excesses of Central Stars of Planetary Nebulae*
Contributed Talk, Asymmetric Planetary Nebulae V, Bowness-on-Windermere, United Kingdom, 20 - 25 June 2010
- ◇ *Debris Disks around Hot White Dwarfs*
Student Seminar, University of Illinois at Urbana-Champaign, 2010
- ◇ *24 μ m excesses of hot WDs - Evidence of dust disks?*
Contributed Talk, 16th European White Dwarf Workshop, Barcelona, Spain, 30 June - 4 July, 2008
- ◇ *Dust Disks around Hot WDs and CSPNs*
Student Seminar, University of Illinois at Urbana-Champaign, 2008
- ◇ *IR Excesses of Four Central Stars of Planetary Nebulae*
Poster Presentation, 211th American Astronomical Society Meeting, Austin, TX, 7 - 11 January, 2008

- ◇ *Origin of WD's Infrared Excesses*
Student Seminar, University of Illinois at Urbana-Champaign, 2007
- ◇ *Physical Structure of N49*
Student Seminar, University of Illinois at Urbana-Champaign, 2006
- ◇ *Using Pulsars to Detect Black Hole Binaries in Globular Clusters*
Student Seminar, University of Illinois at Urbana-Champaign, 2005

Skills

- ◇ **Programming Languages:** IDL, Python, Fortran, Mathematica
- ◇ **Astronomical data reduction:** IRAF, CUBISM, XSPEC, SMART
- ◇ **Other:** Linux/Unix shell scripting, LaTeX, WIP, AWK, html/php, supermongo
- ◇ **Languages:** Slovak (native), Czech (native), English (advanced), German (intermediate-advanced)

Professional Membership

- ◇ American Astronomical Society 2007 - present

Service

- ◇ Served as a Referee for Astrophysical Journal
- ◇ Student Colloquium Speaker Lunches
- ◇ Organized Student Seminar / Journal Club

References

- ◇ **Prof. You-Hua Chu**
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University of Illinois at Urbana-Champaign
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- ◇ **Dr. Kate Y.-L. Su**
Steward Observatory, University of Arizona
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