

L. Matthew Haffner

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Research Interests

Interstellar medium

- ▶ Discovering the interplay between stars and gas, especially feedback processes and their role in the evolution of galaxies.
- ▶ Understanding the global structure of gaseous components in the Milky Way and similar spiral galaxies.
- ▶ Mapping the distribution, kinematics, and physical conditions of the warm ionized medium and diffuse nebulae through optical emission line studies.
- ▶ Exploring the origin, evolution, and structure of intermediate- and high-velocity clouds.

Instrumentation

- ▶ Maximizing the scientific impact of wide-field, imaging, and integral-field spectroscopy.
- ▶ Designing observing systems that enable high levels of automation and remote capabilities.
- ▶ Optimizing techniques to reduce large datasets simply and accurately.

Professional Experience

	University of Wisconsin–Madison
October 2009 – present	Senior Scientist
January 2006 – September 2009	Associate Scientist
January 2001 – December 2005	Assistant Scientist
January 1999 – December 2000	Research Associate
July 1993 – December 1998	Research Assistant
Fall 1989 – Spring 1993	Northwestern University Undergraduate Research Assistant

Education

University of Wisconsin – Madison

Ph.D. in Astronomy, December 1998

Advisor: Prof. Ronald J. Reynolds

Thesis: *The Warm Ionized Medium: Distribution, Kinematics, and Physical Conditions*

Northwestern University, Evanston, IL

Bachelor of Arts in Physics and Applied Mathematics, May 1993

Research Grants

NSF AST-0204973: *Continued Exploration of the Warm Ionized Medium using the Wisconsin H-Alpha Mapper*, R.J. Reynolds (PI) & **L.M. Haffner** (Co-PI). **\$1,520,000 + \$17,427** REU supplement; Sep 1, 2002 – Aug 31, 2008.

NSF AST-0607512: *Ionized Gas in the Galaxy: A Southern Hemisphere Perspective with the Wisconsin H-Alpha Mapper*, **L.M. Haffner** (PI), R.J. Reynolds (Co-PI), & G.J. Madsen (Co-PI). **\$1,952,635 + \$47,248** REU supplement; Sep 15, 2007 – Aug 31, 2012.

NSF AST-1108911: *Diffuse Ionized Gas in Galactic Halos: Multiwavelength Studies of the Milky Way and Magellanic System with WHAM-South*, **L.M. Haffner** (PI) & R.J. Reynolds (Co-PI). **\$2,243,529**; Sep 1, 2011 – Aug 31, 2016.

Honors

University Fellowship, UW–Madison, 1993–1994
Graduated “with Highest Distinction,” Northwestern University, 1993
Departmental Honors in Physics, 1993
Oliver Marcy Scholar, 1993
Phi Beta Kappa, Spring 1992
Sigma Pi Sigma, National Physics Honorary Society, Spring 1992
Barry M. Goldwater National Scholar, 1991
Phi Eta Sigma Honor Society, Spring 1990

Invited Talks

<i>The Dynamic ISM</i> , Naramata, BC	June 2010
Colloquium: SOFIA Science Center	May 2010
Colloquium: Northwestern University	Sept 2008
<i>CMB Component Separation and the Physics of Foregrounds</i> , Pasadena, CA	July 2008
<i>Diffuse Matter in the Galaxy: Observations Confront Theory</i> , Arecibo Observatory	August/September 2004
<i>Blending of Plasma and Neutral Gas in the Sun, the Heliosphere, and the ISM (DPP/APS)</i> , Orlando, FL	November 2002
<i>Gaseous Halos and Edges of Disk Galaxies (AAS)</i> , Albuquerque, NM	June 2002
Colloquium: University of Illinois	April 2000
<i>Astrophysical Plasmas: Codes, Models & Observations</i> , Mexico City, Mexico	October 1999
Colloquium: Northwestern University	April 1999

Other Topical Conference Contributions

<i>The Role of Disk-Halo Interaction in Galaxy Evolution: Outflow vs. Infall?</i> , Espinho, Portugal	August 2008
<i>Milky Way Halo—Stars and Gas</i> , Bonn, Germany	May/June 2007
<i>Extra-planar Gas</i> , Dwingeloo, Netherlands	June 2004
<i>Tetons 4: Galactic Structure, Stars, and the Interstellar Medium</i> , Jackson Hole, WY	May/June 2000

Professional Activities

UW Astronomy Graduate Admissions committee, 2010 – 2011.
UW Astronomy Strategic Plan committee, Fall 2008 – Spring 2009.
UW Astronomy Colloquium co-organizer, September 2004 – June 2006.
UW Astronomy Instrument PI Council, 2006 – 2011.
UW Astronomy website redesign lead, 2005 – 2006.
Reviewer for *Astrophysical Journal* and *Astronomical Journal* submissions.
Reviewer for Netherlands Organisation for Scientific Research (NWO, Netherlands) and Science and Technology Facilities Council (STFC, UK) proposals.
Member of American Astronomical Society.

Students

Alex Hill PhD, June 2011
Ph.D. thesis: examining the EM distribution of the WIM; modeling the structure and ionization of the WIM using new HD and MHD combined with Monte Carlo photoionization; investigating the ionized component of the high-velocity Smith Cloud.
Sept 2011: Postdoctoral Fellow, CSIRO/ATNF; Supervisor: Naomi McClure-Griffiths

Kat Barger expected defense 2012
Ph.D. thesis: H α mapping and multiline studies of the ionized component within HVC Complex A and the Magellanic Bridge.

Teaching Experience and Outreach

Lecturer for Astronomy 103: “The Evolving Universe: Stars, Galaxies, & Cosmology”, Spring 2006.

Planned and taught course for 133-student course, including text selection, lecture design, semester group project (all students), and honors projects (select students). Employed concept-test technique during lectures, frequent demonstrations, and surveying outside of class to gain additional student feedback on learning and retention during the semester.

Mentored more than ten undergraduates in the last decade: defined projects; taught data processing and analysis techniques; aided writing and dissemination of results through meeting posters and papers. Hosted three students through UW Astronomy’s summer REU program. Selected examples:

Rachel Baker (2004 Summer REU): Analyzed H α , [N II], and [S II] maps toward the ζ Oph H II region. Poster at AAS, senior thesis at East Tennessee State University, contribution to Wood et al. 2005.

Allison Duncan (2005 Summer REU): Reduced H α maps toward HVC Complex A. Poster at AAS, co-author of Haffner et al. 2009 and Barger et al. 2011.

Nitish Chopra (current UW undergrad): Processing southern H α survey observations, examining faint atmospheric foreground spectrum. Poster at Jan 2011 AAS, co-author of Haffner et al. 2010.

Guest Lecturer

- Astronomy 320, (undergraduate) Interstellar Medium, Spring 2007
- Astronomy 920, (graduate) Interstellar Medium, Fall 2003

Teaching Assistant, Spring 1994.

- *Astronomy 100, Survey of Astronomy (non-calculus)*
Planned and taught weekly discussion sections, designed demonstrations, and gave planetarium presentations.
- *Astronomy 200, General Astronomy (calculus)*
Lab instructor. Taught basic observational concepts and designed labs using telescopes.

Guest Speaker

Glacier Edge Elementary School, November 2009

New Century Elementary School, May 2009

UW Synchrotron Radiation Center/Space Place Teacher Workshop, July 2007

Countryside Montessori Preschool, September 2005

UW Space Place, February 2001

Southern Door High School, October 1999

Universe in the Park: Presented a public talk and led public observing at several Wisconsin state parks. This ongoing outreach program at UW–Madison is funded through a NASA IDEA grant.

Washburn Observatory Public Viewing Night: Hosted numerous public viewing nights at UW–Madison's historic 15.6 inch Clark refractor. Attendance is typically 30-150 people per night.

Refereed Publications

- "Metal Line Emission Study of High Velocity Cloud Complex A with WHAM", Barger, K. A., Haffner, L. M., Hill, A. S., Wakker, B. P., Madsen, G. J., Duncan, A. K., ApJ, in prep.
- "WHAM discovery of a New Superbubble in Circinus", Gostisha, M. C., Benjamin, R. A., Haffner, L. M., AJ, in prep.
- "Vertical structure of a supernova-driven turbulent, magnetized ISM", Hill, A. S., Joung, M. R., Mac Low, M.-M., Benjamin, R. A., Haffner, L. M., Klingenberg, C., Waagan, K. 2011, ApJ, submitted.
- "Sodium Atoms in the Lunar Exotail: Observed Velocity and Spatial Distributions", Line, M. R., Mierkiewicz, E., Oliverson, R. J., Wilson, J. K., Haffner, L. M., Roesler, F. L. 2011, Icarus, submitted.
- "Photoionization of High-altitude Gas in a Supernova-driven Turbulent Interstellar Medium", Wood, K., Hill, A. S., Joung, M. R., Mac Low, M.-M., Benjamin, R. A., Haffner, L. M., Reynolds, R. J., & Madsen, G. J. 2010, ApJ, 721, 1397.
- "Ionized gas in the Smith Cloud", Hill, A. S., Haffner, L. M., & Reynolds, R. J. 2009, ApJ, 703, 1832.
- "The warm ionized medium in spiral galaxies", Haffner, L. M., Dettmar, R.-J., Beckman, J. E., Wood, K., Slavin, J. D., Giammanco, C., Madsen, G. J., Zurita, A., & Reynolds, R. J. 2009, Reviews of Modern Physics, 81, 969.
- "Confirmation of a Faraday Rotation Measure Anomaly in Cygnus", Whiting, C. A., Spangler, S. R., Ingleby, L. D., & Haffner, L. M. 2009, ApJ, 694, 1452.
- "Geocoronal hydrogen observations spanning three solar minima", Nossal, S. M., Mierkiewicz, E. J., Roesler, F. L., Haffner, L. M., Reynolds, R. J., & Woodward, R. C. 2008, Journal of Geophysical Research, 113, A11307.
- "The Turbulent Warm Ionized Medium: Emission Measure Distribution and MHD Simulations", Hill, A. S., Benjamin, R. A., Kowal, G., Reynolds, R. J., Haffner, L. M., & Lazarian, A. 2008, ApJ, 686, 363.
- "Determination of the Far-Infrared Cosmic Background Using COBE DIRBE and WHAM Data", Odegard, N.; Arendt, R. G.; Dwek, E.; Haffner, L. M.; Hauser, M. G.; Reynolds, R. J. 2007, ApJ, 667, 11.
- "A Multiwavelength Optical Emission Line Survey of Warm Ionized Gas in the Galaxy", Madsen, G. J., Reynolds, R. J., & Haffner, L. M. 2006, ApJ, 652, 401.
- "Geocoronal Hydrogen Studies Using Fabry-Perot Interferometers, Part 2: Long Term Observations", Nossal, S. M., Mierkiewicz, E. J., Roesler, F. L., Reynolds, R. J., & Haffner, L. M. 2006, Journal of Atmospheric and Solar-Terrestrial Physics, 68, 1553.
- "Estimating the Porosity of the Interstellar Medium from Three-Dimensional Photoionization Modeling of H II Regions", Wood, K., Haffner, L. M., Reynolds, R. J., Mathis, J., & Madsen, G. 2005, ApJ, 633, 295, 2005.
- "Unresolved H α Enhancements at High Galactic Latitude in the WHAM Sky Survey Maps", Reynolds, R. J., Chaudhary, V., Madsen, G. J., & Haffner, L. M. 2005, AJ, 331, 25.
- "The Wisconsin H α Mapper Northern Sky Survey," Haffner, L.M., Reynolds, R.J., Tufte, S.L., Madsen, G.J., Jaehnig, K.P., & Percival, J.W. 2003, ApJS, 149, 405.

- "Multiwavelength Observations of the M15 Intermediate-Velocity Cloud," Smoker, J.V., Haffner, L.M., Keenan, F.P., Davies, R.D., & Pollacco, D. 2002, MNRAS, 337, 385.
- "Measurements of [O II] λ 6300/H α Line Intensity Ratios for Four O Star H II Regions," Hausen, N.R., Reynolds, R.J., & Haffner, L.M. 2002, AJ, 124, 3336.
- "WHAM Observations of H α from High-Velocity Clouds: Are They Galactic or Extragalactic?" Tufte, S.L., Wilson, J.D., Madsen, G.J., Haffner, L.M., & Reynolds, R.J. 2002, ApJ, 572, L153.
- "Interstellar H α Line Profiles toward HD 93521 and the Lockman Window," Hausen, N.R., Reynolds, R.J., Haffner, L.M., & Tufte, S.L. 2002, ApJ, 565, 1060.
- "Observations of the Extended Distribution of Ionized Hydrogen in the Plane of M31," Madsen, G.J., Reynolds, R.J., Haffner, L.M., Tufte, S.L., & Maloney, P.R. 2001, ApJ, 560, L135.
- "A New Spin on Galactic Dust," de Oliveira-Costa, A., et al. 2002, ApJ, 567, 363.
- "Detection of a Large Arc of Ionized Hydrogen Far above the Cassiopeia OB6 Association: A Superbubble Blowout into the Galactic Halo?," Reynolds, R.J., Sterling, N.C., & Haffner, L.M. 2001, ApJ, 558, L101.
- "A Map of the Ionized Component of the Intermediate-Velocity Cloud Complex K," Haffner, L.M., Reynolds, R.J., & Tufte, S.L. 2001, ApJ, 556, L33.
- "Detection of [N II] 5755 Emission from the Low-Density Ionized Interstellar Gas," Reynolds, R.J., Sterling, N.C., Haffner, L.M., & Tufte S.L. 2001, ApJ, 548, L221.
- "Geocoronal H α intensity measurements using the Wisconsin H α Mapper Fabry-Perot facility," Nossal, S., Roesler, F. L., Bishop, J., Reynolds, R. J., Haffner, M., Tufte, S., Percival, J., & Mierkiewicz, E. J. 2001, JGR, 106, 5605.
- "Galactic Contamination in the QMAP Experiment," de Oliveira-Costa, A., et al. 2000, ApJ, 542, L5.
- "Physical Conditions, Grain Temperatures, and Enhanced Very Small Grains in Barnard's Loop," Heiles, C., Haffner, L.M., Reynolds, R. J., & Tufte, S.L. 2000, ApJ, 536, 335.
- "Observational Evidence of Supershell Blowout in GS 018-04+44: The Scutum Supershell," Callaway, M.B., Savage, B.D., Benjamin, R.A., Haffner, L.M., & Tufte, S.L. 2000, ApJ, 532, 943.
- "Evidence for Dust Emission in the Warm Ionised Medium Using WHAM Data," Lagache, G., Haffner, L.M., Reynolds, R.J., & Tufte, S.L. 2000, A & A, 354, 247.
- "Evidence for an Additional Heat Source in the Warm Ionized Medium of Galaxies," Reynolds, R.J., Haffner, L.M., & Tufte S.L. 1999, ApJ, 525, L21.
- "WHAM Observations of H α , [S II], and [N II] toward the Orion and Perseus Arms: Probing the Physical Conditions of the Warm Ionized Medium," Haffner, L.M., Reynolds, R.J., & Tufte, S.L. 1999, ApJ, 523, 223.
- "WHAM Observations of H α Emission from High-Velocity Clouds in the M, A, and C Complexes," Tufte, S.L., Reynolds, R.J., & Haffner, L.M. 1998 ApJ, 504, 773.
- "Faint, Large-scale H α Filaments in the Milky Way," Haffner, L.M., Reynolds, R.J., & Tufte, S.L. 1998 ApJ (Letters), 501, L83.

"Detection of [O I] λ 6300 Emission from the Diffuse Interstellar Medium," Reynolds, R.J., Hausen, N.R., Tufte, S.L., & Haffner, L.M. 1998, ApJ (Letters), 494, L99.

"The Wisconsin H α Mapper (WHAM): A Brief Review of Performance Characteristics and Early Scientific Results," Reynolds, R.J., Tufte, S.L., Haffner, L.M., Jaehnig, K.P., & Percival, J.W. 1998, PASA, 15, 14.

"A Search for Interstellar C₃ in the Translucent Cloud toward HD147889," Haffner, L.M. & Meyer, D.M. 1995, ApJ, 453, 450.

Conference Proceedings and Papers

"Early Results from the Wisconsin H-Alpha Mapper Southern Sky Survey", Haffner, L. M., Reynolds, R. J., Madsen, G. J., Hill, A. S., Barger, K. A., Jaehnig, K. P., Mierkiewicz, E. J., Percival, J. W., & Chopra, N. 2010, in ASP Conference Series, Vol. 438, The Dynamic Interstellar Medium: A Celebration of the Canadian Galactic Plane Survey, eds. R. Kothes, T. L. Landecker, and A. G. Willis (San Francisco: ASP), p. 388.

"The Distribution of Warm Ionized Medium in Galaxies", Haffner, L. M. 2010, in ASP Conference Series, Vol. 438, The Dynamic Interstellar Medium: A Celebration of the Canadian Galactic Plane Survey, eds. R. Kothes, T. L. Landecker, and A. G. Willis (San Francisco: ASP), p. 179.

"The role of turbulence in the warm ionized medium", Hill, A. S., Wood, K., & Haffner, L. M. 2010, in ASP Conference Series, Vol. 438, The Dynamic Interstellar Medium: A Celebration of the Canadian Galactic Plane Survey, eds. R. Kothes, T. L. Landecker, and A. G. Willis (San Francisco: ASP), p. 190.

"Ionization of Infalling Gas," Haffner, L. M.; Duncan, A. K.; Hoffman, S. M.; Madsen, G. J.; Hill, A. S.; Reynolds, R. J. 2009, in proceedings of "The Role of Disk-Halo Interaction in Galaxy Evolution: Outflow vs Infall?", in press, arXiv:0901.0940

"Ionized Gas in the Smith Cloud," Hill, A. S.; Haffner, L. M.; Reynolds, R. J. 2009, in proceedings of "The Role of Disk-Halo Interaction in Galaxy Evolution: Outflow vs Infall?", in press, arXiv:0901.0712.

"Diffuse ionized gas in spiral galaxies and the disk-halo interaction," Reynolds, R. J.; Haffner, L. M.; Madsen, G. J.; Wood, K.; Hill, A. S. 2009, in proceedings of "The Role of Disk-Halo Interaction in Galaxy Evolution: Outflow vs Infall?", in press, arXiv:0812.4303.

"Density Distribution of the Warm Ionized Medium", Hill, A. S.; Reynolds, R. J.; Benjamin, R. A.; Haffner, L. M. 2007, in ASP Conference Series, Vol. 365, SINS - Small Ionized and Neutral Structures in the Diffuse Interstellar Medium, eds. M. Haverkorn and W. M. Goss (San Francisco: ASP), p. 250.

"The WHAM survey of ionized gas in the galaxy", Madsen, G. J.; Haffner, L. M.; Reynolds, R. J. 2006, Memorie della Societa Astronomica Italiana, 77, 1163.

"An Optical Emission Line Survey of Large Planetary Nebulae", Madsen, G. J., Frew, D. J., Parker, Q. A., Reynolds, R. J., & Haffner, L. M. 2006, in proceedings of IAU Symp. No. 234, Planetary Nebulae in our Galaxy and Beyond, eds. M. J. Barlow and R. H. Méndez (Cambridge: Cambridge University Press), p. 455.

"Mapping the Galactic Free-Free Foreground via Interstellar H α Emission", Reynolds, R.J. & Haffner, L.M. 2005, in proceedings of IAU Symp. No. 201, New Cosmological Data and the Values of the Fundamental Parameters, eds. A. Lasenby and A. Wilkinson (San Francisco: ASP), p. 116.

"The Ionized Component of Intermediate-Velocity Cloud Complex L" , Haffner, L.M. 2005, in ASP Conference Series, Vol. 331, Extra-Planar Gas, ed. Robert Braun (San Francisco: ASP), p. 25.

"Surveying the Galaxy with WHAM", Reynolds, R. J., Haffner, L. M., Madsen, G. J., & Tufte, S. L. 2004, in ASP Conference Series, Vol. 217: Milky Way Surveys: The Structure and Evolution of our Galaxy, eds. D. Clemens, R. Shah, and T. Brainerd (San Francisco: ASP), p. 186.

"The Wisconsin H-Alpha Mapper Northern Sky Survey," Madsen, G.J., Haffner, L.M., & Reynolds, R.J. 2002, in ASP Conference Proceedings, Vol. 276: Seeing Through the Dust: The Detection of HI and the Exploration of the ISM in Galaxies, eds. A. R. Taylor, T. L. Landecker, and A. G. Willis (San Francisco: ASP), 96.

"Three-Dimensional Studies of the Warm Ionized Medium in the Milky Way using WHAM," Reynolds, R.J., Haffner, L.M., & Madsen, G.J. 2002, in ASP Conference Proceedings 282: Galaxies: The Third Dimension, eds. M. Rosado, L. Binette, & L. Arias (San Francisco: ASP), 31.

"The Wisconsin H-Alpha Mapper Northern Sky Survey," Haffner, L.M. 2001, in ASP Conference Series 231: Tetons 4: Galactic Structure, Stars, and the Interstellar Medium, eds. M.B. Bica & C.E. Woodward (San Francisco: ASP), 345.

"The Extragalactic Background and its Fluctuations in the Far-Infrared Wavelengths," Lagache, G., et al. 2000, in Lecture Notes in Physics 548: ISO Surveys of a Dusty Universe, eds. D. Lemke, M. Stickel, and K. Wilke, 548, 81.

"The WHAM H-Alpha Mapper: A New Look at the Warm Ionized Medium," Haffner, L.M., Reynolds, R.J., & Tufte, S.L. 2000, Rev. Mex. A & A (Serie de Conf.), 9, 335.

"Temperature Variations and Non-photoionization Heating in the Warm Ionized Medium of Galaxies," Reynolds, R.J., Haffner, L.M., & Tufte, S.L. 2000, Rev. Mex. A & A (Serie de Conf.), 9, 249.

"Probing Interstellar Turbulence in the Warm Ionized Medium Using Emission Lines," Tufte, S.L., Reynolds, R.J., & Haffner, L.M. 1999, Proceedings of the 2nd Guillermo Haro Conference on Interstellar Turbulence, eds. J. Franco and A. Carraminanna (Cambridge University Press), 27.

"The Gaseous ISM: Observations with the Wisconsin H-alpha Mapper (WHAM)," Reynolds, R.J., Haffner, L.M., & Tufte, S.L. 1999, in ASP Conference Series 168: New Perspectives on the Interstellar Medium, eds. A.R. Taylor, T.L. Landecker, and G. Joncas, 149.

"The Eridanus Superbubble in its Multiwavelength Glory," Heiles, C., Haffner, L.M., & Reynolds, R.J. 1999, in ASP Conference Series 168: New Perspectives on the Interstellar Medium, eds. A.R. Taylor, T.L. Landecker, and G. Joncas, 211.

"H-alpha from HVCs," Tufte, S.L., Reynolds, R.J., & Haffner, L.M. 1998, in ASP Conference Series 166: Stromlo Workshop on High Velocity Clouds, eds. B.K. Gibson and M.E. Putman, 231.

"The WHAM H α Survey," Tufte, S.L., Reynolds, R.J., & Haffner, L.M. 1998, in ASP Conference Series 141: Astrophysics From Antarctica, eds. R. Landsberg & G. Novak, 169.

"Orion, Eridanus, and the Assembly of Local Superbubbles," Heiles, C., Reynolds, R.J., Haffner, L.M., & Tufte, S.L. 1998, in The Orion Complex Revisited, eds. M. McCaughrean & A. Burkert, in press.

Meeting Abstracts

"Diffuse Ionized Gas in the Magellanic System: Early Results from WHAM-South," Haffner, L. M. & Madsen, G. J. 2011, AAS, 43.

"Ionized Gas in the Magellanic Bridge: A First Look at New Observations with WHAM," Barger, K. & Haffner, L. M., AAS, 43.

"MHD Simulations of a Supernova-driven ISM and the Warm Ionized Medium," Hill, A. S., Joungh, M. R., Benjamin, R. A., Haffner, L. M., Klingenberg, C., Mac Low, M. M., Waagan, K., & Wood, K. A. 2011, AAS, 43.

"Studying the Temperature and Ionization State of the Warm Ionized Medium," Halford, M., Mierkiewicz, E. J., Reynolds, R. J., Madsen, G. J., Haffner, L. M., Barger, K. A., & Roesler, F. L. 2011 AAS, 43.

"The Wisconsin H-Alpha Mapper Sky Survey: A First Look at the Global Distribution of Diffuse Ionized Gas in the Milky Way," Chopra, N., Haffner, L. M., Reynolds, R. J., Madsen, G. J., Hill, A. S., Barger, K. A., Jaehnig, K. P., Mierkiewicz, E. J., Percival, J. W., Pingel, N. M., Reese, D. T., & Gostisha, M. C. 2011, AAS, 43.

"WHAM Discovery of a New Superbubble in Circinus," Gostisha, M. C., Benjamin, R. A., & Haffner, L. M. 2011, AAS, 43.

"Ongoing Search for Metal Line Emission in Intermediate and High Velocity Clouds with WHAM," Barger, K. A., Haffner, L. M., Madsen, G. J., Hill, A. S., & Wakker, B. P. 2010, AAS, 42, 265.

"Early Results from the Wisconsin H-Alpha Mapper Southern Sky Survey," Haffner, L. Matthew, Reynolds, R. J., Madsen, G. J., Hill, A. S., Barger, K. A., Jaehnig, K. P., Mierkiewicz, E. J., & Percival, J. W. 2010, AAS, 42, 265.

"WHAM Observations of Ionized Gas in the Smith Cloud HVC," Hill, Alex S. & Haffner, L. 2010, AAS, 42, 265.

"Monitoring the Outer Region of the Neutral Atmosphere," Nossal, S. M., Mierkiewicz, E. J., Roesler, F. L., Haffner, L. M., Reynolds, R. J., & Woodward, R. C. 2009, AGU, SMSA14, A1.

"A Faraday Rotation Measure Anomaly Due to the Cygnus OB1 Association," Whiting, C., Spangler, S. R., Ingleby, L. D., & Haffner, L. M. 2007, 39, 987.

"WHAM Observations of the Extended Lunar Sodium Tail," Line, M. R., Mierkiewicz, E. J., Haffner, L. M., Oliverson, R. J., & Roesler, F. L. 2007, AAS, 39, 829.

"1997 and 2006 Solar Minimum Comparisons of Geocoronal Hydrogen Data," Nossal, S. M., Mierkiewicz, E. J., Roesler, F. L., Haffner, L. M., & Reynolds, R. J. 2007, AGU, SMSA53, A4.

"The Sagittarius Spiral Arm of the Galaxy: Now You See It, Now You Don't," Benjamin, R. A., Churchwell, E., Haffner, M., & GLIMPSE team 2006, AAS, 38, 1229.

"Velocity Resolved Observations of the Extended Lunar Sodium Tail," Line, M. R., Mierkiewicz, E. J., Roesler, F. L., Haffner, L. M., & Oliverson, R. J. 2006, AAS, 38, 936.

"Comet 73P/Schwassmann-Wachmann 3: O(1D) and H₂O Production Rates," Hall, T. L., Mierkiewicz, E. J., Haffner, L. M., Roesler, F. L., & Harris, W. M. 2006, AAS, 38, 935.

"Density Distribution of the Warm Ionized Medium," Hill, A. S., Reynolds, R. J., Benjamin, R. A., & Haffner, L. M. 2006, AAS, 38, 923.

"Mapping [O III] Emission in Diffuse Ionized Gas," Beaber, R. C., Haffner, L. M., Reynolds, R. J., & Madsen, G. J. 2006, AAS, 38, 922.

"High Resolution Fabry-Perot Spectroscopy Of Comet Fragments 73P/Schwassmann-Wachmann 3-B,C," Oliverson, R. J., Mierkiewicz, E. J., Morgenthaler, J. P., Harris, W. M., Kokorowski, M., Kidder, A., Schnackenberg, T., Carpena Nunez, J., Hall, T., & Haffner, L. 2006, DPS, 38, 503.

"The Relationship Between Pulsar Dispersion Measures and Interstellar H-alpha Intensities at High Galactic Latitude," Hill, A. S., Benjamin, R. A., Reynolds, R. J., & Haffner, L. M. 2005, AAS, 37, 1302.

"Mapping the Ionized Component of High-Velocity Cloud Complex A," Duncan, A. K., Haffner, L. M., Madsen, G. J., & Reynolds, R. J. 2005, AAS, 37, 1256.

"Emission Line Spectroscopy of Large, Diffuse Planetary Nebulae," Madsen, G. J., Frew, D. J., Parker, Q. A., Reynolds, R. J., & Haffner, L. M. 2005, AAS, 37, 1163.

"WHAM Multiwavelength Observations of the ζ Oph H II Region," Baker, R. I., Haffner, L. M., Reynolds, R. J., & Madsen, G. J. 2004, AAS, 205, 139.03.

"Unresolved H α Enhancements at High Galactic Latitude in the WHAM Sky Survey Maps," Chaudhary, V., Reynolds, R. J., Madsen, G. J., & Haffner, L. M. 2004, 205, 139.02.

"The Heterogeneous Nature of the Warm Ionized Medium in the Galaxy," Madsen, G. J., Reynolds, R. J., & Haffner, L. M. 2004, AAS, 205, 41.05.

"Exploring Faint, Large-Scale Filaments in the Warm Ionized Medium of the Galaxy," Madsen, G. J., Reynolds, R. J., & Haffner, L. M. 2002, AAS, 200, 42.02.

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