

Timothy M. Lawlor

CURRICULUM VITAE

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EDUCATION:

- 2001 Ph.D. in Physics: Stellar evolution, computational astrophysics
University of Delaware, Newark, DE
- 1996 M.S. in Physics: Stellar atmospheres, computational astrophysics
Wichita State University, Wichita, KS
- 1994 B.S. in Physics: Astrophysics: Summa Cum Laude
East Stroudsburg University of Pennsylvania, PA
- 1991 B.S. in Mathematics: Applied analysis
Pennsylvania State University, University Park, PA

ACADEMIC AND PROFESSIONAL POSITIONS:

- 7/2006– Present **Assistant Professor of Physics,**
Pennsylvania State University, Delaware County Campus
- 8/2001 – 7/2006 **Assistant Professor of Physics,**
Pennsylvania State University, Wilkes-Barre Campus
- 8/2001 – 8/2006 **Director**
The Friedman Observatory, Pennsylvania State University,
Wilkes-Barre Campus
- 1/2000 – 2/2001 **Instructor/Lecturer – Physics**
University of Delaware, Newark, DE
- 6/2000 – 8/2000 **Instructor/Lecturer – Physical Science**
University of Delaware, Newark, DE
- 6/1999 – 8/1999 **Instructor/Lecturer – Physics**
University of Delaware, Newark, DE
- 2/1998 – 5/1998 **Course Manager – Physical Science**
2/1999 – 5/1999 University of Delaware, Newark, DE
- 8/1994 – 5/2001 **Graduate Teaching Assistant, Astronomy & Physics**
University of Delaware and Wichita State University

PUBLIC OUTREACH:

Director, Friedman Observatory August 2001 – August 2006

- I provided public observing sessions once a week at the Friedman Observatory, as well as once or twice a month for special groups. Occasional attendance has been in excess of 150 people. Biannual amateur astronomer meetings are held at the observatory. I provided astronomy public education and website development

Assistant for public observation programs, 1993-1994

- I assisted in public use of East Stroudsburg University telescopes for programs

RESEARCH INTERESTS AND EXPERIENCE:

Current and previous research (Publication list to follow)

- The late stages of stellar evolution; variable stars; Born-again Phenomena objects (e.g. V606 Aql, Sakurai's Object, and FG Sge)
- V838 Monocerotis and similar variable stars, massive binary stars
- Population III stars (early universe stars)
- Hydrogen deficient, non-DA white dwarfs
- RCrB stars, PG1159 type stars, variable stars
- Hydrogen deficient CSPN
- Stellar atmospheres for cool AGB stars - modeling stellar atmospheres for cool AGB stars and constructing a massive comparison between model and observed spectra.
- Radial velocities for planetary nebulae

COMPUTER LITERACY:

Windows XP and earlier platforms; various, standard software packages.

Experience with FORTRAN; some experience with C++, Visual Basic.

Unix: used for research on both Sun and SGI platforms.

Codes used: JMSTAR by James MacDonald/Peter Eggleton,

ATLAS by Robert Kuruz, and an adiabatic oscillation program by Jorgen Christensen-Dalsgaard.

HONORS AND MEMBERSHIPS

American Astronomical Society (AAS)

International Astronomical Union (IAU)

"Penn Stater of the Quarter", Fall 2003

Sigma Xi National Honor Society

Graduated Summa Cum Laude, 1994, East Stroudsburg University

INVITED TALKS

“Accretion in Stellar Evolution and V838 Mon,” November 2006, University of Delaware Research Seminar Series

“The Mysterious Outburst of V838 Monocerotis,” October 2006, University of North Dakota Physics Colloquium

REFERENCES

James MacDonald, Doctoral research supervisor/collaborator, Associate Professor,
(302) 831-6855, jimmacd@udel.edu

Harry Shipman, committee member and teaching supervisor, Associate Professor
(302) 831-2986, harrys@udel.edu

Dave Alexander, research and teaching supervisor, Professor
(316)978-3988, david.alexander@wichita.edu

Additional references

Stan Owocki, committee member and course instructor, Associate Professor,
(302) 831-8357, owocki@bartol.udel.edu

Timothy R. Young, collaborator, Assistant Professor
(701) 777-4709, tim_young@und.nodak.edu

PUBLICATIONS:

Peer Reviewed:

T.M. Lawlor, T.R. Young, T. Johnson, and J. MacDonald, 2007, "Accretion in Massive Binary Systems and Their Resulting Supernovae," Submitted March 2007, *Astrophysical Journal*

T.M. Lawlor, 2007, "The reflection effect in Born-again binaries," In progress for *Monthly Notices of the Royal Astronomical Society*

T.M. Lawlor, 2005, "A New Model for V838 Mon: A Born-again Object with an Episode of Accretion," *Monthly Notices of the Royal Astronomical Society*, 361, pp. 695-700

T.M. Lawlor & J. MacDonald, 2006, "The Mass of Helium in White Dwarf Stars and the Formation and Evolution of Hydrogen Deficient Post-AGB Stars," *Monthly Notices of the Royal Astronomical Society*, 371, pp. 263-282

T.M. Lawlor & J. MacDonald, 2003 "Sakurai's Object, V605 Aql, and FG Sge: An Evolutionary Sequence Revealed," *Astrophysical Journal*, 583, 913

T.M. Lawlor & T.R. Young, "A Computational Exercise Investigating the Ancient and Future Parameters of the Earth-Moon System" *In revision*, *American Journal of Physics*

Professional Meetings and Conferences:

T.M. Lawlor 2006, "Evolution Models for V838 Mon: Born-again Binaries and Others," *The Nature of V838 Mon and its Light Echo*, eds. R.L.M. Corradi and U. Munari, *Astronomical Society of the Pacific Conference Series*, In press

T.M. Lawlor, T.R. Young, T. Johnson & J. MacDonald 2006, "Mass Transfer in Population III Massive Binaries and Their Resulting SN Light Curves," *Space Telescope Science Institute May Symposium – Massive Stars: From Pop III and GRBs to the Milky Way*, ed. M. Livio, STScI, in press

T.M. Lawlor, J. MacDonald and T.R. Young 2005, "The Effects of Mass Transfer On Massive Binaries," 206th Meeting of the American Astronomical Society, *Bulletin of the American Astronomical Society*, 37, p 500

T.M. Lawlor & J. MacDonald , 2004, "V838 Mon: Not a Born Again Object?" *BAAS*, 35, p1339

T.M. Lawlor & J. MacDonald, 2002 "Sakurai's Object, V605 Aql, and FG Sge: An Evolutionary Sequence Revealed," *International Astronomical Union Colloq. 187, Exotic stars as challenges to evolution*, eds. C.A. Tout and W. Van Hamme, *Astronomical Society of the Pacific Conference Series*, 279, pp.193-199

T.M. Lawlor & J. MacDonald, 2002, "Theoretical-Observational comparisons and details in the evolution of Sakurai's Object," *Astrophysics and Space Science*, 279/1-2,

Special Issue: *Sakurai's Object: What have we learned in the first five years?* eds. J. Dyson, S.A. Lamb, A. Evans, and B. Smalley, pp. 123-128

T.M. Lawlor & J. MacDonald, 2000, "The Born Again Phenomena and its Link to H-deficient Post-AGB Objects," Proceedings of the 12th European Conference on White Dwarf Stars, Astronomical Society of the Pacific Conference Series, 226, pp.20-26

T.M. Lawlor & J. MacDonald, 1999, "The Born Again Phenomena: Exploratory Evolutionary Models Including Mass Loss," *BAAS*, 31 1435

A. Ulla, P. Thejll, F. Pérez Hernández, J. MacDonald, **T. Lawlor**, 1999 "Hot Sub-dwarfs: Infrared Fluxes, Binaries and Oscillations," Proceedings of the 11th European Workshop on White Dwarfs, Astronomical Society of the Pacific Conference Series, 169, p.58-64

F. Allard, **T. Lawlor**, D. R. Alexander, 1995 "M Stars Model Atmospheres: Spectra and Colors," *BAAS*, 27, 1432