

## Joshua D. Thomas

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EDUCATION	<u>University of Toledo, Toledo, Ohio USA</u> <ul style="list-style-type: none"><li>• Ph. D. Physics, August 2012<ul style="list-style-type: none"><li>· Dissertation Title: “Spectroscopic Analysis and Modeling of the Red Rectangle”</li><li>· Advisors: Dr. Jon E. Bjorkman and Dr. Adolf N. Witt</li></ul></li><li>• M. S. Physics, December 2006<ul style="list-style-type: none"><li>· Thesis Title: “Fluorescence Spectroscopy of Gas-phase Polycyclic Aromatic Hydrocarbons”</li><li>· Advisor: Dr. Adolf N. Witt</li></ul></li><li>• B. S. Physics, Concentration in Astrophysics, May 2004<ul style="list-style-type: none"><li>· Magna Cum Laude, Departmental Honors, Outstanding Physics and Astronomy Student</li><li>· Thesis Title: “Gravitational Microlensing of Stars with Circumstellar Envelopes”</li><li>· Advisor: Dr. Jon E. Bjorkman</li></ul></li></ul>
RESEARCH INTERESTS	Observational Astronomy, Spectroscopy, Photometry Numerical Simulation Laboratory Astrophysics
POSITIONS HELD	<u>Assistant Professor</u> <ul style="list-style-type: none"><li>• Clarkson University, Potsdam, NY, USA <b>Aug. 2013 – Present</b></li></ul> <u>Public Outreach Scientist</u> <ul style="list-style-type: none"><li>• Adirondack Public Observatory, Tupper Lake, NY, USA <b>May 28, 2014 – Aug. 8, 2014</b></li></ul> <u>Visiting Assistant Professor</u> <ul style="list-style-type: none"><li>• Clarkson University, Potsdam, NY, USA <b>Aug. 2012 – May 2013</b></li></ul> <u>Teaching/Graduate Assistant</u> <ul style="list-style-type: none"><li>• University of Toledo, Toledo, OH, USA <b>Aug. 2004 – Aug. 2012</b></li></ul>
TEACHING EXPERIENCE, INSTRUCTOR OF RECORD	<u>Clarkson University, Potsdam, NY, USA</u> <ul style="list-style-type: none"><li>• Instructor for Physics 131, Physics I <b>Fall 2012 – Fall 2016</b><ul style="list-style-type: none"><li>· I taught 1 of 3 sections of <i>Physics I</i>, an undergraduate calculus-based class for science and engineering majors.</li><li>· Each semester had approximately 100 students in my lecture section.</li><li>· I conducted office hours with students, created and graded assignments.</li></ul></li><li>• Instructor for Physics 131, Team Design Lab <b>Fall 2012– Fall 2016</b><ul style="list-style-type: none"><li>· I taught 2 of 3 sections of an advanced, research motivated laboratory that accompanies the Physics 131 course.</li><li>· Each semester I had a total of approximately 50 students.</li><li>· I guided students through a simulated research experience.</li></ul></li><li>• Instructor for Physics 132, Physics II <b>Spring 2013 – Spring 2016</b><ul style="list-style-type: none"><li>· I taught 1 of 3 sections of <i>Physics II</i>, an undergraduate calculus-based class for science and engineering majors.</li><li>· Each semester had approximately 100 students in my lecture section.</li><li>· I conducted office hours with students, created and graded assignments.</li></ul></li></ul>

- Instructor for Physics 132, Team Design Lab **Spring 2013 – Spring 2016**
  - I taught 2 of 3 sections of an advanced, research motivated laboratory that accompanies the Physics 132 course in spring 2013 (35 students).
  - Each semester I had a total of approximately 50 students.
  - I guided students through a simulated research experience.
  
- Instructor for Physics 157, Elementary Astronomy **Spring 2015 – Spring 2016**
  - This course is aimed at non-physics majors.
  - I created this course and got it added to the course offerings from our department.
  - The course has 30 students.
  
- Instructor for Physics 457, Introductory Astrophysics **Spring 2012, Fall 2015**
  - I taught this elective astrophysics course for junior/senior level students in physics or closely related fields (15 students).

University of Toledo, Toledo, OH, USA

- Instructor for Astronomy 1010, Survey of Astronomy **2006, 2012**
  - I taught the spring section of *Survey of Astronomy*, an undergraduate class for non-science majors in 2012 (50 students).
  - I taught the summer section in 2006 (25 students).
  - Conducted office hours with students, developed and graded assignments.
  
- Instructor for Physics 2010, Technical Physics I **Fall 2008**
  - I taught 1 section of *Technical Physics: Mechanics*, an undergraduate algebra-based class for engineering technology majors (60 students).
  - Developed and graded assignments.
  - Conducted office hours with students.
  
- Instructor for Physics 2130, Physics I **Spring 2008**
  - I taught 1 section of *Physics for Science and Engineering Majors I*, an undergraduate calculus-based class for science majors (30 students).
  - Developed and graded assignments. Designed in-class group problem solving activities.
  - Conducted office hours with students.

ACADEMIC  
ADVISING

Clarkson University, Potsdam, NY, USA

**Fall 2013 – Present**

- Advise student on degree requirements and course selection.

UNDERGRADUATE  
PROJECTS  
ADVISED

Clarkson University, Potsdam, NY, USA

- Advised undergraduate students on various research projects.
  - “Modelling the velocity distribution of a galaxy cluster”, Peter Valliancourt (2.5 semester project)
  - “Flat field box for a CCD camera”, Benjamin Roulston (10 week project)
  - “Hartmann mask for Reynolds Observatory”, Jonathan Brassard (5 week project)
  - “Photometric measurements of MWC 953”, Emily Fabian (10 week project)
  - “Photometric measurements of the 1-day binary LS4948”, Shoshana Chipman (5 week project)

- “Arduino based Received Signal Strength Intensity distance Measurement”, Jonathan Brasseur (10 week project)
- “Spectroscopic measurements of the binary star R81”, Benjamin Roulson (2 semester project)
- “Arduino based GPS for computer time synchronization”, Jacob Hohl (1 semester project)
- “Installing and testing the LHIRES III spectrograph, and telescope mount at Reynolds Observatory”, Andrew Couperus and Courtney Maki (10 week project).
- “Spectroscopic monitoring of WR 140 and other binary stars”, Andrew Couperus (Ongoing)

TEACHING  
EXPERIENCE,  
TEACHING  
ASSISTANT

University of Toledo, Toledo, OH, USA

- Teaching Assistant **2004–2012**
  - I proctored exams, graded assignments, and tutored students at the *Physics and Astronomy Help Center*
- Head Teaching Assistant **Summer 2011, Summer 2012**
  - I supervised lab set-up, explained how to conduct the lab class.
  - I tested and organized the lab equipment.
  - I revised lab manuals for the Technical Physics courses.
- Laboratory Instructor for Astronomy 2050 **2009–2011**
  - I instructed students during introductory astronomy laboratory for the non-major.
  - I wrote pre-lab assignments and supplementary lab questions.
  - I wrote a lab on the H-R diagram to add to the course manual.
  - I setup equipment, graded labs, and held office hours.
- Recitation Instructor for Physics 2080 and 2140 **2007–2011**
  - Physics 2080 (algebra-based Physics II), Physics 2140 (calculus-based Physics II)
  - I taught recitation sections for the introductory physics courses.
  - I conducted office hours and graded assignments.
- Laboratory Instructor for Physics 2010, 2020, 2070, 2080, 2130, and 2140 **2004–2011**
  - Algebra-based: Physics I (2010, 2070), Physics II (2020,2080).
  - Calculus-based: Physics I (2130), Physics II (2140).
  - I instructed students during introductory physics laboratory.
  - I suggested the implementation of pre-lab assignments, which were implemented.
  - I setup equipment, and graded labs.

TEACHING  
DEVELOPMENT

State University of New York Canton, Canton, NY, USA

- 22<sup>nd</sup> Annual Teaching Effectiveness Conference, Nov. 2, 2013.
- Clarkson University, Potsdam, NY, USA
- 21<sup>st</sup> Annual Teaching Effectiveness Conference, Nov. 3, 2012.
  - Course Design Workshop, speaker: Dominic Voge of Princeton’s McGraw Center for Teaching and Learning. April 13, 2013

GRANT  
INVOLVEMENTClarkson University, Potsdam, NY, USA

- Co-PI for the Clarkson IMPETUS program, a New York state department of education funded k-12 STEM outreach program.
- Help plan and run monthly campus visits.
- Run activities for the summer roller coaster camp.
- Web master and administrator for Moodle.

RESEARCH  
EXPERIENCEClarkson University, Potsdam, NY, USA

- Spectroscopy of Binary Stars **June 2016–Present**
  - Spectroscopic monitoring of Be stars, P Cygni Stars, and Wolfe-Rayet Stars
  - Current focus is the star WR 140, which has a periastron passage in December 2016.
- Photometry of Binary Stars **June 2015–Present**
  - The current focus is the 1-day binary LS4948, and WR 140.
- Red Rectangle **2012–Present**
  - Studying the polarization of the Red Rectangle to look for periodic changes in polarization, with hopes of learning more about the return of material to the interstellar medium.
  - Determine the mass-loss rate in the outflow.

University of Toledo, Toledo, OH, USA

- Observational Spectroscopy and Radiative Transfer Simulation **2009–2012**
  - I analyzed the complex sodium lines of the Red Rectangle.
  - I modeled the system to reproduce the observed sodium line profiles.
  - This work has two refereed publication, one soon to be submitted.
  - Advisor: Dr. Adolf N. Witt and Dr. Jon E. Bjorkman
- Accelerator-based Atomic Physics **2007–2009**
  - I collaborated with Dr. Charles C. Havener at Oak Ridge National Lab, Physics Division.
  - This work resulted in 3 papers published in conference proceedings.
  - Advisor: Dr. Thomas J. Kvale
- Young Stellar Objects **2006–2007**
  - I analyzed Hectospec, multi-fiber, spectra and spectral-typed the observed stars.
  - I obtained and reduced IR spectra from the NASA IRTF.
  - I did the orbit planning for 252 orbits of the Hubble Space Telescope time, later awarded when I left the group.
  - Advisor: Dr. Thomas Megeath
- Laboratory Astrophysics **2004–2006**
  - I designed and conducted experiments in laser induced fluorescence of neutral gas-phase polycyclic aromatic hydrocarbons (PAHs).
  - Some of this work was published in a conference proceedings.
  - Advisor: Dr. Adolf N. Witt

- Scattered Light Simulation of Eta Carinae **Summer 2004**
  - Modeled the density and structure of the bipolar outflow to produce scattered light images for comparison to HST images.
  - Advisor: Dr. Jon E. Bjorkman
  
- Gravitational Microlensing **2003–2004**
  - Modeled the lensing of stars with circumstellar atmospheres to determine light and polarization curves.
  - Funded by the Ohio Space Grant Junior and Senior Scholarships.
  - The work done was included in the proceedings of the annual conference.
  - Advisor: Dr. Jon E. Bjorkman
  
- Accelerator-based Atomic Physics **2001–2004**
  - Modified the design of an electrostatic Faraday cup detector in order to improved its performance.
  - Funded by the National Science Foundation Research Experience for Undergraduates.
  - This research resulted in a published paper.
  - Advisor: Dr. Thomas J. Kvale
  
- Member of the Ritter 1-meter observing team **2001–2004**
  - Operated the 1-m telescope and echelle spectrograph in order to collect spectra of stars.
  - Logged approximately 30 solo observing nights.
  - Director of the Observatory: Dr. Nancy D. Morrison

Triangle University Nuclear Laboratory, Duke University, Durham, NC, USA

- Nuclear Physics **Summer 2002**
  - Modified a silicon strip detector and data acquisition system for use at the Duke Free Electron Laser Laboratory to study photodisintegration of Carbon nuclei.
  - Funded by the National Science Foundation Research Experience for Undergraduates.
  - Advisor: Dr. John Kelly

REFEREED  
PUBLICATIONS

“Spectroscopy, MOST photometry, and interferometry of MWC 314: is it an LBV or an interacting binary?”, Richardson, Noel D.; Moffat, Anthony F. J.; Maltais-Tariant, Raphael; Pablo, Herbert; Gies, Douglas R.; Saio, Hideyuki; St-Louis, Nicole; Schaefer, Gail; Miroshnichenko, Anatoly S.; Farrington, Chris; Aldoretta, Emily J.; Artigau, tienne; Boyajian, Tabetha S.; Gordon, Kathryn; Jones, Jeremy; Matson, Rachel; McAlister, Harold A.; O’Brien, David; Raghavan, Deepak; Ramiaramanantsoa, Tahina; Ridgway, Stephen T.; Scott, Nic; Sturmman, Judit; Sturmman, Laszlo; Brummelaar, Theo ten; **Thomas, Joshua D.**; Turner, Nils; Vargas, Norm; Zharikov, Sergey; Matthews, Jaymie; Cameron, Chris; Guenther, David; Kuschnig, Rainer; Rowe, Jason; Rucinski, Slavek; Sasselov, Dimitar; Weiss, Werner, *Monthly Notices of the Royal Astronomical Society*, Volume 455, Issue 1, p.244–257, November 2, 2015 DOI: 10.1093/mnras/stv2291

“Forelimbs of Tyrannosaurus rex: a pathetic vestigial organ or an integral part of a fearsome predator?”, Scott A. Lee and Joshua D. Thomas, *Phys. Teach.* 52, 521 (2014) AAPT

“Geometry and velocity structure of HD 44179’s bipolar jet”, Joshua D. Thomas, Adolf N. Witt, Jason P. Aufdenberg, J. E. Bjorkman, Julie A. Dahlstrom, L. M. Hobbs and Donald G. York, *Monthly Notices of the Royal Astronomical Society*, Volume 430, Issue 2, p.1230-1237, 2013

“The nature of the Na I D-lines in the Red Rectangle”, Joshua D. Thomas, Adolf N. Witt, Jason P. Aufdenberg, J. E. Bjorkman, Julie A. Dahlstrom, S. R. Federman, L. M. Hobbs, Uma P. Vijh and Donald G. York, Monthly Notices of the Royal Astronomical Society, Volume 417, Issue 4, pp. 2860–2873, 2011

“Performance enhancement study of an electrostatic Faraday cup detector”, Thomas, J. D., Hodges, G. S., Seely, D. G., Moroz, N. A., & Kvale, T. J. Nuclear Instruments and Methods in Physics Research A, Volume 536, Issue 1-2, pp. 11–25, 2005

CONFERENCE  
PUBLICATIONS

“MWC 314: binary results from optical interferometry compared with spectroscopy and photometry”, Richardson, Noel D.; Moffat, Anthony F. J.; Maltais-Tariant, Raphael; Pablo, Herbert; Gies, Douglas R.; St-Louis, Nicole; Schaefer, Gail; Miroshnichenko, Anatoly S.; Farrington, Chris; Aldoretta, Emily J.; Artigau, Etienne; Boyajian, Tabetha; Gordon, Katie; Goldfinger, P. J.; Jones, Jeremy; Matson, Rachel; McAlister, Harold A.; O’Brien, David; Raghavan, Deepak; Ramiaramanantsoa, Tahina; Ridgway, Stephen T.; Scott, Nic; Sturmman, Judit; Sturmman, Laszlo; ten Brummelaar, Theo; **Thomas, Joshua D.**; Turner, Nils; Vargas, Norm; Zharikov, Sergey, Proceedings of the SPIE, Volume 9146, id. 91460G 12 pp. (2014) DOI: 10.1117/12.2055364

“The forelimb of Tyrannosaurus rex: a pathetic vestigial organ or an integral part of a fearsome predator?” Scott Lee and Joshua Thomas, 2014 March Meeting of the American Physical Society, Boulder, CO, 03 - 07 March 2014, P1.00092 (Abstract published)

“Production, Characterization, and Measurement of H(D) Beams on the ORNL Merged-Beams Experiment”, Thomas, J. D., Kvale, T. J., Strasser, S. M. Z., Seely, D. G., & Havener, C. C. American Institute of Physics Conference Series, Volume 1099, pp. 154–158, 2009

“Isotope Effects in Low Energy Ion-Atom Collisions”, Havener, C. C., Seely, D. G., Thomas, J. D., & Kvale, T. J. American Institute of Physics Conference Series, Volume 1099, pp. 150–153, 2009

“Fluorescence Spectroscopy of Gas-phase Polycyclic Aromatic Hydrocarbons”, Thomas J. D., Witt A. N. Proceedings of the Nasa Laboratory Astrophysics Workshop 2006, pp. 264–268, 2006

CONFERENCE  
PRESENTATIONS

“The Structure of the Bipolar Jet in the Red Rectangle”, Thomas, J. D., Witt, A. N., Aufdenberg, J. P., Bjorkman, J. E., Dahlstrom, J. A., Hobbs, L. M., Vijh, U. P., York, D. G., Wittfest, University of Toledo, Invited Session Speaker, Nov. 8 2014

“The Red Rectangle: Recent Research on the Inner Workings of its Dust Engine”, Thomas, J. D., Witt, A. N., Aufdenberg, J. P., Bjorkman, J. E., Dahlstrom, J. A., Hobbs, L. M., Vijh, U. P., York, D. G., Wittfest, University of Toledo, Invited Session Speaker, 2010

“Determination of the Secondary Emission Coefficient  $\gamma$  in Electron Capture Cross Section Measurements in Low-Energy, Multiply-Charged Ion Atom Collisions”, Thomas, J. D., Kvale, T. J., Strasser, S. M. Z., Seely, D. G., & Havener, C. C. 2009, American Institute of Physics Conference Series, 1099, pp. 154, Conference on the Application of Accelerators in Research and Industry, Oral Presentation, 2008

“Fluorescence Spectroscopy of Gas-phase Polycyclic Aromatic Hydrocarbons”, Thomas, J. D. & Witt, A. N., NASA Laboratory Astrophysics Workshop, University of Nevada Las Vegas, Poster, 2006

“Fluorescence Spectroscopy of Gas-phase Polycyclic Aromatic Hydrocarbons”, Thomas, J. D. & Witt, A. N., Sigma Xi Research Symposium, University of Toledo Chapter, Oral Presentation,

2006

“Fluorescence Spectroscopy of Gas-phase Polycyclic Aromatic Hydrocarbons”, Thomas, J. D. & Witt, A. N., Sigma Xi Research Symposium, University of Toledo Chapter, Oral Presentation, 2005

“Gravitational Microlensing of Stars with Circumstellar Envelopes”, Thomas, J. D. & Bjorkman, J. E., Ohio Space Grant Consortium, Ohio Aerospace Institute, Cleveland, Ohio, Oral Presentation, 2004

“Gravitational Microlensing of Stars with Circumstellar Envelopes”, Thomas, J. D. & Bjorkman, J. E., Sigma Xi Research Symposium, University of Toledo Chapter, Oral Presentation, 2004

“Performance Enhancement Study of an Electrostatic Faraday Cup Detector”, Thomas, J. D. & Kvale, T. J., Sigma Xi Research Symposium, University of Toledo Chapter, Poster, 2004

“Gravitational Microlensing of Stars with Circumstellar Envelopes”, Thomas, J. D. & Bjorkman, J. E., Ohio Space Grant Consortium, Ohio Aerospace Institute, Cleveland, Ohio, Poster, 2003

“Design Improvements in Data Collection Faraday Cup Detector”, Thomas, J. D. & Kvale, T. J., Sigma Xi Research Symposium, University of Toledo Chapter, Oral Presentation, 2002

## COLLOQUIA

“The Structure of the Bipolar Jet in the Red Rectangle”, University of Montreal, March 14th, 2013

“The Red Rectangle”, Clarkson University, David A. Walsh ‘67 College of Arts and Sciences Seminar Series, December 5th, 2012

“Geometry and Velocity Structure of the Bipolar Jet in the Red Rectangle”, Clarkson University Physics Department, January 18th, 2013

PUBLIC  
OUTREACH

Madison Elementary School, Massena NY, USA

**Oct. 15, 2014 and Apr. 20, 2016**

- Astronomy Night
  - Presented to about 150 6th graders, in 3 groups.
  - At the 2014 event: I shared some personal experiences and talked about exploding stars!
  - At the 2016 event: I talked about the phases of the moon, with a demonstration. I also demonstrated an infra-red camera and tied that in with current space missions!

Malone High School at SUNY Potsdam **Oct. 10, 2013; Oct. 10, 2014; Oct. 7, 2015; and Oct. 20, 2016**

- Astronomy Night
  - Presented to about 30 high school students and parents.
  - Operated the SPITZ analog planetarium located at the State University of NY Potsdam, and introduced the students to a vast variety of topics in astronomy.
  - Weather permitting star gazing with the telescopes at Clarkson’s Reynolds observatory.

SOAR Life Long Learning, Potsdam, NY, USA

**May 2, 2016**

- A demonstration-filled lecture to senior citizens on starlight.
- Spectroscopy, and how light interacts with material. The astrophysics of astronomical images were related back to the blue sky and sunset.

Museum With Out Walls, North Country Children’s Museum, Potsdam, NY, USA  
**2014 – present**

**Nov.**

- Hands-on activities for elementary school kids.

- September 29, 2014: Scrap Heap Challenge–Rube Goldberg Machine
- October 2, 2015: Scrap Heap Challenge–Rube Goldberg Machine
- November 21, 2015: Astronomy Workshop, The solar system and constellations
- December 10, 2016: Astronomy Workshop, The solar system and constellations

Great Camp Sagamore, Raquette Lake, NY, USA

**June 25, 2015 – present**

- June 25, 2015: Instructed the staff on how to use a Dobsonian mounted telescope.
- June 29, 2016: Prepared a star map, and gave a short presentation followed by stargazing. The audience was the New York State Master Teachers workshop participants.
- September 23, 2016: Presentation to a general audience: “What’s up? The night sky”
- September 24, 2016: Presentation to a general audience: “Spectroscopy, Taste The Rainbow”

Adirondack Public Observatory, Tupper Lake, NY, USA

**May 28, 2014 – Aug. 8, 2014**

- Gave twice weekly presentations on the Science on a Sphere to the general public at the Wild Center in Tupper Lake.
- Ran a telescope for public observing at the observatory every Friday.
- Created part of the program of activities for the local celebration of “International Sun-day” held on the summer Solstice.
- Created advertising content, presentations, and provided IT tech support.

Adirondack Public Observatory, Tupper Lake, NY, USA

**Aug 8, 2014 – Present**

- Give occasional presentations on the Science on a Sphere at the Wild Center.
- Helped out with public stargazing nights from time to time.

Clarkson University, Potsdam, NY, USA

- Science Olympiad **Feb. 2 2013, Feb. 1 2014, Jan. 31 2015**
  - I administered and judged the astronomy portion of the competition for high school students.
- North Country Science and Engineering Festival **Oct. 10 2012**
  - I volunteered during a public outreach event held on campus for 5<sup>th</sup> – 12<sup>th</sup> grade, sponsored by IMPETUS a NY state STEM program for minorities and economically disadvantaged students.
  - I assisted the Physics Club with a demonstration of non-Newtonian fluids.
- Star parties **Fall 2012**
  - I assisted the undergraduate Physics Club with a star party held on campus with several telescopes.
- Public Observing at Reynolds Observatory **Fall 2012 – present**
  - I lead the revitalization of Reynolds Observatory, and I run the outreach events.
  - Solar observing for 5<sup>th</sup> and 6<sup>th</sup> graders (about 15 students) on August 15, 2013.
  - Public Observing on October 11, 2013 for approximately 10 local residents.
  - Between 2013 and 2016 the observatory equipment was being repaired, replaced, and upgraded.
  - Observing for community members July 25, 2016.

University of Toledo, Toledo, OH, USA

- Venus Transit **2012**
  - I volunteered during a public outreach event held on campus, pointing out sunspots, Venus, and solar flares.
  - I operated an 8-inch reflector with a projection screen, training a student to track the Sun.
  - I set up and operated a small solar telescope with an H $\alpha$ -filter.

Society of Physics Students, University of Toledo

- National Rube Goldberg Machine Competition **2005, 2006**
  - I participated in the construction of two Rube Goldberg machines. I participated in the local competition against engineers, winning both years. The machines went on to win honorable mention in 2005 and second place on 2006 at the National Rube Goldberg Competition.
  - I took part in a public outreach event, which included a segment on the local news to promote science and engineering at the University of Toledo, as well as having the second machine exhibited at the Imagination Station (formerly COSI Toledo).
  
- Elementary School Star Parties **2004–2005**
  - I operated a small telescope and pointed out constellations to middle school children.
  - At Lail Elementary and St. Pius X Academy, Toledo OH, USA.
  
- Ritter Planetarium **2003–2008**
  - On several occasions I gave public tours of the 1-meter telescope facilities.
  - I operated the 1-m telescope for public observing.
  - I assisted in updating several of the planetarium's display cases.
  
- Toledo Astronomical Association Boy Scout Star Parties **2003–2005**
  - I operated an 8-inch telescope and pointed out the constellations for night sky viewing by the boy scouts and their families.
  - The event was held at the Pioneer Scout Reservation in north west Ohio.
  
- Various Physics Demonstrations **2002–2006**
  - I participated in a physics demonstration at the Toledo public library (main branch) for school-aged children.
  - I participated in physics demonstrations at Defiance College Science Fair (first two years).
  - I participated in the yearly demonstrations at the Northwest Ohio Science Fair, held at the University of Toledo.

## PUBLIC TALKS

“Dawn, Rosetta and Philae”, Invited by the Adirondack Public Observatory, held at The Wild Center, Tupper Lake NY, June 24th, 2015

Two public lectures on astronomy “Starlight: Revealing the Universe”, part of the “Science Cafe” series in Canton & Potsdam NY, February 26 & 27, 2013 (About 40 people attended the talk on the 26th, and about 30 people attended the talk on the 27th.)

“The Comets Are Coming, The Comets Are Coming”, Invited by the Adirondack Public Observatory, held at The Wild Center, Tupper Lake NY, December 28th, 2012 (about 40 people attended)

**OTHER PUBLICATIONS** Updated 8 test bank chapters, and wrote about 20 new questions per chapter, for an introductory astronomy text book.

Created 350-400 questions for the ORION adaptive learning system (Wiley PLUS on line homework system) on electromagnetic waves, May 2014

“Winter Skies”, Joshua Thomas, Adirondack Public Observatory Newsletter, November 2013

**TECHNICAL SKILLS** **Operating systems:** Linux/Unix, Windows, Mac, and OpenVMS

**Mark-up languages:** L<sup>A</sup>T<sub>E</sub>X, and HTML.

**Programming languages:** Python, Fortran, and IDL.

**Software:** IRAF, Spextool, SAOImage, Origin, CAD software, SIMION, spreadsheet software, and Blender.

**Education:** Blackboard, Moodle, Echo360, Turning Technologies Response, Tracker video analysis.

**LEADERSHIP** Society of Physics Students, University of Toledo **2001–2006**

- President, our chapter was awarded an outstanding chapter award. (2003–2004)
- Outreach Coordinator, organized outreach activities. (2001–2003)
- Web-master, designed and managed a new web page. (2001–2006)
- Organized a meeting of students and faculty to discuss the curriculum. This led to the creation of the course “Mathematical Methods in Physics” first offered spring of 2003, which has become a requirement for the B.S. in Physics.
- As president I organized the 2004 SPS Zone-7 meeting, which was attended by undergraduate students from Michigan and Ohio.

**HONORS AND AWARDS** University of Toledo, Toledo, OH, USA

- Astronomy Bag Lunch Seminar, Best graduate student presentation. (Fall 2011)
- Ed Foster Graduate Scholarship. (2011)
- Sigma Xi Research Symposium, First Place in Poster Division. (2004)
- Sigma Xi Research Symposium, Honorable Mention in Oral Presentation. (2004)
- Ohio Space Grant Consortium, Senior Space Grant. (2003–2004)
- Ohio Space Grant Consortium, Junior Space Grant. (2002–2003)
- C.V. Wolfe Scholarship in the Natural Sciences. (2001–2002)
- Presidential Scholarship. (2000-2004)