

# Justin A. Vasel

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RESEARCH INTERESTS	<b>Neutrino Astrophysics</b> : supernova detection; oscillation; high-energy sources <b>Heliophysics</b> : space weather prediction; solar wind generation; sunspots <b>Public Policy</b> : economic and societal effects of science policy in the United States	
EDUCATION	<b>Doctor of Philosophy, Physics</b> <i>Indiana University</i>	August 2013 — Present
	<b>Master of Science, Physics</b> <i>University of Minnesota Duluth</i>	September 2011 — August 2013
	<b>Bachelor of Science, Physics</b> <i>University of Wisconsin—Eau Claire</i>	September 2007 — May 2011
HONORS & AWARDS	<b>Treviño Service Award</b> <i>Graduate and Professional Student Organization, Indiana University</i>	April 2014
	<b>AAPT Outstanding Teaching Assistant Award</b> <i>American Association of Physics Teachers</i>	May 2013
	<b>Outstanding Graduate Teaching Assistant in Physics</b> <i>University of Minnesota Duluth</i>	May 2013
	<b>Student Research Day Poster Competition — First Place</b> <i>University of Wisconsin—Eau Claire</i>	May 2011
	<b>University Physics Competition 2010 — Silver Medal</b> <a href="http://www.uphysicsc.com/">http://www.uphysicsc.com/</a> ( <i>International</i> )	November 2010
	<b>Physics Beyond the Classroom Scholarship</b> <i>University of Wisconsin—Eau Claire</i>	Fall 2010 — Spring 2011
CONFERENCES ATTENDED	<b>American Physical Society April 2013 Meeting</b> <i>Poster Presenter</i>	April 2013
	<b>221<sup>st</sup> American Astronomical Society Meeting</b> <i>Poster Presenter</i>	January 2013
	<b>217<sup>th</sup> American Astronomical Society Meeting</b> <i>Society of Physics Students Reporter</i>	January 2011
	<b>41<sup>st</sup> Nobel Conference — The Legacy of Einstein</b>	September 2005

RESEARCH  
EXPERIENCE

**The NuMI Off-Axis  $\nu_e$  Appearance Experiment (NO $\nu$ A)** May 2014 — Present  
*Fermi National Accelerator Laboratory — Batavia, Illinois*

- Developed a set of web-based monitoring tools using Python, HTML5, and jQuery

**The Helium and Lead Observatory (HALO)** December 2011 — Present  
*SNOLAB — Lively, Ontario, Canada*

- Developed existing Objective-C software to make automated selection cuts to data and to collect diagnostic data from detector hardware
- Designed and implemented experimental infrastructure: ie. local IP networks, hardware monitoring, user interfaces for remote management

**Determining the Radial Location of the X-ray Emitting Zones of Spica** January 2008 — July 2011  
*University of Wisconsin—Eau Claire, Department of Physics and Astronomy*

- Combined existing photospheric models for hot stars with a unique H-alpha data set for the B-type star, Spica
- Wrote programs using Mathematica to process and visualize data from photospheric models of hot stars

**Achieving a Circular Orbit Around Neptune Through Aerobraking** November 2010 — May 2011  
*University of Wisconsin—Eau Claire, Department of Physics and Astronomy*

- Utilized data from Voyager-2 to construct an atmospheric profile of Neptune
- Wrote programs in Mathematica to simulate the process of aerobraking

PROFESSIONAL  
EXPERIENCE

**Graduate Research Associate** May 2013 — Present  
*Indiana University, Department of Physics*

**Graduate Associate Instructor** August 2013 — May 2013  
*Indiana University, Department of Physics*

- Duties include teaching labs, leading discussion sections, and tutoring.

**Astrophysics Writer** January 2012 — October  
<http://www.astrobites.com/>

Astrobites is a daily literature journal summarizing new astrophysical research posted to arXiv's astro-ph. Astrobites is written by graduate students for undergraduates.

- Twenty articles written to date (see *Other Writing*)

**Graduate Teaching Assistant** September 2011 — May 2013  
*University of Minnesota Duluth, Department of Physics*

- Duties included teaching labs, grading, and tutoring.

**Sales Associate** September 2005 — August 2011  
*Shopko — Electronics Department, Eau Claire, WI*

**Physics Tutor** September 2008 — December 2008  
*University of Wisconsin—Eau Claire, Department of Physics and Astronomy*

**Assistant Teacher** July 2007  
*University of Wisconsin—Eau Claire, Summer Science Institute*

- Helped teach students (grades 6–12) how to build a robot from a kit and program it using BASIC and assisted students in learning how to build a computer from scratch with a hands-on approach

**Calculus Tutor** October 2006 — December 2006  
*Winona State University, Mathematics Department*

- Developed and implemented methods for teaching differential calculus to a blind student

PROFESSIONAL  
AFFILIATIONS

**American Physical Society** ( Student Member )  
Division of Astrophysics; Division of Particles and Fields

**American Astronomical Society** ( Junior Member )  
Solar Physics Division

*American Association of Physics Teachers* ( Former Student Member )

TECHNICAL  
FAMILIARITY

Software	Languages	Operating Systems
ROOT	C++	Unix
Geant 4	Objective-C	Mac OS X
Mathematica	Python	Apple iOS
Adobe Suite	L <sup>A</sup> T <sub>E</sub> X	Windows 98–7
Gnuplot	MATLAB	
Xcode 4	html 5, css 3	
	Javascript	

PUBLIC  
LECTURES

<b>Predicting the Next Galactic Supernova—How <i>You</i> Can Help</b> <i>Chippewa Valley Astronomical Society: Northwoods Starfest 2013</i>	9 August 2013
<b>Under the Hood: Preparing the Helium and Lead Observatory for Full Operation</b> <i>University of Minnesota Duluth: M.S. Thesis Defense</i>	8 August 2013
<b>Astronomically Patient—The Hunt for Galactic Supernovae</b> <i>University of Wisconsin—Eau Claire: Physics Thursday Seminar Series</i>	4 April 2013
<b>Stealthy Neutrinos and the Search for Exploding Stars</b> <i>Eau Claire, WI: ‘Ask A Scientist’ Seminar Series</i>	20 March 2013
<b>Tornado Physics—A Terrifying Lesson in Fluid Dynamics</b> <i>University of Minnesota Duluth</i>	1 March 2013
<b>The Many Roles of Physicists in Particle Physics Experiments</b> <i>University of Minnesota Duluth</i>	15 November 2012
<b>Searching for Alien Civilizations</b> <i>University of Minnesota Duluth: Astronomy Day</i>	28 April 2012
<b>Space Weather Forecasting</b> <i>University of Minnesota Duluth</i>	6 April 2012
<b>Science in Seattle: The Latest Astronomy Findings from the 217<sup>th</sup> AAS Meeting</b> <i>University of Wisconsin—Eau Claire: Physics Thursday Seminar Series</i>	11 February 2011
<b>The Formation and Evolution of Supermassive Black Holes</b> <i>University of Wisconsin—Eau Claire</i>	17 December 2010
<b>Determining the Radial Location of the X-ray Emitting Zones of Spica</b> <i>University of Wisconsin—Eau Claire: Physics Thursday Seminar Series</i>	19 November 2009

## PUBLICATIONS

Under the Hood: Preparing the Helium and Lead  
Observatory for Full Operation (M.S. Thesis)

15 August 2013

*University of Minnesota Duluth*

B. Montet, N. Chisari, J. Donaldson, C. D. Dressing, C. Faesi, J. T. Fuchs, S. Kohler, E. Lovegrove, E. A. Mills, E. Nesvold, E. R. Newton, A. Olmstead, **J. A. Vasel**, L. M. Weiss, Astrobites Team, *Updates from Astrobites: The Astro-ph Reader's Digest*, American Astronomical Society Meeting 223 (2014), poster #445.13

**J. A. Vasel**, A. Habig, C. Virtue, *The Helium and Lead Observatory and the Supernova Early Warning System*, American Physical Society Meeting April 2013, poster #S2.005

**J. A. Vasel**, C. Faesi, M. Drout, E. R. Newton *Astrobites: The Astro-ph Reader's Digest For Undergraduates*, American Physical Society Meeting April 2013, poster #E2.015

**J. A. Vasel**, HALO Collaboration, SNEWS Collaboration, *The Helium and Lead Observatory and the Supernova Early Warning System*, American Astronomical Society Meeting 221 (2013), poster #253.25

M. Drout, **J. A. Vasel**, C. D. Dressing, D. Gifford, C. Morley, S. Hall, E. R. Newton, Astrobites Team, *Astrobites: The Astro-ph Reader's Digest For Undergraduates*, American Astronomical Society Meeting 221 (2013), poster #255.11

A. R. Bartlein, N. R. Brewer, **J. A. Vasel**, *Achieving a Closed Orbit Around Neptune Through Aerobraking*, UW-Eau Claire Student Research Poster Day (2011)

**J. A. Vasel**, G. J. McGill, *Determining the Radial Location of the X-ray Emitting Zones of Spica*, UW-Eau Claire Student Research Poster Day (2011)

**J. A. Vasel**, N. A. Miller, *Determining the Radial Location of the X-ray Emitting Zones of Spica*, UW-Eau Claire Student Research Poster Day (2010)

## OTHER WRITING

## GUEST WRITING

## Jupiter's moon has the potential for life

20 September 2014

*Leader-Telegram: Eau Claire, WI*

## NASA Spacecraft Dawn Studies Asteroids Closely

20 October 2012

*Leader-Telegram: Eau Claire, WI*

## Star's Death Visible from Across the Universe

18 June 2011

*Leader-Telegram: Eau Claire, WI*

## Reporting on AAS from the Front Lines

February 2011

*spsnational.org*

## ASTROBITES BLOG

## Our Moon, the Cosmic Ray Detector

16 September 2014

## To the Center of The Cold Spot

30 April 2014

## The Echoes of a Supernova

2 April 2014

Information Preservation and Weather Forecasting for Black Holes	31 January 2014
Observing the Next Galactic Supernova	5 December 2013
Fishing For Neutrinos	7 November 2013
How to Drag an Asteroid to Earth	14 August 2013
Cartography of the Local Cosmos	7 June 2013
The Great Disco Ball in the Sky	2 June 2013
Why Does Nature Form Exoplanets So Easily?	7 May 2013
How the Sequester Affects Space Science	6 March 2013
Introducing: The Over-massive Black Hole	5 December 2012
An Unlikely Planetary Nursery	17 September 2012
The REAL Political Science	17 August 2012
A Star Screams While Being Devoured by Black Hole	10 August 2012
The Study of Climate on Alien Worlds	21 June 2012
The Supernova Early Warning System	24 May 2012
Stellar Archeology: A Cosmological View of Dwarf Galaxies	12 April 2012
Understanding GRBs Through High-Energy Neutrinos	3 March 2012
Caught in the Line of Fire: The Giants vs The Jets	4 February 2012

#### SERVICE & OUTREACH

<b>Search Committee Member</b> <i>Search Committee for the Vice President of Research, Indiana University</i>	April 2015 — Present
<b>Vice President</b> (Elected) <i>Graduate and Professional Student Organization, Indiana University</i> <ul style="list-style-type: none"> <li>Chair, Student Affairs Committee</li> <li>Representative to the All University Student Association</li> </ul>	May 2014 — May 2015
<b>Graduate Student Representative</b> <i>Bloomington Faculty Council (BFC), Indiana University</i> <i>BFC Student Affairs Committee, Indiana University</i> <i>Campus Curriculum Committee, Indiana University</i>	September 2014 — April 2015
<b>Graduate Student Representative</b> <i>Student Assistance Initiative, Indiana University</i>	October 2014 — January 2015
<b>Physics Graduate Student Representative</b> (Elected) <i>Graduate and Professional Student Organization, Indiana University</i> <ul style="list-style-type: none"> <li>Vice Chair, Student Affairs Committee</li> </ul>	September 2013 — April 2014
<b>Committee Member</b> <i>BFC Research Affairs Committee, Indiana University</i>	September 2013 — April 2014
<b>Participant</b> <i>AAS Congressional Visits Day, Washington, D.C.</i>	March 13, 2013
<b>Graduate Student Representative</b> <i>Graduate Council, University of Minnesota Duluth</i>	December 2012 — August 2013

<b>Committee Member</b> <i>SCSE Technology Fees Committee, University of Minnesota Duluth</i>	September 2012 — May 2013
<b>Judge</b> <i>Northeastern Minnesota Regional Science Fair</i>	February 2013
<b>Adopt-A-Physicist</b> <a href="http://www.adoptaphysicist.org/">http://www.adoptaphysicist.org/</a>	October 2012
<b>President</b> (Elected) <i>Society of Physics Students, University of Minnesota Duluth</i>	December 2011 — February 2013
<b>Judge</b> <i>Lakeview Christian Academy Science Fair</i>	December 2011
<b>Volunteer</b> <i>Astronomy Day, University of Wisconsin—Eau Claire</i>	May 2011
<b>President</b> (Elected) <i>Society of Physics Students, University of Wisconsin—Eau Claire</i>	May 2010 — May 2011
<b>Website Administrator</b> (Elected) <i>Society of Physics Students, University of Wisconsin—Eau Claire</i>	May 2008 — May 2010
<b>Freshman Senator</b> (Elected) <i>Student Senate, Winona State University</i>	September 2006 — May 2007
<ul style="list-style-type: none"> <li>■ Cultural Diversity Committee, Election Committee</li> </ul>	