

# Justin A. Vasel

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## CURRENT

371 M. W. Allworth Hall  
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## PERMANENT

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Eau Claire, WI 54703  
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<http://www.JustinVasel.com>

## RESEARCH INTERESTS

**Neutrino Astrophysics** : supernova detection; high-energy sources  
**Heliophysics** : space weather prediction; solar wind generation; sunspots  
**Public Policy** : economic and societal effects of science policy in the United States

## EDUCATION

*Doctor of Philosophy, Physics* August 2013 — Present  
Indiana University  
*Master of Science, Physics* September 2011 — August 2013  
University of Minnesota Duluth  
*Bachelor of Science, Physics* September 2007 — May 2011  
University of Wisconsin—Eau Claire

## SCHOLARSHIPS & AWARDS

**AAPT Outstanding Teaching Assistant Award** May 2013  
*American Association of Physics Teachers*  
**Outstanding Graduate Teaching Assistant in Physics** May 2013  
*University of Minnesota Duluth*  
**Student Research Day Poster Competition — First Place** May 2011  
*University of Wisconsin—Eau Claire*  
**University Physics Competition 2010 — Silver Medal** November 2010  
<http://www.uphysicsc.com/> ( International )  
**Physics Beyond the Classroom** Fall 2010 — Spring 2011  
*University of Wisconsin—Eau Claire*

## CONFERENCES ATTENDED

**American Physical Society April 2013 Meeting** April 2013  
*Poster Presenter*  
**221<sup>st</sup> American Astronomical Society Meeting** January 2013  
*Poster Presenter*  
**217<sup>th</sup> American Astronomical Society Meeting** January 2011  
*Society of Physics Students Reporter*  
**41<sup>st</sup> Nobel Conference — The Legacy of Einstein** September 2005

RESEARCH  
EXPERIENCE

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

- Developing existing Objective-C software to make automated selection cuts to data and to collect diagnostic data from detector hardware
- Designing and implementing 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

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

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

- Regular contributor and editor
- Twelve articles written to date ( see *Publications* )

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

- Instructor and grader for three weekly lab sections
- Tutor undergraduate students on a weekly basis
- Assist course instructors in grading exams

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

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

**American Association of Physics Teachers** ( 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 You Can Help</b> ( Future Event ) <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: Thesis Defense (M.S.)</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

## SCHOLARLY

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

*University of Minnesota Duluth*

15 August 2013

## GENERAL

The Great Disco Ball in the Sky

*Astrobites.com*

2 June 2013

Why Does Nature Form Exoplanets So Easily?

*Astrobites.com*

7 May 2013

How the Sequester Affects Space Science

*Astrobites.com*

6 March 2013

Introducing: The Over-massive Black Hole

*Astrobites.com*

5 December 2012

NASA Spacecraft Dawn Studies Asteroids Closely

*Leader-Telegram: Eau Claire, WI*

20 October 2012

An Unlikely Planetary Nursery

*Astrobites.com*

17 September 2012

The REAL Political Science

*Astrobites.com*

17 August 2012

A Star Screams While Being Devoured by Black Hole

*Astrobites.com*

10 August 2012

The Study of Climate on Alien Worlds

*Astrobites.com*

21 June 2012

The Supernova Early Warning System

*Astrobites.com*

24 May 2012

Stellar Archeology: A Cosmological View of Dwarf Galaxies

*Astrobites.com*

12 April 2012

Understanding GRBs Through High-Energy Neutrinos

*Astrobites.com*

3 March 2012

Caught in the Line of Fire: The Giants vs The Jets

*Astrobites.com*

4 February 2012

Star's Death Visible from Across the Universe

*Leader-Telegram: Eau Claire, WI*

18 June 2011

Reporting on AAS from the Front Lines

*spsnational.org*

February 2011

SERVICE &  
OUTREACH

<b>Participant</b> <i>AAS Congressional Visits Day, Washington, D.C.</i>	March 13, 2013
<b>Graduate Student Representative</b> (Appointed) <i>Graduate Council, University of Minnesota Duluth</i>	December 2012 — Present
<b>Committee Member</b> (Appointed) <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> (Appointed) <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> <ul style="list-style-type: none"><li>• Cultural Diversity Committee, member</li><li>• Election Committee, member</li></ul>	September 2006 — May 2007