

# William F. Zech, PhD

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## EDUCATION

Ph.D., Astrophysics, University of Notre Dame, Notre Dame, IN	2010
M.S., Physics, University of Notre Dame, Notre Dame, IN	2005
B.S., (Highest Distinction) Physics, Indiana University South Bend, South Bend, IN	2002
B.S., (Highest Distinction) Applied Mathematics, Ibid.	2002
A.S., Mathematics (High Honors), Lake Michigan College, Benton Harbor, MI	1999
Completion of Apprenticeship, Machine Builder, United States Dept. of Labor	1997
Completion of Apprenticeship, Tool and Die Maker, United States Dept. of Labor	1995

## EXPERIENCE

<b>Director of the Advanced Physics Laboratory</b>	November 2009
University of Notre Dame, Notre Dame, IN	
<b>Lab Instructor/Lecturer</b>	
University of Notre Dame, Notre Dame, IN	
◦ Introduction to Electronics and Circuitry	
◦ Sophomore Electricity & Magnetism	
◦ Sophomore Mechanics and Thermal Physics	
<b>Adjunct Professor</b>	Spring 2007
Indiana University South Bend, South Bend, IN	
◦ Astronomy – Stars and Galaxies	
<b>Teaching Assistant:</b>	2002-2008
◦ Mathematical Methods for Physicists 1 & 2	
◦ Special and General Relativity	
◦ Quantum Mechanics 1 & 2	
◦ Engineering Physics 1 & 2 Lab	
◦ Physics Lab for Physics Majors	
◦ Engineering Physics Tutorial	
◦ Engineering Physics Grader	
◦ Astronomy Observatory Assistant and Grader	
◦ Modern Physics Lab	
<b>Notre Dame REU</b>	2001
◦ Built a low energy proton accelerator to investigate CP and T violation in the decay of free neutrons with Dr. L. Lamm and Prof. A. Garcia	
<b>Supplemental Instructor</b>	2000-2002
Indiana University South Bend, South Bend, IN	
◦ Introductory Calculus-Based Physics	
<b>Mathematics Tutor</b>	2000-2002
Indiana University South Bend, South Bend, IN	
<b>Engineering Manager / Engineer / Journeyman Machine Builder</b>	1995-1998
Sunset Tool, Saint Joseph, MI	
<b>Night Shift Foreman / Journeyman Tool &amp; Die Maker</b>	1990-1995
Custom Tool and Die, Stevensville, MI	

## HONORS

Notre Dame:

**Outstanding Graduate Teaching Assistant Award** 2006

Notre Dame Graduate Student Union (one awarded per year)

**Outstanding Graduate Teacher Award for Excellence in Teaching** 2006

**Outstanding Teaching Award** 2006

The American Association of Physics Teachers (AAPT)

**Quinn Fellowship** (2006-2007 academic year)

Indiana University South Bend:

**Student Excellence Award in Mathematics** 2002 (one awarded per year)

**Ernest H. Gerkin Memorial Scholarship** 2002 (two awarded per year)

Articulation Scholarship: 2000-2002

Dean's List: 2000-2002

Lake Michigan College:

National Dean's List: 1998-1999

President's Honor Roll: 1999

## REFEREED PUBLICATIONS

1. *The High-Velocity Gas Toward Messier 5: Tracing Feedback Flows in the Inner Galaxy*  
**Zech, W.F.**, Lehner, N., Howk, J.C., Dixon, W.V.D., Brown, T.M.  
The Astrophysical Journal, 679, 460-480 (2008)
2. *Fundamental Properties of the Highly Ionized Plasmas in the Milky Way*  
Lehner, N., **Zech, W.F.**, Howk, J.C., Svage, B.D.  
The Astrophysical Journal, 727, 46 (2011)
3. *Analysis of White Dwarfs with Strange-Matter Cores*  
Mathews, G.J., Sun, I.-S., O'Gorman, B., Lan, N.Q., **Zech, W.**, Otsuki, K., Weber, F.:  
Journal of Physics G: Nuclear and Particle Physics, 32, 1-13 (2006).
4. *A zero-to-few-hundred eV proton beam for calibrations of neutron  $\beta$  decay experiments*  
Naab, F., Lamm, L.O., **Zech, W.**, Garcia, A., Mumm, P.:  
Nuclear Instruments and Methods in Physics Research B 197, 278-281 (2002).

## OTHER PUBLICATIONS

1. *Are Highly-Ionized HVCs a Galactic Phenomenon?*  
**Zech, W.F.**, Lehner, N., Howk, J.C.  
"Future Directions in Ultraviolet Spectroscopy", AIP Conf., Vol. 1135 (2009)

## INVITED TALKS AND POSTERS

1. Feb. 2009 – "Research at the 213<sup>th</sup> American Astronomical Society Meeting." Seminar presented at the University of Notre Dame, Notre Dame, IN.
2. Jan. 2009 – "A HST/STIS E140H Survey of the Highly-Ionized Gas in the Milky Way." Poster presented at the 213<sup>th</sup> AAS meeting, Long Beach, CA.
3. Oct. 2008 – "The Highly-Ionized HVCs Toward the Cluster M5 in the Inner Galaxy: Evidence for a Galactic Origin." Poster presented at the NASA Future Directions in Ultraviolet Spectroscopy Conference, Annapolis, MD.
4. Nov. 2007 – "Observations of High-Velocity Clouds Toward the Inner Galaxy: Evidence for a Galactic Wind." Invited talk at Indiana University South Bend, South Bend, IN.
5. Sept. 2007 – "Observations of High-Velocity Clouds Toward the Inner Galaxy: Evidence for a Galactic Wind?" Seminar presented at the University of Notre Dame, Notre Dame, IN.