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## Curriculum Vitae

# John C. Vernaleo, Ph.D.

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## Employment

2011-present: **Data Scientist**, Octopart

I work on web analytics for the Octopart website, focusing on building an analytics environment using python and mongodb. Octopart is a specialized search engine for electronic parts and components.

2010-2011: **Research Associate**, Ada Investment Management

I work as the primary developer supporting and enhancing the internal software platform for financial modeling and trading as well as enhancing the financial models. I also help support and enhance the overall IT infrastructure and manage the version control system.

2010-2011: **Scientific Programmer** for Fermi/GLAST Science Support Center at NASA/Goddard, working for Wyle Information Systems (part time/casual)

I continued to provide a low level of support for my previous NASA projects.

2008-2010: **Scientific Programmer** for Fermi/GLAST Science Support Center at NASA/Goddard, working for Wyle Information Systems

I worked on the Fermi ScienceTools (the analysis tools for NASA's Fermi Gamma Ray Space Telescope), concentrating on the spacecraft pointing simulator, the data binning tool, code portability, and code validation and testing. I maintained and enhanced the Fermi LAT dataserver. This is where the astronomical community can search and download the entire dataset for the main instrument on the Fermi telescope (<http://fermi.gsfc.nasa.gov/cgi-bin/ssc/LAT/LATDataQuery.cgi>).

## Education

2001-2008: Ph.D., Astronomy, University of Maryland, College Park; Advisor: Dr. Christopher Reynolds  
Title: *Hydrodynamic Models of AGN Feedback in Cooling Core Clusters*

2001-2003: M.S. Astronomy, University of Maryland, College Park

1996-2001: B.S. Physics and Astronomy, University of Rochester, Cum Laude, with Distinction

1996-2001: B.A. Philosophy, University of Rochester, Cum Laude, with High Distinction

## Computer Experience

Languages: Python, PERL, C/C++, FORTRAN 77/95, MySQL, MongoDB, JavaScript, IDL, C-shell scripting, Bash scripting, parallel programming with MPI, XML, Java, R, and Stata.

Systems: UNIX: GNU/Linux (esp. Ubuntu/Debian, Redhat/Fedora, Mandrake/Mandriva, and Gentoo), Mac OS X, Windows using Cygwin, and Solaris.

Miscellaneous: Hydrodynamic modeling; Setup and use of the condor batch processing system and BEOWULF cluster setup; Modifying and creating styles and classes for the L<sup>A</sup>T<sub>E</sub>X typesetting system; The POVray raytracer and other 3D visualization tools; Setup, use, and maintenance of TWiki web collaboration platform; Portability and maintenance issues in both current and legacy C++ and FORTRAN codes; Data formats such as HDF4/5 and FITS; Web applications; Version control with cvs, subversion, and git. Experience with CMMI. Experience with MarketQA and Bloomberg for downloading and processing financial datasets.

Webmaster for <http://stallman.org> (personal page of the founder of the GNU project, Richard Stallman), 2004-present.

Member W3C's HTML working group, 2007-present.

## Professional Interests

Web Analytics

High-Performance and Numerical Computing

Data Visualization

UNIX software development and portability

Hydrodynamics and Magneto-Hydrodynamics

General data handling/manipulation in Astrophysics

General data handling/manipulation in Finance

## Research Experience

2002-2008: Graduate Research Assistant, Department of Astronomy, University of Maryland, College Park

1999-2001: Undergraduate Research Assistant, Department of Physics and Astronomy Near Infrared Astronomy Lab, University of Rochester

1998-1999: Undergraduate Research Assistant, Department of Physics and Astronomy, University of Rochester

## Teaching Experience

2004-2007: Guest Lecture (Advanced UNIX) for Graduate Introduction to Research (Astro 695), University of Maryland, College Park

2003: Teaching Assistant, Introduction to Astronomy for Non-Majors (Astro 100), University of Maryland, College Park

2001-2002: Teaching Assistant, Observational Astronomy (Astro 310), University of Maryland, College Park

2001-2003: Teaching Assistant, Introduction to Astrophysics I and II (Astro 120 and 121), University of Maryland, College Park

## Honors and Awards

2010: NASA/Goddard Astrophysics Science Division Peer Award

2000: Sigma Pi Sigma, National Physics Honors Society

1996-2001: Dean's List, University of Rochester

## Society Memberships

2002-2011: American Astronomical Society

2002-2011: Historical Astronomy Division of the American Astronomical Society

2000-2008: Society of Physics Students

## Departmental Activities

2009-2010: Answer questions for Goddard's *Ask an Astrophysicist* website.

2006-2008: Graduate Student Representative on UMD Astronomy Department Computer Committee.

2005-2006: Organized weekly UMD astronomy theory group lunchtime talks.

## Publications

### Publications in Refereed Journals

1. *Energetic impact of jet inflated cocoons in relaxed galaxy clusters*, **J. C. Vernaleo**, C. S. Reynolds, 2007, ApJ, 671, 171
2. *AGN Feedback and Cooling Flows: The Failure of Simple Hydrodynamical Models*, **J. C. Vernaleo**, C. S. Reynolds, 2006, ApJ, 645, 83
3. *Buoyant radio lobes in a viscous intracluster medium*, C. S. Reynolds, B. McKernan, A. C. Fabian, J. M. Stone, **J. C. Vernaleo**, 2005, MNRAS, 357, 242

### Conference Abstracts and Proceedings

4. *The Fermi Science Support Center*, **J. C. Vernaleo**, Fermi Science Support Center, 2009, AAS Meeting 213, #468.04
5. *Hydrodynamic Models of AGN Feedback in Cooling Core Clusters*, **J. C. Vernaleo**, C. S. Reynolds, 2006, AAS/AAPT Joint Meeting 2007, AAS Meeting 209, #113.01
6. *AGN Heating of Cooling Flow Clusters: Problems with 3D Hydrodynamic Models*, **J. C. Vernaleo**, C. S. Reynolds, Proceedings of "Heating vs. Cooling in Galaxies and Clusters of Galaxies", August 2006 - Garching, Germany

7. *AGN Heating of Cooling Flow Clusters: The Failure of Simple Hydrodynamical Models*, **J. C. Vernaleo**, C. S. Reynolds, 2005, AAS Meeting 207, #55.03; Bulletin of the American Astronomical Society, 37, 1239
8. *Radio Galaxy Heating of Cooling Flow Clusters: Problems with Pure Hydrodynamic Models*, **J. C. Vernaleo**, C. S. Reynolds, 2005, 6 years of Science with Chandra Symposium

## Invited and Public Talks

9. *Looking Back to the Future*, guest speaker on Goddard's Astrophysical Science Division's Blueshift Podcast, December 16, 2009
10. *Astronomical Data's Long Road Home*, guest speaker on Goddard's Astrophysical Science Division's Blueshift Podcast, June 30, 2009
11. *Hydrodynamic Models of AGN Feedback on Cooling Cluster Gas, Galaxy and Black Hole Evolution: Towards a Unified View* November 30, 2007, Tucson, Arizona
12. *Hydro Simulations: How We Can Model Fluids to Understand Astronomy.*, University of Maryland Observatory Open House, October 5, 2007