Christopher D. **Ramos**

FREELANCE WEB DEVELOPER

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"Peace through knowledge."

Education

Mississippi State University	*Starkville, Mississippi*
M.S. IN PHYSICS	*Aug. 2009 - Dec. 2012*

- Defended thesis pertaining to brown dwarf astronomy.

Northern Arizona University	*Flagstaff, Arizona*
M.S. IN APPLIED PHYSICS	*Aug. 2007 - May 2009*

- Defended thesis pertaining to renewable synthetic fuels.

Lafayette College	*Easton, Pennsylvania*
B.A. IN PHYSICS	*Aug. 2003 - May 2007*

Master's Theses

The hinterland: compilation of nearby brown dwarfs and ultracool stars   *Mississippi State University*

DESCRIPTION

- This work is a compilation and analysis of ultracool dwarfs (UCDs) and brown dwarfs within 25 parsecs. I began by incorporating newly discovered (post 1991) cool companions to Gliese-Jahreiß stars that had been previously undetectable. I then expanded the compilation to include isolated UCDs and other nearby systems with at least one UCD component. Multiple systems are a panacea for astrophysical problems: by applying Kepler's laws, the model-independent mass of brown dwarfs and low mass stars can be determined and hence serve to constrain theory. This work puts this data into context by exploring the history of brown dwarf theory and reviewing open questions concerning their nature.

The catalytic hydrogenation of carbon dioxide: methanol as potentially carbon-neutral fuel   *Northern Arizona University*

DESCRIPTION

- We characterized a small fixed-bed reactor, which operated in a single-pass configuration. Hydrogen and carbon dioxide gas were reacted over a $Cu/ZnO/Al_2O_3$ catalyst to form methanol (byproducts water, carbon monoxide, and trace amounts of higher-order alcohols). We examined the effects of varying bed temperature, reactor pressure, gas-hourly space velocity (GHSV), and catalyst loading on methanol yield, selectivity, and space-time yield. Our study invites research of the question of how to optimize a reactor with recycle- loop as well as how to incorporate captured CO_2 into such as system. Research on this gas-to-liquids (GTL) process is relevant to the development of a sustainable liquid fuel.

Experience

freelance

various

WEBSITE DEVELOPER AND COMPUTER TROUBLESHOOTER

2013 — Present

- Troubleshooting client requests for computer, network, and other associated problems.
- Designing and developing websites for local small businesses and individuals.
- Interfacing with domain hosts and registrars, integrating with *Google and Bing*, and maintaining online services.
- Making a point of protecting client data with such technologies as (open) SSH and rsync; and adhering to non-disclosure agreements.

Bright Street House Co-op, Inc.

Burlington, VT

FINANCE COMMITTEE INFORMATION OFFICER

Jan. 2018 — Present

- Taking minutes and managing hardware.
- Digitizing financial documents and auditing expenses.

Burlington, VT

UNDERSECRETARY

Jan. 2017 — Jan. 2018

- Executed corporate governance obligations as a member of the first board of directors.
- Addressed security concerns via successful proposal.
- In the capacity of undersecretary, created and maintained a repository of data of mixed sensitivity for a new corporate entity using *Microsoft* and *Google* products.

Mississippi State University

remote

CONTRACT RESEARCH ASSISTANT

Feb. 2014 — May 2014

- Built upon research conducted at Mississippi State for master's thesis by expanding and maturing the compilation catalog of astronomical data that was the core product of this work. This catalog comprises astrometric, photometric, taxonomic, onomastic, and other pertinent data for nearly a thousand ultracool dwarf stars, brown dwarfs, and planets within 25 parsecs of the Solar System.

Starkville, MS

GRADUATE RESEARCH ASSISTANT (PART-TIME) WITH DEPARTMENT OF PHYSICS AND ASTRONOMY

Aug. 2011 — Dec. 2012

- Worked towards the development of a compilation catalog of ultracool dwarfs within twenty-five parsecs of the Sun, resulting in a master's thesis.
- Queried and parsed disparate astronomical databases and the literature in order to extract a global understanding of progress in the field of brown dwarf astronomy/astrophysics.
- Employed software such as MS Excel to construct said catalog, extracting numerous informative tables whilst tracking data authorship; MATLAB to generate plots; Scrivener to write and organize the written work; and LaTeX to bring it all together.

LABORATORY INSTRUCTOR

Jan. 2011 — Jul. 2011

- Worked as a physics laboratory instructor, conducting three sections per semester with a focus on classical mechanics and simple optics.
- Fostered an intimate educational experience by actively encouraging questioning and by working with students on a group-by-group basis.

PHYSICS TUTOR

Aug. 2009 — Dec. 2012

- Tutored undergraduate students, individually and in groups, in physics topics such as classical mechanics, optics, and electromagnetism at Mississippi State University's Learning Center.

Northern Arizona University

Flagstaff, AZ

GRADUATE RESEARCH ASSISTANT

Aug. 2007 — May 2009

- Worked on a multidisciplinary research project focused on methanol synthesis, resulting in a master's thesis and the publication of a refereed article in *energy & fuels* from ACS Publications.
- Funded by the Northern Arizona University TRIF program for Environmental Research, Development and Education for the New Economy; and partnered with Mogollon Brewing Company and Arizona High Spirits Distillery.

- Worked as a physics laboratory instructor, conducting three sections per semester with a focus on classical mechanics.
- Fostered an intimate educational experience by actively encouraging questioning and by working with students on a group-by-group basis.

Skills

Programming languages

- Most experienced with bash (Unix shell) and PHP
- Some experience with HTML, JavaScript/jQuery, and CSS/SASS
- Dabbled in Swift

Website development tools

- Most experienced with emacs, git, GitHub
- Some experience with yarnjs, npm, composer

Desktop applications & Miscellany

- Inkscape, Microsoft Excel
- Typing speed of 70 WPM

Writing

References

B. Doss, C. D. Ramos, and S. Atkins. Optimization of Methanol Synthesis from Carbon Dioxide and Hydrogen: Demonstration of a Pilot-Scale Carbon-Neutral Synthetic Fuels Process. *energy & fuels*, 23(9):4647–4650, August 2009. doi: $10.1021/\mathrm{ef}900466\mathrm{u}$. URL `http://pubs.acs.org/doi/abs/10.1021/ef900466u`.

C. D. Ramos. The catalytic hydrogenation of carbon dioxide: methanol as potentially carbon-neutral fuel. Master's thesis, Northern Arizona University, May 2009.

C. D. Ramos. Apotheosis, February 2010. URL `http://www.liquidimagination.silverpen.org/Issue5/Story1a.html`.

C. D. Ramos. Science serves as weapon against ignorance. *The Reflector*, February 3, 2011a.

C. D. Ramos. Disinformation hinders scientific efforts. *The Reflector*, February 17, 2011b.

C. D. Ramos. Proposed budget cuts threaten public welfare. *The Reflector*, February 21, 2011c.

C. D. Ramos. Fossil fuel consumption addressed. *The Reflector*, March 10, 2011d.

C. D. Ramos. Possibility of reactor meltdown threatens. *The Reflector*, March 24, 2011e.

C. D. Ramos. Some Christians may misunderstand atheism. *The Reflector*, April 8, 2011f.

C. D. Ramos. Why you should give a damn. *The Reflector*, August 2011g.

C. D. Ramos. Loss of Aiken Village impacts students. *The Reflector*, September 13, 2011h.

C. D. Ramos. Study of physics 'confronts you with the philosophical'. *Starkville Daily News*, January 26, 2012.

C. D. Ramos. The hinterland: compilation of nearby brown dwarfs and ultracool stars. Master's thesis, Mississippi State University, November 2012.

A. M. Tanner, C. Ramos, J. Gagne, A. R. Riedel, T. J. Henry, and Recons. A Catalog of Nearby Ultracool Dwarfs. In *American Astronomical Society Meeting Abstracts*, volume 225 of *American Astronomical Society Meeting Abstracts*, Jan. 2015.