Marissa Ramirez Zweiger

401 S. Gallaher View Rd
Apt. 44
Knoxville, TN 37919
✆ +1 (650) 305 0743
✉ mrz@cal.berkeley.edu
🖥 mzweig.github.io

Education

2011 — 2015 **BA Mathematics**, *University of California*, Berkeley.
Relevant Coursework: Numerical Solutions of Partial Differential Equations (Graduate), Numerical Analysis (Undergraduate), Mathematical Logic, Complex Analysis, Real Analysis, Concepts of Probability, Abstract Algebra, Linear Algebra and Differential Equations, Calculus

Undergraduate thesis

title *The Line-Based Discontinuous Galerkin Method for Equations of Fluid Dynamics*

supervisor Dr. Per-Olof Persson

description In this study, I examined the line-based discontinuous Galerkin (Line DG) method for convection-diffusion. This method is an extension of the standard discontinuous Galerkin method for the same equations. Like the standard DG method, Line DG is advantageous for convection-dominated problems with complex geometries, is highly parallelizable, and can be easily made higher order for increased accuracy. The line-based component takes advantage of the low number of connectivities in the problem by treating each dimension independently, increasing computational speed. Ultimately, we plan to extend this work to explore shock capturing. This project was funded by the McNair Scholars Program.

Achievements

2014-2015	**UCB McNair Scholar**	*The McNair Scholars Program*
Dec 2014	**Scored in Top Third of Participants**	*William Lowell Putnam Mathematical Competition*
Feb 2014	**Successful Participant**	*The Mathematical Contest in Modeling*

Languages

English	**Native**
Spanish	**Fluent**
Khmer	**Beginning**

Activities

Jun 2014 - present	**Board Member**, *Oakland Catholic Worker*, Oakland, CA.
2009 - 2015	**Camp Counselor**, *Mid Hudson Valley Camps*, Esopus, NY.

Oct 2014 - **Volunteer Tutor**, *San Quentin State Prison*, San Quentin, CA.
Jul 2015

Aug 2011 - **Outreach Volunteer**, *UCB RAZA Recruitment & Retention Center*, Berkeley, CA.
May 2015

Research Experience

Sep 2015 - **Post Bachelor's Research Associate, Radiation Transport Group**, *Oak Ridge*
present *National Laboratory*, Oak Ridge, TN.

○ Perform a detailed convergence analysis using the method of manufactured solutions on the radiation transport models employed in the RNSD code Exnihilo, including Sn, SPn, and MOC
○ Build a library of problems involving reactor analysis, radiation shielding, criticality safety, and/or dosimetry to be used to analyze new methods

May 2015 - **Undergraduate Researcher**, *Dr. Per-Olof Persson, Applied Mathematics*, UC
Aug 2015 Berkeley.

○ Developed a line-based discontinuous Galerkin solver for the Convection-Diffusion Equation.
○ Prepared a paper ready for publication in the McNair Scholars Journal.
○ Funded through the McNair Scholars Program.

Nov 2014 - **Undergraduate Researcher**, *Dr. Rachel Slaybaugh, Neutronics Research Group,*
Aug 2015 *Nuclear Engineering*, UC Berkeley.
○ Contributed to PyNE, the open source, Python library for nuclear engineers
○ Implemented in PyNE a Chebyshev Rational Approximation Method solver for burnup calculations
○ Mentored undergraduate student in PyNE development

Skills

Technical Python, Java, Matlab, Python, Latex, C++, UNIX, Git, vim

Conferences & Talks

The Line-Based Discontinuous Galerkin Method for Equations of Fluid Dynamics [TALK], *McNair Scholars Symposium, University of California, Berkeley, July 31st 2015*.

Software Development to Enable Next-Generation Computational Neutronics Capability [POSTER], *University and Industry Technical Interchange Review Meeting, University of Michigan, June 3rd 2015*.

PyNE: Python for Nuclear Engineers [WORKSHOP], *American Nuclear Society Meeting on Mathematics & Computation, Nashville, TN, April 23rd 2015*.