Marissa Ramirez Zweiger

mzweig@berkeley.edu | mzweig.github.io

Education

Expected 2021 — Doctor of Philosophy in Applied Science and Technology
with a designated emphasis in Computational and Data Science and Engineering
University of California, Berkeley
Advisors: Prof. Phillip Colella (Electrical Engineering and Computer Science) and Prof. Rachel Slaybaugh (Nuclear Engineering)

Aug 2018 — Master of Science in Nuclear Engineering
University of California, Berkeley
Advisor: Prof. Rachel Slaybaugh
Thesis: *A Two-Grid, Nonlinear Diffusion Acceleration Method for the Multigroup S_N Equations with Neutron Upscattering*

Aug 2015 — Bachelor of Arts in Mathematics
University of California, Berkeley
Senior Project: *The Line-Based Discontinous Galerkin Method for Equations of Fluid Dynamics*

Research Experience

May 2019 - Present — Graduate Student Researcher at Lawrence Berkeley National Lab
Applied Numerical Methods Group
Project: Embedded Boundary Methods

July 2016 - May 2019 — Graduate Student Researcher at University of California, Berkeley
Prof. Rachel Slaybaugh, Nuclear Engineering
Project: Two-Grid, Nonlinear Diffusion Acceleration Method

Sep 2015 - June 2016 — Graduate Research Assistant at Oak Ridge National Lab
Radiation Transport Group, Exnihilo Development Team
Projects: Rayleigh Quotient Iteration with Multigrid in Energy Preconditioning, A Parallel Efficiency Model for Radiation Transport

May - Aug 2015 — Undergraduate Researcher at University of California, Berkeley
Prof. Per-Olof Persson, Applied Mathematics
Project: The Line-Based Discontinuous Galerkin Method for Equations of Fluid Dynamics

Nov 2014 - Aug 2015 — Undergraduate Researcher at University of California, Berkeley
Prof. Rachel Slaybaugh, Nuclear Engineering
Project: The Implementation of the Chebyshev Rational Approximation Method into PyNE

Teaching

Part-Time Faculty	Mathematics	Foothill College	Fall 2017 - Fall 2018
Graduate Student Tutor	McNair and Firebaugh Scholars Programs	University of California Berkeley	Spring 2017
Co-Instructor	Intermediate Algebra	Patten University Prison University Project	Fall 2016

Scholarships, Awards, and Grants

Apr 2016	5M CPU Hours (Co-PI with Dr. Steven Hamilton)	Oak Ridge Leadership Computing Facility
2014 - 2015	UC Berkeley McNair Scholar	The McNair Scholars Program

Languages

English, Native; Spanish, Fluent; Khmer, Beginning

Computer Skills

Python, Matlab, FORTRAN, C++, OpenMP, MPI, UNIX, Git

Service Activities

2019	Research Mentor	McNair Scholars Program	Berkeley, CA
2017 - 2018	Member	Chancellor's Council on Students of Color	Berkeley, CA
2014 - 2018	Board Member	Oakland Catholic Worker	Oakland, CA
2009 - 2016	Camp Counselor	Mid-Hudson Valley Camps	Esopus, NY
Apr 2016	Lead Judge	Southern Appalachian Science Fair	Knoxville, TN
2014 - 2015	ESL & Math Tutor	San Quentin State Prison	San Quentin, CA
2011 - 2015	Outreach Volunteer	Raza Recruitment & Retention Center	Berkeley, CA
2010 - 2011	ESL & Math Teacher	The Ponheary Ly Foundation	Cambodia

Training

Sixth Summer School on Formal Techniques. May 22 - 27, 2016. Menlo College, Atherton, CA.

Publications

[Submitted 2019] M. Ramirez Zweiger, W. Zheng, R. N. Slaybaugh, *A Two-Grid, Nonlinear Diffusion Acceleration Method for the Multigroup S_N Equations with Neutron Upscattering*. The Journal of Computational and Theoretical Transport.

R. N. Slaybaugh, M. Ramirez Zweiger, T. Pandya, S. Hamilton, and T.M. Evans. *Eigenvalue Solvers for Modeling Nuclear Reactors on Leadership Class Machines*. Nuclear Science and Engineering. **190** (2017) 31-44.

M. Ramirez Zweiger, R. N. Slaybaugh. *The Implementation of the Chebyshev Rational Approximation Method for Burnup Calculations Into PyNE*. The UC Berkeley McNair Scholars Journal (2016).

Conferences

Talks

M. Ramirez Zweiger, W. Zheng, R. N. Slaybaugh, *A Two-Grid, Nonlinear Diffusion Acceleration Method for the Multigroup S_N Equations with Neutron Upscattering*. The International Conference on Transport Theory; October 19th, 2017; Monterey, CA.

M. Ramirez Zweiger, T. M. Evans, S. P. Hamilton, T. M. Pandya, R. N. Slaybaugh, *Modeling Parallel Efficiency for Discrete Ordinates Transport Calculations*. American Nuclear Society Student Conference; April 6th-9th, 2017; Pittsburgh, PA.

M. Ramirez Zweiger, T. M. Evans, S. P. Hamilton, T. M. Pandya, R. N. Slaybaugh, *Radiation Transport Using Rayleigh Quotient Iteration with Multigrid in Energy Preconditioning*. The Copper Mountain Conference on Iterative Methods; March 24th, 2016; Copper Mountain, CO.

M. Ramirez Zweiger, P. O. Persson. *The Line-Based Discontinuous Galerkin Method for Equations of Fluid Dynamics*. The McNair Scholars Symposium; July 31st, 2015; University of California, Berkeley.

Workshops

PyNE: Python for Nuclear Engineers. American Nuclear Society Student Conference; Mar 31st, 2016; Madison, WI.

PyNE: Python for Nuclear Engineers. ANS Joint International Meeting on Mathematics and Computation; Apr 23rd, 2016; Nashville, TN.