
DONNA CALHOUN

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EDUCATION

- **Ph.D. Applied Mathematics.** University of Washington (1999). Thesis : “A Cartesian grid method for solving the streamfunction vorticity equations in irregular geometries”. Thesis advisor: Prof. Randall J. LeVeque.
- **M.S. Mathematics.** University of Washington, Seattle, WA. (1988). Master’s degree specialization in optimization. Advisor : Prof. James Burke.
- **B.A. Mathematics.** Pomona College, Claremont, CA. (1985)

ACADEMIC RESEARCH POSITIONS

- Associate Professor (2016-present) **Dept. of Mathematics**, Boise State University, Boise, ID.
- Assistant Professor (2011-2016) **Dept. of Mathematics**, Boise State University, Boise, ID.
- Visiting Fellow (Summer 2015) **Isaac Newton Institute for Mathematical Sciences**, Cambridge, England. Program : “Coupling Geometric PDEs with Physics for Cell Morphology, Motility and Pattern Formation”.
- CAES Affiliate Faculty (2012-present) **Center for Advanced Energy Studies**, Idaho National Laboratory, Idaho Falls, ID.
- Visiting Fellow (Fall 2012) **Isaac Newton Institute for Mathematical Sciences**, Cambridge, England. Program : “Multiscale Numerics for the Ocean and Atmosphere”.
- Acting Assistant Professor (2004 - 2005) **Dept. of Mathematics**, University of Washington, Seattle, WA.
- Post-doctoral researcher (2002-2004) **Dept. of Applied Mathematics**, University of Washington, Seattle, WA. Work supported by the Department of Energy SciDAC program. Research supervisor: Prof. Randall J. LeVeque.
- Post-doctoral researcher (1999-2002) **Courant Institute of Mathematical Sciences**, New York University, NYC, NY. Work supported by the Department of Energy. Research Supervisor: Prof. Marsha Berger.
- Research assistant (1995-1999) **Department of Applied Mathematics**, University of Washington, Seattle, WA. Thesis advisor : Prof. Randall J. LeVeque.
- Research assistant (1997-1998) **Program in Geophysics**, University of Washington, Seattle, WA. Developed 3d boundary element code for modeling growth of ice crystals in the atmosphere. Work supported by NSF research grant. Research directed by Prof. Marcia Baker.

GOVERNMENT AND INDUSTRY POSITIONS

- Research Engineer (2005 - 2010) **Commissariat l'Énergie Atomique**, *DEN/DM2S/SFME-LTMF* Saclay, France. Division of Nuclear Energy. Research engineer in computational fluids and mechanics group responsible for modeling hydrogen combustion and multiphase flows. My primary responsibilities include using an adaptive mesh refinement code (CHOMBOCLAW, EBCHOMBO, CLAWPACK) to simulate combustion processes. Head of Laboratory : Alain Bengaouer
- Summer Employee (Summer, 1995) **Lawrence Livermore National Laboratory**, Livermore CA. Center for Computational Sciences and Engineering. Developed tools for adaptive mesh refinement code. Research supervisor : Dr. Ann Almgren.
- Senior Analyst/Programmer (1991 - 1994) Hazardous Material Response and Assessment Division, Western Regional Office, **National Oceanic and Atmospheric Administration**, Seattle, WA. Supported development of simulation software for modeling accidental release of hazardous materials into the environment, including oil spills, chlorine gas releases and fires involving toxic chemicals.
- Software Developer (1993-1995) **Rogue Wave Software, Inc.** Boulder, CO. Developed SPARSE-MAT.H++, a C++ sparse matrix package. Work done under contract as a consultant to Rogue Wave.
- Director of Applications and Third Party Products (1989-1991) **Aptech Systems, Inc.**, Kent, WA. Developed third-party statistical and mathematical applications for Aptech's scientific programming language GAUSS. Also developed a linear programming package for GAUSS.
- Software Developer (1989 - 1991) **Desktop Photogrammetry, Inc.** San Mateo, CA. Primary developer of PhotoCAD, a system which can be used for photogrammetric reconstruction of objects. Work done under contract as a consultant to Desktop Photogrammetry.

TEACHING POSITIONS

- Associate Professor (2016-present) **Department of Mathematics**, Boise State University, Boise, Idaho. Courses taught include graduate and undergraduate courses in scientific computing, numerical analysis, complex analysis and linear algebra.
- Assistant Professor (2011-2016) **Department of Mathematics**, Boise State University, Boise, Idaho. Courses taught include graduate and undergraduate courses in scientific computing, numerical analysis, and linear algebra.
- Instructor (Pan-American Advanced Studies Institute, 2013), Instructor in 10 day course on Summer School "The science of predicting and understanding tsunamis, storm surges and tidal phenomena". Gave 3 hour-long lectures and ran lab sessions on finite-volume schemes in the GeoClaw software. Valparaiso, Chile (January 2-13, 2013).
- Instructor (Summer School RTG Short Course, 2011) **Department of Mathematics**, University of Washington, Seattle, Washington. One of two instructors on three week course on finite volume methods for hyperbolic problems. Students are advanced undergraduates and beginning graduate students and were supported by the University of Washington Research Training Grant on Inverse Problems and Partial Differential Equations. Course taught jointly with Randall J. LeVeque (Dept. of Applied Mathematics, Univ. of Washington). June 20 - July 8, 2011.
- Instructor (2009, 2010) **Institut Galilée**, Department of Mathematics, Université Paris 13, Villetaneuse, France. Instructor for 5 week (15 hours) course on scientific computation, with directed projects. Students are third year engineering students.
- Acting Assistant Professor (2004 - 2005) **Department of Mathematics**, University of Washington, Seattle, WA. Instructor for three-quarter sequence in upper division numerical analysis. In

addition to theoretical numerical analysis, the course also focused on practical aspects of computational science, including development of skills in Matlab and Fortran programming.

- Instructor (Winter and Fall semesters, 2001) **New York University**. New York, NY. Instructor for the Department of Mathematics. Taught two semesters of pre-calculus. Held lectures in large lecture hall and organized 2-3 TAs working under my supervision.
- Teacher (1988-1989) Substitute teacher for several private high schools in the Seattle area, including **Lakeside, Overlake** and **The Bush School**. Was on the short list for full-time teaching position at Lakeside; was offered a full-time teaching position at Overlake.
- Instructor (1987-1988) **University of Washington**, Department of Mathematics, Seattle, WA. Fully responsible for college level algebra and pre-calculus courses.
- Instructor (Summers 1987 and 1989) **Phillips Academy Summer Session**. Instructor for Phillips Academy. Taught high school algebra and pre-calculus. Developed and taught a course on Fractal Geometry for high school students.
- Teaching Assistant (1986-1987) **University of Washington**, Department of Mathematics, Seattle, WA. Held quiz sections for Calculus.
- Teaching Fellow (1985-1986) **Phillips Academy**, Department of Mathematics, Andover, MA. Taught four courses of pre-calculus and high school algebra for the Mathematics Department. Was asked to stay as full-time instructor.
- Teaching Fellow (Summer 1984) **Northfield Mount Hermon School**, Northfield, MA. Teaching assistant for junior high school level algebra course.

JOURNAL PUBLICATIONS AND REFEREED CONFERENCE PROCEEDINGS

- D. Duplyakin, J. Brown, and D. Calhoun, "Evaluating active learning with cost and memory awareness", in 32nd IEEE International Parallel and Distributed Processing Symposium (IPDPS), Vancouver, WA, May 21-25 2018 (accepted).
- D. Calhoun and C. Burstedde, "ForestClaw : A parallel algorithm for patch-based adaptive mesh refinement on a forest of quadtrees", (2017), arXiv:1703.03116.
- K. T. Mandli, A. J. Ahmadi, M. Berger, D. Calhoun et al., "Clawpack: Building an open source ecosystem for solving hyperbolic PDEs", *Peer J Computer Science*, 2(68) (2016).
- P. H. Lauritzen, P. A. Ullrich, C. Jablonowski, P. A. Bosler, D. Calhoun, et al., "A standard test case suite for two-dimensional linear transport on the sphere: Results from a collection of state-of-the-art schemes", *Geosci. Model Dev.*, 7 (2014) pp. 105-145.
- C. Burstedde, D. Calhoun, K. T. Mandli, and A. R. Terrel, "ForestClaw: Hybrid forest-of-octrees AMR for hyperbolic conservation laws", in *Parallel Computing : Accelerating Computational Science and Engineering (CSE)*, M. Bader, A. Bode, H.-J. Bungartz, M. Gerndt, G. R. Joubert, and F. Peter, eds., vol. 25 of *Advances in Parallel Computing*, IOS Press, 2014. 253-262.
- J-R. Ling, D. Calhoun, C. Poupon, D. Le Bihan, "Numerical simulation of diffusion MRI signals using an adaptive time-stepping method", *Physics in Medicine and Biology*, 59 (2014), pp. 441-454.
- D. Calhoun, C. Helzel, "A finite-volume method for solving parabolic equations on logically Cartesian curved surface meshes", *SIAM J. Sci. Comp.*, Vol. 31, Issue 6. pp. 4066-4099 (2009).
- M. Berger, D. Calhoun, C. Helzel, R. J. LeVeque, "Logically rectangular finite volume methods with adaptive refinement on the sphere", *Phil. Trans. R. Soc.*, Vol. 367, No. 1907, pp. 4483-4496 (2009).

- J. Li, D. Calhoun, L. Brush, “Efficient thermal field computation in phasefield models”, *J. Comp. Phys.*, Vol. 228, Issue 24. pp. 8945–8957 (2009).
- A. Kato, L. M. Moskal, P. Schiess, M. Swanson, D. Calhoun, W. Stuetzle, ”Capturing tree crown formation through implicit surface reconstruction using airborne lidar data”, *Remote Sensing of Environment* Vol. 113, pp. 1148-1162 (2009)
- D. Calhoun, C. Helzel, R. J. LeVeque. “Logically rectangular grids and finite volume methods for PDEs in circular and spherical domains”. *SIAM Review* Vol. 50, Issue 4, pp. 723-752 (2008).
- D. Calhoun, H. Paillère. “Wave propagation algorithms and adaptive mesh refinement for CFD simulations of potential hydrogen explosions in nuclear containment structures”. *Proceedings of the Joint International Topical Meeting on Mathematics and Computation and Supercomputing in Nuclear Applications*. Monterey, California, April (2007).
- A. Kato, D. Calhoun, G. Schreuder, P. Schiess, “Estimating Crown Volume through Implicit Surface Reconstruction from LIDAR Points for Forest Fire Simulation”, *Proceedings of the American Society for Photogrammetry and Remote Sensing*, November (2006).
- D. Calhoun, C. Helzel, R. J. LeVeque. “A Finite Volume Grid for Solving Hyperbolic Problems on the Sphere”, *Hyperbolic Problems : Theory, Numerics, Applications*, Springer. Proceedings of the Eleventh Int. Conf. on Hyperbolic Problems, Lyon, France. July 17-21 (2006).
- D. Calhoun and R. J. LeVeque, “An accuracy study of mesh refinement on mapped grids”, Proceedings of the *Chicago Workshop on Adaptive Mesh Refinement*, September, 2003. Series: Lecture Notes in Computational Science and Engineering, Vol 41. December 2004.
- D. Calhoun, “A Cartesian grid method for solving the two-dimensional streamfunction vorticity equations in irregular regions”, *J. Comp. Phys.*, Vol. 176, pp. 231-275 (2002).
- Stephen E. Wood, M. Baker and D. Calhoun. “New model for the vapor growth of hexagonal ice crystals in the atmosphere”, *J. of Geophys. Res.*, Vol. 106, pp. 4845-4870 (2001).
- D. Calhoun, R. J. LeVeque, “Cartesian grid methods for fluid flow in complex geometries”, *Computational Modeling in Biological Fluid Dynamics*, IMA Volumes in Mathematics and its Applications, Vol. 124, pp. 117–143 (2001).
- D. Calhoun, R.J. LeVeque, “Solving the advection-diffusion equation in irregular geometries”, *J. Comp. Phys.* Vol. 157, pp. 143–180 (2000).
- D. Calhoun and Roy Overstreet, “Sensitivity Analysis of a Dynamical System Using C++”, Special Issue of *Scientific Programming*, Vol. 2, No. 4, pp. 157-169 (1993).

TECHNICAL REPORTS

- D. Calhoun and N. Coulon, “Thermodynamics and transport of homogenous air-vapor-liquid mixture through cracks in concrete (Part II)”, *Technical Report, Commissariat a l’Energie Atomique*, RAPPORT SFME/LTMF/RT/10-014/A, Direction de l’Energie Nucleaire (2010).
- D. Calhoun “Using Cartesian Embedded Boundary Methods to Simulate Detonations in Complex Geometry”, *Technical Report, Commissariat a l’Energie Atomique*, RAPPORT SFME/LTMF/RT/09-010/A, Direction de l’Energie Nucleaire (2009).
- D. Calhoun, “Thermodynamics and transport of homogenous air-vapor-liquid mixture through cracks in concrete”, *Technical Report, Commissariat a l’Energie Atomique*, RAPPORT SFME/LTMF/RT/09-007/A, Direction de l’Energie Nucleaire (2009).

- D. Calhoun. “Wave propagation algorithms and adaptive mesh refinement for simulating hydrogen explosions in nuclear containment buildings”, *Technical Report, Commissariat a l’Energie Atomique*, RAPPORT SFME/LTMF/RT/07-14/A, Direction de l’Energie Nucleaire (2007).

SOFTWARE

- FORESTCLAW. A parallel, adaptive library for solving PDEs in logically Cartesian, mapped, multiblock domains. In collaboration with Carsten Burstedde, Univ. of Bonn, Germany. (<http://www.forestclaw.org>).

SELECTED TALKS

- “Volcanic ash transport using parallel, adaptive Ash3d”, Joint Pacific Northwest Numerical Analysis Seminar and Northwest SIAM Chapter meeting, Corvallis Oregon, (October 27-29, 2017).
- “GeoClaw software development and testing”, SIAM Conference on the Mathematical and Computational Issues in the Geosciences”, Erlangen, Germany (Sept. 11-14, 2017).
- “Solving depth averaged equations using parallel GeoClaw”, SIAM Conference on the Mathematical and Computational Issues in the Geosciences”, Erlangen, Germany (Sept. 11-14, 2017).
- “ForestClaw/Geo : Modeling dam break flooding using scalable adaptive quadtrees”, Invited talk. Numerical Analysis Seminar, University of Dusseldorf, Germany. (June 7, 2017).
- “Multi-rate Runge-Kutta-Chebyshev time-stepping for parabolic equations on adaptively refined meshes”, Numerical Methods for PDEs and their Applications. Institut Mittag-Leffler, Sweden. (May 29 - June 2, 2017).
- “ForestClaw/Geo : Modeling dam break flooding using scalable adaptive quadtrees”, Invited talk. Kaust workshop on predictive complex computational fluid dynamics, KAUST, Saudi Arabia. (May 22-24, 2017).
- “Geo-ForestClaw : Modeling dam-break flooding using scalable, adaptive, quadtrees”, 2017 Clifford Lectures, *Hyperbolic PDEs, Software and Geohazard Applications*, Tulane University, New Orleans. (April 5-7, 2017).
- “Adaptive Mesh Refinement for Geophysical Flow Modeling”, SIAM CSE. Atlanta, Georgia. (March 1, 2017).
- “Adaptive mesh refinement for solving PDEs on logically Cartesian mapped multiblock quadtree domains”, Invited talk, Applied Mathematics, Colorado State University, Fort Collins, CO. (Sept. 22, 2016).
- “Algorithmic components of the ForestClaw adaptive mesh library : Multi-rate time stepping”, SIAM Parallel Processing, University Pierre and Marie Curie, (April 12-15, 2016).
- “Recent parallel results using dynamic quadtree refinement for solving hyperbolic conservation laws in 2d”, SIAM Parallel Processing, University Pierre and Marie Curie, (April 12-15, 2016).
- “A mapped, multiblock software library for solving conservation law on locally adaptive Cartesian meshes”, Workshop on Dynamic Adaptivity, Simula Research Lab, Norway. (December 9-19, 2015).
- “ForestClaw : Mapped, multiblock adaptive quadtrees”, SIAM Computational Science and Engineering (mini-symposium organizer). Salt Lake City, Utah. (March 13-18, 2015).

- “Multi-resolution modeling and simulation in natural hazards modeling”, Invited talks, Japan Agency for Earth-Science and Technology (JAMSTEC), Yokohama, Japan (February 18, 2015). Chiba University, Chiba, Japan. (February 19, 2015).
- “ForestClaw : Mapped, multiblock adaptive quadtrees”. Invited talk, HPC³. Kaust, Saudi Arabia. (November 9-13 2014).
- “Parallel, adaptive framework for mapped, multi-block domains”. SIAM Parallel Processing. Portland, Oregon. (February 18-21, 2014).
- “Parallel, adaptive framework for mapped, multi-block domains”. PDEs on the Sphere. NCAR (Boulder, CO). (April 7-11, 2014).
- “Adaptive Mesh Refinement: Boldy going beyond single stage methods”, Invited presentation, Department of Mathematics, University of Texas, Arlington. (November 1, 2013).
- *Developer’s Workshop and Hackathon*, Presentation of *ForestClaw*, July 22-26, 2013. University of Washington, Seattle, WA. (July 23, 2013).
- “A hybrid adaptive mesh framework for finite volume schemes on a forest of locally refined Cartesian meshes”, SIAM Geosciences Conference, June 17-20, 2013. Padua, Italy (June 20, 2013).
- “A hybrid adaptive mesh framework for finite volume schemes on a forest of locally refined Cartesian meshes”, SIAM Conference on Computational Science and Engineering, Feb. 24-28, 2013, Boston, MA. (February 26, 2013).
- “A locally adaptive Cartesian finite volume framework for solving PDEs on surfaces”, Invited presentation, University of Oxford, UK (November 29th, 2012).
- “A conservative finite-volume approach to modeling thermodynamics and transport in air-water-vapor mixtures”, Isaac Newton Institute, Cambridge, UK (Nov. 19th, 2012).
- “Solving the Riemann problem for linear and linearized hyperbolic systems”, Isaac Newton Institute, Cambridge, UK (Nov. 19th 2012).
- “A logically Cartesian, adaptively refined two-patch sphere grid for modeling transport in the atmosphere”, Invited talk, University of Warwick, UK (Nov. 16, 2012).
- “A logically Cartesian, Adaptively refined two-patch sphere grid for modeling transport in the atmosphere”, PDEs on the Sphere. Cambridge, UK (Sept. 24-28, 2012).
- “Patch-based AMR Algorithms”, HPC³. King Abdullah University of Science and Technology (Kaust), (invited) Saudi Arabia. Feb 2-10, 2012.
- “An Approximate Riemann solver for modeling stream flow in cracks in concrete nuclear reactor containment buildints”, *The Second Annual CAES Workshop on Modeling, Simulation and Visualization*, **Boise State University**, Boise, ID. September 8-9, 2011.
- “A conservative finite volume approach to modeling thermodynamics and transport in air-vapor-water mixtures”, **ICIAM 2011**, Vancouver, Canada. (mini-symposium organizer). July 18-22, 2011.
- “A conservative finite volume approach to modeling thermodynamics and transport in air-vapor-water mixtures”, (invited) **University of Idaho**, Moscow, ID. May 5, 2011.
- “Wave Propagation Algorithm of LeVeque on the Sphere”, **Workshop on Transport Schemes on the Sphere**, National Center for Atmospheric Research (NCAR), Boulder, CO. March 30-31, 2011.

GRANTS PENDING OR AWARDED

- National Science Foundation "Parallel, adaptive Cartesian grid algorithms for natural hazards modeling". PI : Donna Calhoun. Amount requested : \$322,540. Division of Mathematical Sciences. (Pending).
- National Science Foundation. "A parallel algorithmic framework for flexible time discretization on adaptive Cartesian meshes". PI : Donna Calhoun. Award Amount : \$194,000. Division of Mathematical Sciences, Award # 1419108. Funded (3 years, starting Aug. 2014).
- National Science Foundation. "Massively Parallel Adaptive Computational Methods for Improved Predictions of Atmospheric Flows over Complex Terrain" PI : Inanc Senocak (Dept. of Mech. Eng., BSU). Co-PIs : Donna Calhoun, Grady Wright (Dept. of Math., BSU), Elena Sherman (Dept. of Comp. Sci., BSU). Program in Sustainable Software Infrastructure (SSI) Award # SSE-1440638. Award Amount \$500, 000). Funded (3 years, starting Sept. 2014).
- National Science Foundation. "Pacific Northwest Numerical Analysis Seminar 2012" (PNWNAS 2012). Award covered speakers and a limited number of students travel costs. PI : Donna Calhoun; Co-PIs : Grady Wright and Jodi Mead (Dept. of Math., BSU). Award Amount \$8,200. Funded (July 2012).

GRADUATE STUDENTS SUPERVISED

- Talin Mirzakhanian, Master's student, BSU Dept. of Mathematics. (Spring, 2017). *Multi-rate Runge-Kutta-Chebyshev Time Stepping for Parabolic Equations on Adaptively Refined Meshes*. Funded as Master's student through NSF award # 1419108. *Role : Supervisor and Chair of Master's Degree Committee*
- Yuan-Hsian (Melody) Shih, Research Assistant (former Columbia University Master's student; current NYU PhD student). (January-July, 2017). Simulation of volcanic ash cloud modeling using ForestClaw. Joint with with the USGS, Vancouver, WA. Funded through NSF grant # 1419108. *Role : Research supervisor*
- John Hutchins, Master's student, BSU Department of Mathematics (July, 2013). *Computing curvature and curvature normals on smooth logically Cartesian surface meshes*. Current position : Staff researcher, Dept. of Chemical Engineering, University of Utah. *Role : Supervisor and Chair of Master's Degree Committee*
- Jean Schneider, Master's student, BSU Department of Mathematics (May, 2012). *Perfect stripes from a general Turing model in different geometries*. Current position : Lecturer, Department of Mathematics, Boise State University. *Role : Supervisor and Chair of Master's Degree Committee*

SUPERVISORY COMMITTEES

- Diego Domenzain, PhD student, BSU Dept. of Geosciences. (2016-present) *Imaging by joint inversion of electromagnetic waves and DC currents*. *Role : Member, Thesis committee. Supervisor : Jodi Mead*
- Katherine Drake, Master's student, BSU Dept. of Mathematics. (Spring, 2017). *A Stable Algorithm for Divergence-Free and Curl-Free Radial Basis Functions in the Flat Limit*. *Role : Member, Thesis committee. Supervisor : Grady Wright*.
- David Sanchez, Master's student, BSU Dept. of Mathematics. (Spring 2014). *A projection method using radial basis functions for incompressible Navier-Stokes on the rotating sphere*. *Role : Member, Thesis committee. Supervisor : Grady Wright*.

- Kevin Aiton, Master's student, BSU Dept. of Mathematics. (Fall 2013). *A radial basis function partition of unity method for transport on the sphere. Role : Member, Thesis committee. Supervisor : Grady Wright.*
- Micah Johnson, Master's student, BSU Dept. of Mechanical and Biomedical Engineering, (Spring 2015). *A numerical investigation of a solidification model for snow micro-structure metamorphosis. Role : Member, Thesis committee. Supervisor : Inanc Senocak*

UNDERGRADUATE STUDENTS SUPERVISED

- Brenten Peck, Undergraduate Research, BSU Dept. of Mathematics, (Fall 2017 - present). Develop direct solver for 3d adaptive octree meshes. Worked supported by NSF GEM3d grant. *Role : Research group member*
- Scott Aiton, Undergraduate Research, BSU Dept. of Mathematics, Dept. of Computer Science (Fall 2016-present). Develop direct solver for 3d adaptive octree meshes. Worked supported by NSF GEM3d grant. *Role : Research group member*
- Jordan Engstrom, Senior Thesis, BSU Dept. of Geosciences. (Fall 2017). "Petrogenesis and Thermodynamic Modeling of Magmas from the Los Nevados Cones: Villarrica Volcano, Southern Chile" *Role : Senior Thesis Supervisor*
- Aaron Solt, Undergraduate, BSU Dept. of Mathematics. (Fall, 2015). Senior Thesis project on implementing schemes for maintaining conservation in the parallel, adaptive ForestClaw code. *Role : Senior Thesis supervisor*
- Ryan Camacho, Undergraduate, BSU Dept. of Mathematics. (Fall, 2015). Student project on developing animations for curves traced out by cycloids. *Role : Supervisor*
- Cody Casteneda, Undergraduate, BSU Dept. of Mechanical Engineering. (April 2015 – Dec. 2015). Work with Idaho National Laboratory to develop flooding models using GEOCLAW and FORESTCLAW. Funded as undergraduate research through NSF Award # 1419108. *Role : Research supervisor*
- Stephanie Potter, Undergraduate, BSU Department of Mathematics. (Oct 2013 - Spring 2015). Recipient of BSU SRI Grant (\$500) for undergraduate research. "Google Earth visualization of tsunami activity". Current position : Graduate student, Dept. of Mathematics, Boise State. *Role : Research supervisor.*

UNIVERSITY SERVICE

- (2017-present) Personnel and Budget Committee, Department of Mathematics.
- (2017-present) Coordinator, Minor Degree in Computational Science and Engineering.
- (2017-present) Hiring committee member, Dept. of Mathematics.
- (2015-present) One of two College of Arts and Sciences Representatives to the university Graduate Council.
- (2013-present) Undergraduate Internship Coordinator, Dept. of Mathematics.
- (2015-2016) Member of the Honor's College committee to review and assist students in their Marshall Scholars Applications.

- (2013-2014) Member, Applied Math Working Group, to develop new course in Applied Mathematics for Scientists and Engineers (Math 427/527). Presented the new course to math dept. faculty, and to the University Curriculum committee. This effort was lead by Inanc Senocak, Dept. of MBE.
- Part of working group, led by Inanc Senocak (MBE), to design the CSE (Computational Science and Engineering) Minor degree at BSU.
- (2011-2013) Calculus Committee. Coordinated with textbook publisher to do a trial run of new text for the Calculus sequence, and introduced the use of the WebAssign Online homework system.
- Maintain GEMRES website and virtual network for computational research activities at Boise State <http://www.gemres.org>.

OUTREACH

- (April, 2015) Worked with the GEMSET Girls Club, organized by the Discovery Center in Boise to introduce girls to STEM fields. I presented the project “Bunny Hop!”, an introduction to fractals using hopping bunnies as the motivation.
- (January, 2011) Presented poster on computational methods for pattern formation at the Boise State Discover Engineering Day (January 24, 2011)

PROFESSIONAL SERVICE AND MEMBERSHIP

- Member of Society for Industrial and Applied Mathematics (SIAM).
- Editorial Board, Special Issue : SIAM Journal of Scientific Computing.
- Proposal panel member : Department of Energy (DOE) Office of Science ASCR grants; National Science Foundation (NSF)
- Technical Program Member, Supercomputing 2016.
- Review for numerous journals in numerical software development, and partial differential equations, including *Journal of Computational Physics*, *SIAM Journal of Scientific Computing*, *Advances in Computational Mathematics*, *IMA Journal of Numerical Analysis*; *Numerical Mathematics : Theory, Methods and Applications*, *ACM Transactions on Mathematical Software*, *Computers & Fluids*, *Communications in Applied Mathematics and Computational Science*.