Charles Puelz

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EDUCATION

Rice University, Houston, TX *May 2013–Present*
Ph.D. in Computational and Applied Mathematics, expected 2017.
Thesis Advisors: Beatrice Riviere and Craig G. Rusin

Rice University, Houston, TX *May 2013*
M.A. in Computational and Applied Mathematics
Thesis Advisor: Mark Embree
Title: "Improved Spectral Calculations for Discrete Schrödinger Operators"

Wesleyan University, Middletown, CT *May 2011*
B.A. in Mathematics and B.A. in Physics
Member of Phi Beta Kappa
Honors in Mathematics

HONORS AND AWARDS

Alan Weiser Memorial Travel Award, Rice CAAM department. *April 2016*

National Library of Medicine training fellowship through the Gulf Coast Consortia for the Quantitative Biomedical Sciences. *Awarded 2014, renewed 2015 and 2016*

Honorable Mention in the National Science Foundation GRFP competition. *April 2013*

SIAM Student Chapter Certificate of Recognition. *April 2013*

Rae Shortt Prize, Wesleyan math department. *April 2010*

Robertson Math Award, Wesleyan math department. *April 2009*

REFEREED ARTICLES

"Cardiovascular Mechanics in the Early Stages of Pulmonary Hypertension: a Computational Study." S. Acosta, C. Puelz, B. Rivière, D. Penny, K. Brady, C. G. Rusin. *submitted* 2017.

"A priori error estimates of Adams-Bashforth discontinuous Galerkin methods for scalar nonlinear conservation laws." C. Puelz, B. Rivière. *submitted*, 2017.

"Convergence of IPDG for Coupled Time–Dependent Navier–Stokes and Darcy Equations." N. Chabaane, V. Girault, C. Puelz, B. Rivière. *submitted*, 2016.

"Comparison of Reduced Blood Flow Models using Runge–Kutta Discontinuous Galerkin Methods." C. Puelz, S. Čanić, B. Rivière, C. G. Rusin. *Applied Numerical Mathematics*, 115, pp. 114–141, 2017.

"Numerical Method of Characteristics for One–Dimensional Blood Flow." S. Acosta, C. Puelz, B. Rivière, C. G. Rusin, D. Penny. *Journal of Computational Physics*, 294, pp. 96-109, 2015.

"Spectral Approximation for Quasiperiodic Jacobi Operators." C. Puelz, M. Embree, J. Fillman. *Integral Equations and Operator Theory*, 82(4), pp. 533-554, 2015.

THESES AND TECHNICAL REPORTS

"Numerical Methods and Applications of Reduced Models of Blood Flow." *PhD Thesis, 2017.*

"Improved Spectral Calculations for Discrete Schrödinger Operators." *Masters Thesis, 2013.*

"Visualizing the Pareto Surface." B. Hosseini, G. Liu, C. Puelz, S. Tracht, M. Smilovic. *IMA Preprint Series 2401, 2012.*

COMPUTER SKILLS

Computer Languages	FORTRAN, *C*, *C*$^{++}$, MATLAB
Tools	SVN, Emacs, Git, Eclipse
Experience with	Python

RESEARCH INTERESTS

Numerical partial differential equations, mathematical modeling, discontinuous Galerkin methods, cardiovascular mathematics, clinical decision support, biomedical informatics, spectral theory and largescale eigenvalue algorithms

PROFESSIONAL MEMBERSHIP

SIAM, AMS

SERVICE AND EXPERIENCE

Co–organizer of AMS minisymposium *January 5, 2017*
Joint Mathematics Meeting. Minisymposium entitled: Mathematics in Physiology and Medicine

Teaching Assistant for Matrix Analysis and Numerical PDE *Fall 2014, Spring 2015*
Rice University

Lab Instructor for Matrix Analysis Lab *Spring 2013*
Rice University

Rice Learning Assistant *Fall 2012*
Rice University

SIAM student chapter president *Fall 2012, Spring 2013*
Rice University

Research Assistant under the direction of Laurent Demanet *Summer 2010*
Massachusetts Institute of Technology

Research Assistant under the direction of Tsampikos Kottos *Summer 2009*
Max Planck Institute for Dynamics and Self–Organization

Teaching Assistant, Tutor, and Grader *Spring 2008 – Spring 2011*
Wesleyan Math Department

CONFERENCES AND WORKSHOPS

Joint Mathematics Meeting *January 4–7, 2017*
Atlanta, GA

SIAM Life Sciences *July 11–14, 2016*
Boston, MA

National Library of Medicine Informatics Training Conference *June 27–28, 2016*
Ohio State University
Columbus, OH

AMS MRC: Mathematics in Physiology and Medicine *June 19–25, 2016*
Snowbird Resort
Snowbird, UT

Finite Element Rodeo *March 4–5, 2016*
Texas A&M University
College Station, TX

AMIA Annual Symposium *November 14–18, 2015*
San Francisco, CA

25th Keck Annual Research Conference *October 15–16, 2014*
Bioscience Research Collaborative
Houston, TX

National Library of Medicine Informatics Training Conference *June 23–24, 2015*
National Institutes of Health
Bethesda, MD

Advanced Numerical Methods in the Mathematical Sciences *May 4–7, 2015*
Texas A&M University
College Station, TX

Finite Element Rodeo *February 27–28, 2015*
Southern Methodist University
Dallas, TX

Joint Mathematics Meeting *January 10–13, 2015*
San Antonio, TX

National Library of Medicine Informatics Training Conference *June 17–18, 2014*
University of Pittsburgh
Pittsburgh, PA

24th Keck Annual Research Conference *November 7, 2014*
Bioscience Research Collaborative
Houston, TX

Gene Golub SIAM Summer School on Numerical Linear Algebra *July 22–August 9, 2013*
Fudan University
Shanghai, China

Recent Advances in Harmonic Analysis and Spectral Theory *August 6–10, 2012*
Texas A&M University
College Station, TX

Mathematical Modeling in Industry XVI *July 18–27, 2012*
University of Calgary
Calgary, Alberta

TALKS AND POSTERS

One–Dimensional Blood Flow Models: Analysis and Applications *July 2016*
Talk at SIAM Life Sciences
Boston, MA

One–Dimensional Model of Blood Flow Discretized with Runge–Kutta Discontinuous Galerkin Methods *July 2016*
Poster at SIAM Life Sciences
Boston, MA

Computational Modeling of Hypoplastic Left Heart Syndrome for Improved Decision Support *June 2016*
Poster at NLM Informatics Training Conference
Ohio State University
Columbus, OH

Discontinuous Galerkin Discretizations of One–Dimensional Blood Flow Models *March 2016*
Talk at the Finite Element Rodeo
Texas A&M University
College Station, TX

Mathematical Modeling of Congenital Heart Defects and Abnormal Hemodynamic Physiologies *December 2015*
Poster at the Sigma Xi (Rice and TMC chapter) Holiday Event
Houston, TX

Blood Flow Model for Improved Decision Support *November 2015*
Poster at the AMIA Annual Symposium
San Francisco, CA

A Closed–Loop Reduced Hemodynamic Model for the Simulation of Blood Flow in Patients with Hypoplastic Left Heart Syndrome *October 2015*
Poster at the 25th Keck Annual Research Conference
Bioscience Research Collaborative
Houston, TX

Numerical Methods for Reduced Blood Flow Models *June 2015*
Seminar talk at the National Institute of Standards and Technology
Gaithersburg, MD

Discontinuous Galerkin Methods for Reduced Blood Flow Models *May 2015*
Poster at the Advanced Numerical Methods in the Mathematical Sciences conference
Texas A&M University
College Station, TX

Discontinuous Galerkin Methods for Reduced Blood Flow Models *February 2015*
Talk at the Finite Element Rodeo
Southern Methodist University
Dallas, TX

An O($\mathbf{N^2}$) Eigenvalue Algorithm for Period–N Jacobi Operators *January 2015*
Talk at the Joint Mathematics Meeting
San Antonio, TX

Numerical Methods for One-Dimensional Blood Flow *November 2014*
Poster at the Keck Annual Research Conference
Bioscience Research Collaborative
Houston, TX

Spectra of Schrödinger Operators via Transfer Matrices *January 2014*
Talk at the Rice CAAM department graduate colloquium
Houston, TX

Electrical Networks and Polya's Theorem *January 2012*
Talk at the Rice CAAM department graduate colloquium
Houston, TX

Random Walks and Electrical Networks *April 2011*
Talk for the Wesleyan math department senior honors presentation
Middletown, CT

Oil Drilling and Mathematics *February 2011*
Talk at Wesleyan math department undergraduate colloquium
Middletown, CT