

# Béatrice M. Rivière

August 26, 2017

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## Experience

- **Chair**, Department of Computational and Applied, Mathematics, Rice University (2015 - present).
- **Noah Harding Chair**, Department of Computational and Applied, Mathematics, Rice University (2015 - present).
- **Professor**, Department of Computational and Applied Mathematics, Rice University (2013 - present).
- **Visiting Scientist**, Direction de recherche Mécatronique et Numérique, IFPEN (2016).
- **Affiliate Member Faculty**, McGowan Institute for Regenerative Medicine, University of Pittsburgh (2005-2014).
- **Visiting Professor**, IWR, Interdisciplinary Center for Scientific Computing, University of Heidelberg (2014).
- **Associate Professor**, Department of Computational and Applied Mathematics, Rice University (2008 - 2013).
- **Associate Professor**, Department of Mathematics, The University of Pittsburgh (2007 - 2008).
- **Assistant Professor**, Department of Mathematics, The University of Pittsburgh (2002 - 2007).
- **Post-Doctoral Fellow**, Texas Institute for Computational and Applied Mathematics, The University of Texas at Austin (2000 - 2002)
- **Research Assistant**, Texas Institute for Computational and Applied Mathematics, The University of Texas at Austin (1997 - 2000)
- **Teaching Assistant**, The University of Texas at Austin (1996 - 1997), The Pennsylvania State University (1994 - 1996).

## Research Grants

- Industrial projects (2014-2019) amount to \$2,343,957 (PI) and \$400,000 (co-PI).
- NSF-DMS 1312391: *Collaborative Research: Mathematical Modeling of Biological Processes in Edematous Tissue*, 2013-2017, \$209,105; PI. NSF math bio proposal; PI (coPi is Uray).
- NSF 1318348: *High Order in Time and Space Numerical Methods for Solving the Miscible Displacement Problem*, 2013-2017, \$229,830; PI.
- NSF 1160392: *2012 Finite Element Rodeo Conference*, \$2,000; PI.
- Texas Norman Hackerman Advanced Research Program Grant 003604-0015-2009: *Numerical Simulation of Carbon Dioxide Sequestration in Geologic Reservoirs*, \$149,000; 08/10-07/12; PI.
- NSF 0810422: *High order numerical methods for multiphysics couplings*, total cost \$341,912; 09/08-09/12; PI.

- NSF 0739261: *EMSW21-RTG: Complex Biological Systems Across Multiple Space and Time Scales*, total cost \$1,863,866; 06/08-05/12; original PI, coPIs are Ermentrout, Swigon, Yotov, new PI is Rubin.
- NSF 0506039: *Coupling complex flow and transport phenomena*, total cost \$150,000; 09/05-08/08; PI.
- DOE subcontract with New Mexico Tech: *Modeling of reactive transport through zeolite catalytic membrane*, total cost \$30,000; 08/05-07/06; PI.
- NIH 2P50 GM053789-09: Trauma Center Grant, Project V: Director of the math subaccount, 07/04-06/07, total cost \$131,224; PIs are Dr. T. R. Billiar, M.P. Fink, A.J. Bauer, B.R. Pitt, Y. Vodovotz, S.C. Watkins.
- AWM-NSF Mentoring Travel Grant, total cost \$3,270; 05/04-06/04.
- Central Research Development Fund, University of Pittsburgh, *Numerical simulations of multiphase processes in porous media*, total cost \$11,363, 07/03-06/05; PI.

### Postdoctoral Fellows

- Jennifer Young, Postdoc mentor 2010-2012: Modeling of intestinal edema.
- Richard Rankin, Postdoc mentor 2012-2014: Simulation of black-oil.
- Travis Thompson, Postdoc mentor 2015-2017: Modeling of intestinal edema.
- Florian Frank, Postdoc mentor 2014-present: Pore scale flow modeling.
- Nabil Chaabane, Postdoc mentor 2015-present: Coupled flow and geomechanics.
- Loic Capanera, Postdoc mentor 2017-present: Multiphase flow.

### Ph.D. Graduate Students

- Christopher Thiele, CAAM, Ph.D. Thesis supervisor since 09/16.
- Bryan Doyle, CAAM, Ph.D. Thesis supervisor since 05/16.
- Maurice Fabien, CAAM, Ph.D. Thesis supervisor jointly with M. Knepley since 08/15.
- Chen Liu, CAAM, Ph.D. Thesis supervisor since 05/15.
- Emily Hendryx, CAAM, Ph.D. Thesis supervisor jointly with C. Rusin since 01/14.
- Charles Puelz, CAAM, Ph.D. 2017. Thesis supervisor jointly with C. Rusin. Thesis title: "Numerical methods and applications for reduced models of blood flow". Charles is a postdoc at UNC.
- Jizhou Li, CAAM, Ph.D. 2015. Thesis title: "High order discontinuous Galerkin methods for simulating miscible displacement process in porous media with a focus on minimal regularity". Jizhou is the winner of the 2015 Ralph Budd Award for Research in Engineering. Jizhou is an employee of ExxonMobil.
- Yingpei Wang, CAAM, Ph.D. 2014. Thesis supervisor jointly with L. Borcea. Thesis title: "On the approximation of the Dirichlet to Neumann map for high contrast two phase composites and its applications to domain decomposition methods". Yingpei is an employee of Oracle.
- Xin Yang, CAAM, Ph.D. 2014. Thesis title: "Simulation of CO2 sequestration in saline aquifers using discontinuous Galerkin method". Xin is an employee of Google.
- Kun Liu, CAAM, Ph.D. 2013. Thesis title: "Discontinuous Galerkin Methods for Parabolic Partial Differential Equations with Random Input Data". Kun is the Director of Business Development at Panton, Inc.
- Sevtap Ozisik, Middle East Technical University (METU), Ph.D. 2012. Thesis supervisor, jointly with S. Kaya. Thesis title: "Fully Computable Convergence Analysis of Discontinuous Galerkin Finite Element Approximation with an Arbitrary Number of Levels of Hanging Nodes". Sevtap is an Assistant Professor in Turkey at Selcuk University.

- Aycil Cesmelioglu, CAAM, Ph.D. 2010. Thesis supervisor. Thesis title: “Complex Flow and Transport Phenomena in Porous Media”. Aycil is an Assistant Professor at Oakland University.
- Prince Chidyagwai, CAAM, Ph.D. 2010. Thesis supervisor. Thesis title: “Coupling Surface Flow with Porous Media Flow”. Prince is an Assistant Professor at Loyola University Maryland.
- Qi Mi, University of Pittsburgh, Ph.D. 2007. Thesis supervisor, jointly with D. Swigon. Thesis title: “Modeling The Wound Healing In Necrotizing Enterocolitis And Diabetic Foot Ulcer”. Qi is an Assistant Professor in the School of Health and Medicine at University of Pittsburgh.
- Yekaterina Epshteyn, University of Pittsburgh, Ph.D. 2007. Thesis supervisor. Thesis title: “HP Primal Discontinuous Galerkin Finite Element Methods For Two-Phase Flow In Porous Media”. Yekaterina is an Associate Professor in the department of Mathematics at University of Utah.
- Songul Kaya, University of Pittsburgh, Ph.D. 2004. Thesis supervisor jointly with W. Layton. Thesis title: “Numerical Analysis of a Variational Multiscale Method”. Winner of the 2004 Hales Distinguished Research Award for best doctoral dissertation. Songul is an Associate Professor at Middle East Technical University, Turkey.

### Master Students

- Chen Liu, CAAM, M.A. 2016. Thesis title: “Pore-scale Simulation of Fluid Flow Using Discontinuous Galerkin Methods”. Chen continued in the Ph.D. program.
- Rujeko Chinomona, CAAM, M.A. 2016. Thesis title: “Black Oil Simulation Utilizing a Central Finite Volume Scheme”. Rujeko is a Ph.D. student at SMU.
- Brianna Lynn, CAAM, M.A. 2016. Thesis title: “Optimal Control of Flow and Transport Equations Using Discontinuous Galerkin Methods”. Brianna is employed by NSA.
- Emily Hendryx, CAAM, M.A. 2015. Thesis title: “Identifying ECG clusters in congenital heart disease”. Thesis co-supervisor, jointly with Craig Rusin. Emily continued in the Ph.D. program.
- Jun Tan, CAAM, M.A. 2013. Thesis title: “Theoretical Convergence of Discontinuous Galerkin Methods for Poroelasticity Equations”.
- Jizhou Li, CAAM, M.A. 2013. Thesis title: “Locally Mass-Conservative Method with Discontinuous Galerkin in Time for Solving Miscible Displacement Equations under Low regularity”. Jizhou continued in the Ph.D. program.
- Xin Yang, CAAM, M.A. 2012. Thesis title: “A Coupled Finite Volume and Discontinuous Galerkin Method for Convection-Diffusion Problems”. Xin continued in the Ph.D. program.
- Shirin Sardar, CAAM, M.A. 2012. Thesis title: “Penalty-Free Discontinuous Galerkin Methods for the Stokes and Navier-Stokes Equations”.
- Toni Tullius, CAAM, M.A. 2011. Thesis title: “Accelerated Discontinuous Galerkin Solvers with the Chebyshev Iterative Method on the Graphics Processing Unit”. Thesis co-supervisor, jointly with T. Warburton.
- Kun Liu, CAAM, M.A. 2010. Thesis title: “Discontinuous Galerkin Methods for Elliptic Partial Differential Equations with Random Coefficients”. Kun continued in the Ph.D. program.
- Christina Ho, CAAM, M.A. 2010. Thesis title: “Discontinuous Galerkin Formulation for Multi-component Multiphase Flow”. Christina is a reservoir engineering consultant at Haliburton.
- Ahmet Izmirliglu, University of Pittsburgh, M.S. 2008. Thesis title: “High Order Discontinuous Galerkin Methods for 1D Parabolic Equation”.
- Michael Chiacchiero, University of Pittsburgh, M.S. 2007. Thesis title: “Efficient PETSc Solvers for Discontinuous Galerkin Methods Applied to Elliptic Problems”. Michael is a Professor of Mathematics at Edison State College.

### Undergraduate Students

- Grace Jenkins, CAAM, Spring 2017.

- James Phillip, MECH, Summer 2016.
- James Lee, CAAM, Summer 2015, Summer and Fall 2016.
- Justin Dong, Chemical Engineering, Spring 2013, Fall 2013, Spring 2014. His research results appeared in a paper of SIAM Undergraduate Research Online (SIURO, vol. 7) and in a paper of Computational Geosciences..
- Yichen Lu, Chemical Engineering, Summer and Fall 2011, Spring 2012.
- Joey Huchette, CAAM, Spring and Summer 2011. His research results appeared in a paper of SIAM Undergraduate Research Online (SIURO, vol. 5).
- John Vogelgesang, CAAM, Spring 2011.
- David Medina, AGEP participant, Summer 2011.
- Yuekai Sun, CAAM, Summer and Fall 2009.
- Shantay Branton, AGEP participant, Summer 2009.
- William Klieber, University of Pittsburgh, Bachelor of Philosophy, Honors College, 2007. Thesis title: “Numerical Simulations of Two-Phase Flow”.

## Education

### **Doctor of Philosophy, Computational and Applied Mathematics, May 2000**

The University of Texas at Austin, Austin, TX.

*Specialization:* Finite Element Methods for Surface and Subsurface Flows.

Dissertation: “Discontinuous Galerkin Methods for Solving the Miscible Displacement Problem in Porous Media”, advisor Dr. M.F. Wheeler.

### **Master of Science, Mathematics, May 1996**

The Pennsylvania State University, University Park, PA.

*Specialization:* Algebraic Topology, advisor Dr. N. Higson.

### **Diplome d’Ingénieur, July 1995**

Ecole Centrale de Lyon, Lyon, France.

*Specialization:* Mathematics applied to computing and modeling.

### **Licence de Mathématiques, June 1993**

Claude-Bernard University, Lyon, France.

## Book

B. Rivière, Discontinuous Galerkin Methods for Solving Elliptic and Parabolic Equations: Theory and Implementation, SIAM 2008, ISBN-10:089871656X.

## Refereed Journal Publications

1. M. Fabien, M. Knepley, **B. Rivière**. Heterogeneous Computing for a Hybridizable Discontinuous Galerkin Geometric Multigrid Method, submitted, 2017.
2. N. Chaabane, V. Girault, **B. Rivière**, T. Thompson. A Stable Enriched Galerkin Element for the Stokes Problem, submitted, 2017.
3. C. Puelz, S. Acosta, **B. Rivière**, D. Penny, K. Brady, C.G. Rusin, A Computational Study of the Fontan Circulation with Fenestration or Hepatic Vein Exclusion, Computers in Biology and Medicine, to appear, 2017
4. C. Thiele, M. Araya-Polo, F.O. Alpak, **B. Rivière**, F. Frank. Inexact hierarchical Scale Separation: a Two-Scale Approach for Linear Systems from Discontinuous Galerkin Discretizations, Computers & Mathematics with Applications, to appear, 2017.
5. C. Puelz, B. Riviere. A Priori Error Estimates of Adams-Bashforth Discontinuous Galerkin Methods for Scalar Nonlinear Conservation Laws, Journal of Numerical Mathematics, to appear, 2017.

6. S. Acosta, C. Puelz, **B. Rivière**, D.J. Penny, K.M. Brady, C.G. Rusin. Cardiovascular Mechanics in the Early Stages of Pulmonary Hypertension: a Computational Study, *Biomechanics and Modeling in Mechanobiology*, to appear, 2017.
7. C. Puelz, S. Canic, B. Riviere, C.G. Rusin. Comparison of Reduced Models for Blood Flow Using Runge Kutta Discontinuous Galerkin Methods, *Applied Numerical Mathematics*, 115, p.114-141, 2017.
8. N. Chaabane and **B. Rivière**. A Sequential Discontinuous Galerkin Method for the Coupling of Flow and Geomechanics, *Journal of Scientific Computing*, to appear, 2017.
9. N. Chaabane, V. Girault, C. Puelz, **B. Rivière**. Convergence of IPDG for Coupled Time Dependent Navier-Stokes and Darcy Equations, *Journal of Computational and Applied Mathematics*, 324, p.25-48, 2017.
10. **B. Rivière**, J. Tan, T. Thompson. Error Analysis Of Primal Discontinuous Galerkin Methods For A Mixed Formulation Of The Biot Equations, *Computers and Mathematics with Applications*, 73, p.666-683, 2017.
11. V. Girault, J. Li, **B. Rivière**. Strong Convergence of the Discontinuous Galerkin Scheme for the Low Regularity Miscible Displacement Equations, *Numerical Methods for Partial Differential Equations*, 33 (2), p.489-513, 2017.
12. V. Girault, J. Li, **B. Rivière**. Strong Convergence of Discrete DG Solutions of the Heat Equation, *Journal of Numerical Mathematics*, 24 (4), p.235–252, 2016.
13. O. Alpak, F. Frank, **B. Rivière**. A Phase-Field Method for the Direct Simulation of Two-Phase Flows in Pore-Scale Media Using a Non-Equilibrium Wetting Boundary Condition, *Computational Geosciences*, 20 (5), p. 881-908, 2016.
14. J. Dong, **B. Rivière**. A Semi-Implicit Method for Incompressible Three-Phase Flow in Porous Media, *Computational Geosciences*, 20 (6), p. 1169-1184, 2016.
15. J. Li, **B. Rivière**. Numerical Modeling of Miscible Viscous Fingering Instabilities by High Order Methods, *Transport in Porous Media*, 113 (3), p. 607-628, 2016.
16. J. Li, **B. Rivière**. High Order Discontinuous Galerkin Method for Simulating Miscible Flooding in Porous Media, *Computational Geosciences*, 19 (6), p. 12511268, DOI:10.1007/s10596-015-9541-4, 2015.
17. J. Li, **B. Rivière** and N. Walkington. Convergence of a High Order Method in Time and Space for the Miscible Displacement Equations, *ESAIM: Mathematical Modelling and Numerical Analysis*, 49, p. 953-976, 2015.
18. J. Li and **B. Rivière**. Numerical Solutions of the Incompressible Miscible Displacement Equations in Heterogeneous Media, *Computer Methods in Applied Mechanics and Engineering*, 292, p. 107–121, DOI:10.1016/j.cma.2014.10.048, 2015.
19. S. Acosta, C. Puelz, **B. Rivière**, D. Penny, C. Rusin. Numerical Method of Characteristics for One-Dimensional Blood Flow, *Journal of Computational Physics*, 294, p. 96-109, 2015.
20. R. Rankin, **B. Rivière**. A High Order Method for Solving the Black-Oil Problem in Porous Media, *Advances in Water Resources*, 78, p.126–144, 2015.
21. J. Young, S. Ozisik, **B. Rivière**, M. Shamim. A Comprehensive Mathematical Framework for Modeling Intestinal Smooth Muscle Cell Contraction with Applications to Intestinal Edema, *Mathematical Biosciences*, 262, p.206–213, 2015.
22. **B. Rivière** and X. Yang. Convergence Analysis Of A Coupled Method for Time-Dependent Convection-Diffusion Equations, *Numerical Methods for Partial Differential Equations*, 30 (1), p. 133-157, 2014.
23. K. Liu and **B. Rivière**. Discontinuous Galerkin Methods for Elliptic Partial Differential Equations with Random Coefficients, *International Journal of Computer Mathematics*, 90 (11), p. 2477-2490, 2013.

24. **B. Rivière** and S. Sardar. Penalty-Free Discontinuous Galerkin For Incompressible Navier-Stokes Equations, *Mathematical Models and Methods in Applied Sciences (M3AS)*, 24 (6) p.1217–1236, 2014.
25. V. Girault, G. Kanschat and **B. Rivière**. Error Analysis for a Monolithic Discretization of Coupled Darcy and Stokes Problems, *Journal of Numerical Mathematics*, 22, p.109–142, 2014, also IMA preprint 2390.
26. **B. Rivière**. Discontinuous Finite Element Methods for Coupled Surface-Subsurface Flow and Transport Problems, *IMA Volumes in Mathematics and its Applications: Recent Developments in Discontinuous Galerkin Finite Element Methods for Partial Differential Equations*, Springer, p. 259-279, 2013.
27. D. E. Keyes, L. C. McInnes, C. Woodward, W. D. Gropp, E. Myra, M. Pernice, J. Bell, J. Brown, A. Clo, J. Connors, E. Constantinescu, D. Estep, K. Evans, C. Farhat, A. Hakim, G. Hammond, G. Hansen, J. Hill, T. Isaac, X. Jiao, K. Jordan, D. Kaushik, E. Kaxiras, A. Koniges, K. Lee, A. Lott, Q. Lu, J. Magerlein, R. Maxwell, M. McCourt, M. Mehl, R. Pawlowski, A.P. Randles, D. Reynolds, **B. Rivière**, U. Rüde, T. Scheibe, J. Shadid, B. Sheehan, M. Shephard, A. Siegel, B. Smith, X. Tang, C. Wilson, and B. Wohlmuth. Multiphysics Simulations: Challenges and Opportunities, special issue of *International Journal of High Performance Computing Applications*, 27 (1), p.4–83, 2013.
28. J. Young, **B. Rivière**, K. Uray, and C. Cox. A Mathematical Model of Intestinal Edema Formation, *Mathematical Medicine and Biology*, 31 (1), p.1-15, 2014.
29. A. Cesmelioglu, V. Girault, and **B. Rivière**. Time-Dependent Coupling of Navier-Stokes and Darcy Flows, *ESAIM: Mathematical Modelling and Numerical Analysis*, to appear, 2012.
30. A. Cesmelioglu and **B. Rivière**. Existence Of A Weak Solution For The Fully Coupled Navier-Stokes/Darcy-Transport Problem, *Journal of Differential Equations*, 252 (7), p. 4138-4175, 2012.
31. P. Chidyagwai and **B. Rivière**. A Two-grid Method For Coupled Free Flow With Porous Media Flow, *Advances in Water Resources*, 34, p.1113-1123, 2011.
32. **B. Rivière** and N. Walkington. Convergence Of A Discontinuous Galerkin Method For The Miscible Displacement Under Low Regularity, *SIAM Journal on Numerical Analysis*, 49, p.1085-1110, 2011.
33. P. Chidyagwai, I. Mishev and **B. Rivière**. On The Coupling Of Finite Volume And Discontinuous Galerkin Method For Elliptic Problems, *Journal of Computational and Applied Mathematics*, 231 p.2193-2204, 2011, doi:10.1016/j.cam.2010.10.017, also technical report TR10-10.
34. T. Wihler and **B. Rivière**, Discontinuous Galerkin Methods For Second-Order Elliptic PDE With Low-Regularity Solutions, *Journal of Scientific Computing*, 46 (2), p. 151-165, 2011.
35. G. Kanschat and **B. Rivière**, A Strongly Conservative Finite Element Method For The Coupling Of Stokes And Darcy flow, *Journal of Computational Physics*, 229, p.5933-5943, doi 10.1016/j.jcp.2010.04.021, 2010
36. P. Chidyagwai and **B. Rivière**, Numerical Modelling of Coupled Surface and Subsurface Flow Systems, *Advances in Water Resources*, 33, p.92-105, 2010.
37. P. Chidyagwai and **B. Rivière**, On the Solution of the Coupled Navier-Stokes and Darcy Equations, *Computer Methods in Applied Mechanics and Engineering*, 198, p. 3806-3820, 2009.
38. J. Proft and **B. Rivière**, Discontinuous Galerkin Methods for Convection-Diffusion Equations with Varying and Vanishing Diffusivity, *International Journal of Numerical Analysis and Modeling*, 6 (4), p.533-561, 2009.
39. J. Guzman and **B. Rivière**, Sub-Optimal Convergence of Non-Symmetric Discontinuous Galerkin Methods for Odd Polynomial Approximations, *J. Scient. Comp.*, 40, p. 273-280, 2009
40. A. Cesmelioglu and **B. Rivière**, Primal Discontinuous Galerkin Methods For Time-Dependent Coupled Surface And Subsurface Flow, *J. Scient. Comp.*, 40, p.115-140, 2009
41. **B. Rivière**, Y. Epshteyn, D. Swigon and Y. Vodovotz, A Simple Mathematical Model of Signaling Resulting from the Binding of Lipopolike Receptor 4 Demonstrates Inherent Preconditioning Behavior, *Mathematical Biosciences*, 217 (1) p. 19-26, 2009

42. A. Cesmelioglu and **B. Rivière**, Analysis of Time-Dependent Navier-Stokes Flow Coupled with Darcy Flow, *J. Numer. Math.*, 16 (4) p. 249-280, 2008
43. V. Girault, **B. Rivière**, DG Approximation of Coupled Navier-Stokes and Darcy Equations by Beaver-Joseph-Saffman Interface Condition, *SIAM Journal on Numerical Analysis*, 47, p. 2052-2089, 2009.
44. Y. Epshteyn, T. Khan and **B. Rivière**, Numerical Solution of a One-Dimensional Inverse Problem by the Discontinuous Galerkin Method, *Mathematics and Computers in Simulation*, 79 p. 1989-2000, 2009.
45. Y. Epshteyn, **B. Rivière**, Analysis of hp Discontinuous Galerkin Methods for Incompressible Two-Phase Flow, *Journal of Computational and Applied Mathematics*, 225 p. 487-509, 2009.
46. Y. Epshteyn, **B. Rivière**, Convergence of High Order Methods for Miscible Displacement, *International Journal of Numerical Analysis and Modeling*, 5 p.47-63, 2008.
47. Q. Mi, D. Swigon, **B. Rivière**, S. Cetin, Y. Vodovotz, D. Hackam, One-Dimensional Elastic Continuum Model of Enterocyte Layer Migration, *Biophysical Journal*, 93 p.3745-3752, 2007.
48. Q. Mi, **B. Rivière**, G. Clermont, D.L. Steed, Y. Vodovotz, Agent-Based Modeling of Inflammation and Wound Healing: Insights into Diabetic Foot Ulcer Pathology and the Role of Transforming Growth Factor- $\beta$ 1, *Wound Repair and Regeneration*, 15 (5), p.671-682, 2007.
49. **B. Rivière**, S. Shaw and J.R. Whiteman, Discontinuous Galerkin Finite Element Methods for Dynamic Linear Solid Viscoelasticity Problems, *Numerical Methods for Partial Differential Equations*, 23 (5) p.1149-1166, 2007.
50. Y. Epshteyn and **B. Rivière**, Estimation of Penalty Parameters for Symmetric Interior Penalty Galerkin Methods, *Journal of Computational and Applied Mathematics*, 206 p.843-872, 2007.
51. **B. Rivière** and S. Shaw, Discontinuous Galerkin Finite Element Approximation of Nonlinear Non-Fickian Diffusion in Viscoelastic Polymers, *SIAM Journal on Numerical Analysis*, 44 (6) p.2650-2670, 2006, also technical report BICOM 05/06.
52. S. Kaya, W. Layton and **B. Rivière**, Subgrid Stabilized Defect Correction Methods for the Navier-Stokes Equations, *SIAM Journal on Numerical Analysis*, 44 (4) p.1639-1654, 2006.
53. Y. Epshteyn and **B. Rivière**, Fully Implicit Discontinuous Finite Element Methods for Two-Phase Flow, *Applied Numerical Mathematics*, 57 (4) p.383-401, 2007.
54. W. Klieber and **B. Rivière**, Adaptive Simulations of Two-Phase Flow by Discontinuous Galerkin Methods, *Computer Methods in Applied Mechanics and Engineering*, 196 p.404-419, 2006.
55. Y. Epshteyn and **B. Rivière**, On the Solution of Incompressible Two-Phase Flow by a p-Version Discontinuous Galerkin Method, *Communications in Numerical Methods in Engineering*, 22 p.741-751, 2006.
56. **B. Rivière** and V. Girault, Discontinuous Finite Element Methods for Incompressible Flows on Subdomains with Non-Matching Interfaces, *Computer Methods in Applied Mechanics and Engineering*, 195 p.3274-3292, 2006.
57. S. Kaya and **B. Rivière**, A Two-Grid Stabilization Method for Solving the Steady-state Navier-Stokes Equations, *Numerical Methods for Partial Differential Equations*, 22 (3) p.728-743, 2006, also TR-MATH 04-06.
58. V. Girault, **B. Rivière** and M.F. Wheeler, A Splitting Method Using Discontinuous Galerkin for the Transient Incompressible Navier-Stokes Equations, *Mathematical Modelling and Numerical Analysis (M2AN)* (previously RAIRO), 39 (6) p.1115-1148, 2005, also TR-MATH 04-08.
59. S. Kaya and **B. Rivière**, A Discontinuous Subgrid Eddy Viscosity Method for the Time Dependent Navier-Stokes Equations, *SIAM Journal on Numerical Analysis*, 43 (4) p.1572-1595, 2005, also TR-MATH 03-18.
60. **B. Rivière**, Analysis of a Discontinuous Finite Element Method for the Coupled Stokes and Darcy Problems, *Journal of Scientific Computing*, 22 (1) p.479-500, 2005.

61. **B. Rivière** and I. Yotov, Locally Conservative Coupling of Stokes and Darcy Flows, *SIAM Journal on Numerical Analysis*, 42 (5) p.1959-1977, 2005, also TR-MATH 03-08.
62. V. Girault, **B. Rivière** and M.F. Wheeler, A Discontinuous Galerkin Method with Non-Overlapping Domain Decomposition for the Stokes and Navier-Stokes Problems, *Mathematics of Computation*, 74 p.53-84, 2005.
63. **B. Rivière**, Analysis of a Multi-Numerics/Multi-Physics Problem, *Numerical Mathematics and Advanced Applications, ENUMATH 2003*, ed. Feistauer, Dolejsi, Knobloch and Najzar, p.726-735, Springer-Verlag 2004.
64. **B. Rivière**, S. Shaw, M.F. Wheeler and J.R. Whiteman, Discontinuous Galerkin Finite Element Methods for Linear Elasticity and Quasistatic Linear Viscoelasticity, *Numerische Mathematik*, 95 (2) p.347-376, 2003.
65. P. Bastian and **R. Rivière**, Superconvergence and H(div) Projection for Discontinuous Galerkin Methods, *International Journal for Numerical Methods in Fluids*, 42 (10) p.1043-1057, 2003.
66. **B. Rivière** and M.F. Wheeler, Discontinuous Finite Element Methods for Acoustic and Elastic Wave Problems, *Contemporary Mathematics*, 329 p.271-282, 2003.
67. **B. Rivière** and M.F. Wheeler, A Posteriori Error Estimates for a Discontinuous Galerkin Method Applied to Elliptic Problems. Log number: R74, *Computers and Mathematics with Applications*, 46 (1) p.141-164, 2003.
68. **B. Rivière** and M.F. Wheeler, Non Conforming Methods for Transport with Nonlinear Reaction, *Contemporary Mathematics*, 95 p.421-432, 2002.
69. S. Sun, **B. Rivière** and M.F. Wheeler, A Combined Mixed Finite Element and Discontinuous Galerkin Method for Miscible Displacement Problem in Porous Media, *Recent Progress in Computational and Applied PDEs*, Kluwer Academic/Plenum Publishers, p.321-348, 2002.
70. E. Jenkins, **B. Rivière** and M.F. Wheeler, A Priori Error Estimates for Mixed Finite Element Approximations of the Acoustic Wave Equation, *SIAM Journal on Numerical Analysis*, 40 (5) p.1698-1715, 2002.
71. **B. Rivière** and M.F. Wheeler, Coupling Locally Conservative Methods for Single Phase Flow, *Computational Geosciences*, 6 (3) p.269-284, 2002.
72. **B. Rivière** and M.F. Wheeler, Discontinuous Galerkin Methods for Flow and Transport Problems in Porous Media, *Communications in Numerical Methods in Engineering*, 18 (1) p.63-68, 2002.
73. **B. Rivière**, M.F. Wheeler and V. Girault, A Priori Error Estimates for Finite Element Methods Based on Discontinuous Approximation Spaces for Elliptic Problems, *SIAM Journal on Numerical Analysis*, 39 (3) p.902-931, 2001.
74. **B. Rivière**, M.F. Wheeler and K. Banas, Part II. Discontinuous Galerkin Method Applied to a Single Phase Flow in Porous Media, *Computational Geosciences* 4 p.337-349, 2000.
75. **B. Rivière**, M.F. Wheeler, Locally Conservative Algorithms for Flow, *The Mathematics of Finite Elements and Applications X (MAFELAP 1999)* ed. J. Whiteman, p.29-46, 2000, Elsevier.
76. **B. Rivière**, M.F. Wheeler and V. Girault, Improved Energy Estimates for Interior Penalty, Constrained and Discontinuous Galerkin Methods for Elliptic Problems. Part I., *Computational Geosciences* 3 p.337-360, 1999.
77. **B. Rivière**, M.F. Wheeler, A Discontinuous Galerkin Method Applied to Nonlinear Parabolic Equations, *Discontinuous Galerkin Methods: Theory, Computation and Applications*, ed. B. Cockburn, G.E. Karniadakis and C.-W. Shu, p.231-244, 1999.
78. G. Baker, J. Gunnels, G. Morrow, **B. Rivière**, R. van de Geijn, PLAPACK: High Performance through High-Level Abstraction, icpp, p. 414, 1998 International Conference on Parallel Processing (ICPP'98), 1998.

#### Non-refereed Publications



1. F. Frank, C. Liu, F. Alpak, M. Araya-Polo and **B. Rivière**. A Discontinuous Galerkin Finite Element Framework for the Direct Numerical Simulation of Flow on High-Resolution Pore-Scale Images. Proceedings of the Society for Petroleum Engineers conference, SPE-182606-MS, 2017.
2. C. Thiele, M. Araya-Polo, F. Alpak, **B. Rivière** and F. Frank. Inexact Hierarchical Scale Separation: An Efficient Linear Solver for Discontinuous Galerkin Discretizations. Proceedings of the Society for Petroleum Engineers conference, SPE-182671-MS, 2017.
3. G. Kanschat, V. Girault and **B. Rivière**. Error Analysis For A Monolithic Discretization Of Coupled Darcy And Stokes Problems, Oberwolfach Report, 2014.
4. V. Girault, G. Kanschat and **B. Rivière**. On the Coupling of Incompressible Stokes or Navier-Stokes and Darcy Flows through Porous Media. Proceedings of Workshop on Fluid Dynamic in Porous Media 2011, 2012.
5. J. Young and **B. Rivière**. The Development of a Computational, Poroelastic Model of Intestinal Edema. Proceedings of the ECCOMAS Thematic International Conference on Simulation and Modeling of Biological Flows, 2011.
6. **B. Rivière**, P. Chidyagwai, I. Mishev, On the Coupling of Finite Volume and Discontinuous Galerkin for Reservoir Simulation Problems. Proceedings of the Society for Petroleum Engineers conference, 2011.
7. A. Cesmelioglu and **B. Rivière**. Mathematical Analysis of a Multiphysics Problem. Technical report TR10-23, 2010.
8. Y. Epshteyn, **B. Rivière**, D. Swigon and Y. Vodovotz, A Simple Mathematical Model of Lipopolysaccharide Signaling through Toll-Like Receptor 4 Results in Complex Insights on Preconditioning, *Journal of Critical Care*, 22 (4), p.333-335, 2007.
9. Q. Mi, D. Swigon and **B. Rivière**, Two-Dimensional Elastic Continuum Model of Enterocyte Layer Migration, *Journal of Critical Care*, 22 (4), p.350, 2007.
10. Y. Epshteyn and **B. Rivière**, Fully Implicit Discontinuous Galerkin Scheme for Two-Phase Flow, *Proceedings of the MSRI workshop "The Legacy of Ladyzhenskaya and Oleinik"*, p.125-128, 2006.
11. Y. Vodovotz, C. Chow, J. Bartels, C. Lagoa, R. Kumar, J. Day, J. Rubin, B. Ermentrout, **B. Rivière**, I. Yotov, G. Constantine, T. Billiar, M. Fink and G. Clermont, Mathematical Simulations of Sepsis and Trauma, *Proceedings of the 11th Congress of the European Shock Society*, p.151-159, 2005.
12. **B. Rivière**, Numerical Study of a Discontinuous Galerkin Method for Incompressible Two-Phase Flow, *ECCOMAS 2004 Proceedings*, 2004, available on CD-ROM.
13. M.F. Wheeler, M. Peszynska and **B. Rivière**, Computational Science Issues in Modeling Oil and Gas Production, *Proceedings of the 8th European Conference on the Mathematics of Oil Recovery-ECMOR VIII*, publisher EAGE, 2002.
14. **B. Rivière**, M.F. Wheeler, Miscible Displacement in Porous Media, *Proceedings of the XIV International Conference on Computational Methods in Water Resources*, ed. S.M. Hass Aniz Adeg and R.J. Schotting, Developments in Water Science, 47 p.907-914, 2002.
15. M. Guillot, **B. Rivière**, M.F. Wheeler, Discontinuous Galerkin Methods for Mass Conservation Equations for Environmental Modeling, *Proceedings of the XIV International Conference on Computational Methods in Water Resources*, ed. S.M. Hass Aniz Adeg and R.J. Schotting, Developments in Water Science, 47 p.939-946, 2002.
16. M. Wheeler, O. Eslinger, S. Sun and **B. Rivière**, Discontinuous Galerkin Method for Modeling Flow and Reactive Transport in Porous Media, *Proceedings of 2002 CANUM conference*, series ESAIM, 2002.
17. **B. Rivière**, M.F. Wheeler, E. Jenkins, Locally Conservative Algorithms for Flow, *Proceedings of the Department of Defense Users Group Meeting*, 2001, available on CD-ROM.
18. C.N. Dawson, **B. Rivière**, M.F. Wheeler, Discontinuous Galerkin Methods for Flow and Reactive Transport, *Proceedings of the Department of Defense Users Group Meeting*, Albuquerque, N.M., June 5-8 2000

## Reviews

1. **B. Rivière**, book review of *Computational Methods for Multiphase Flows in Porous Media*, by Z. Chen, G. Huan and Y. Ma., in *Mathematics of Computation*, 76 (260), p.2253-2255, 2007.

## Newspaper Articles

1. **B. Rivière**, E. Jenkins, In Pursuit of Better Models and Simulations, Oil Industry Looks to the Math Sciences, *SIAM News*, 35 (1), January-February 2002.
2. E. Jenkins, **B. Rivière**, Geoscientists Meet in Colorado to Explore Increasingly Complex, Multidisciplinary Problems, *SIAM News*, 24 (9), November 2001.

## Other Selected Publications

1. Mathematics of Planet Earth blog, 2013.
2. P. Bastian and **B. Rivière**, Discontinuous Galerkin Methods for Two-phase Flow in Porous Media, University of Heidelberg, Technical Report 2004-28, 2004.
3. **B. Rivière**, Mathematics and the Energy Crisis, *Pitt MathZine*, electronic magazine ([www.math.pitt.edu/magazine.html](http://www.math.pitt.edu/magazine.html)), 2002.
4. **B. Rivière**, The DGIMPES Model in IPARS: Discontinuous Galerkin for Two-Phase Flow Integrated in a Reservoir Simulator Framework, *Texas Institute for Computational and Applied Mathematics Report 02-29*, 2002.
5. **B. Rivière**, M.F. Wheeler, Optimal Error Estimates for Discontinuous Galerkin Methods Applied to Linear Elasticity Problems, *Texas Institute for Computational and Applied Mathematics Report 00-30*, 2000.
6. **B. Rivière**, K. Banas, M.F. Wheeler, hp 3D Flow Simulations of Discontinuous Galerkin Finite Element Methods, *Texas Institute for Computational and Applied Mathematics Report 00-29*, 2000.
7. **B. Rivière**, A Classification of the Riemannian Surfaces, The Pennsylvania State University, *Department of Mathematics Report*, 1996.

## Invited Talks

### *University/Industry Seminars and Colloquia*

1. Porous Media: Modeling and Simulation, W.D. Von Gonten & Co., Houston (04/17).
2. Flexible and Scalable Discretizations for Porous Media Applications, Total, Houston (10/16).
3. Simulation of Viscous Fingering with High Order Numerical Methods, IFPEN, Paris (06/16).
4. Discontinuous Galerkin Method for Miscible Displacement Simulations, Shell, Houston (04/15).
5. Convergence of a High Order Method in Space and in Time for the Miscible Displacement Problem, University of Texas at Austin, Austin (10/14).
6. Flexible Numerical Methods for Porous Media Flows, University of Heidelberg, Germany (06/14).
7. Flexible Numerical Methods for Reservoir Flows, Institut Francais du Petrole, Paris (05/14).
8. Numerical Methods For Flows In Heterogeneous Porous Media, University Pierre et Marie Curie, Paris (05/14).
9. High Order Flexible Methods for Processes in Porous Media, Geophysical Society of Houston's Data Processing and Acquisition seminar, (11/13).
10. Flexible Discontinuous Galerkin Methods for Complex Flows, Shell Company, (07/13).
11. Locally Mass Conservative Methods for Flows in Porous Media, Exxon Mobil Upstream Research Company, (05/13).
12. Multiphysics and Multinumerics Couplings, Ken Kennedy Institute for Information Technology Member Luncheon Talk, Rice University, (11/10).

13. Weak Solution and Numerical Solution of Multiphysics Couplings, Department of Mathematics, University of Houston, (02/10).
14. Multiphysics Couplings in Porous Media, Department of Mathematical Sciences, Carnegie Mellon University, (09/09).
15. Applications of Discontinuous Galerkin Methods to Complex Flow and Transport Problems, Exxon Mobil Upstream Research Company, (02/09).
16. Multiphysics Couplings in Porous Media, Department of Mathematics, University of Houston, (10/08).
17. Application of Discontinuous Galerkin Methods for Complex Flow and Transport, Department of Civil & Environmental Engineering, University of Pittsburgh, (12/07).
18. On the Modeling and Simulation of Porous Media Problems, Department of Mechanical Engineering and Material Sciences, University of Pittsburgh, (10/07).
19. On Coupled Flow and Two-Phase Flow Problems, Department of Mathematics & Statistics, McGill University, (09/07).
20. Analysis and Simulation of Complex Flow Processes, Rice University, (03/07).
21. Coupling Incompressible Flow With Porous Media Flow, Department of Mathematics, University of Pittsburgh, (09/06).
22. Complex Flow Processes with Applications in Porous Media, University of Pittsburgh, (09/06).
23. High-Order Discontinuous Finite Element Methods for Incompressible Flows, Oregon State University, (05/06).
24. Modeling Complex Flow and Transport Processes, Oregon State University, (05/06).
25. On the Solution of Complex Flow and Transport Processes, University of Maryland at College Park, (02/06).
26. On the Choice of Numerical Fluxes for Discontinuous Galerkin Methods for Coupled Parabolic-Hyperbolic Regions, Computational Mathematics Seminar, University of Pittsburgh, (10/05).
27. Discontinuous Galerkin for Incompressible Flows, Louisiana State University, (03/05).
28. An Operator Splitting Technique for Solving the Navier-Stokes Equations, Computational Mathematics Seminar, University of Pittsburgh, (10/04).
29. Discontinuous Galerkin Methods for Surface and Subsurface Flows, Université Paris XI, Orsay, France (05/04).
30. A Multiphysics-Multinumerics Approach for Surface and Subsurface Flow, Computational Mathematics Seminar, University of Pittsburgh, (09/03).
31. Analysis of Discontinuous Galerkin Methods for Stokes and Navier-Stokes Equations, Department of Mathematical Sciences, Clemson University, (04/03).
32. A Posteriori Error Estimation for Discontinuous Galerkin Methods, Computational Mathematics Seminar, University of Pittsburgh, (03/03).
33. Discontinuous Galerkin Methods for Porous Media Applications, Mechanical Engineering Seminar Series, University of Pittsburgh, (01/03).
34. Discontinuous Galerkin Methods for Stokes and Navier-Stokes, Computational Mathematics Seminar, University of Pittsburgh, (10/02).
35. Introduction to Discontinuous Galerkin Methods for Elliptic Problems, Computational Mathematics Seminar, University of Pittsburgh, (09/02).
36. Fully Discontinuous Approximations of Stokes and Navier-Stokes problems, Interdisziplinäres Zentrum für Wissenschaftliches Rechnen, University of Heidelberg, Germany (06/02).
37. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, Texas Tech University (02/02).

38. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, University of Washington (02/02).
39. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, University of Delaware (02/02).
40. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, Worcester Polytechnic Institute (02/02).
41. An Introduction to Finite Element Methods, Worcester Polytechnic Institute (02/02).
42. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, University of California at Davis (01/02).
43. Discontinuous Finite Element Methods for Transport and Two-phase Flow Problems, The University of Pittsburgh (01/02).
44. Discontinuous Methods for Modeling Subsurface Phenomena, Clemson University (01/02).
45. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, Oklahoma State University (01/02).
46. Discontinuous Galerkin Applications to Multinumerics and Multiphase Flow, The University of Texas at Austin (11/01).
47. Locally Conservative Methods for Flow in Porous Media, The University of Pittsburgh, Pittsburgh (09/01).
48. Méthodes des Eléments Finis Discontinus pour la Simulation des Ecoulements dans les Milieux Poreux, Université Paris XI, Orsay, France (03/01).
49. Locally Conservative Methods for Subsurface Flow, Interdisziplinäres Zentrum für Wissenschaftliches Rechnen, University of Heidelberg, Germany (03/01).
50. Méthodes des Eléments Finis Discontinus pour les Ecoulements dans les Milieux Poreux, INRIA-Rocquencourt, France (02/01).
51. Transport Schemes for Subsurface Flow Simulators, Audition de la Commission National d'Evaluation des Recherches pour la Gestion des Dechets Radioactifs, Maison de la Chimie, Paris, France (02/01).
52. Transport Schemes for Multicomponent, Multiphase Reactive Flow, ANDRA (French National Agency for Radioactive Waste Management), Châtenay-Malabry, France (02/01).

*Conference Lectures*

1. Software Development for Porous Media Modeling, *Scientific Software Days Conference*, UT-Austin, Austin, TX (04/17), Keynote speaker.
2. Numerical Methods for Solving Linear Poroelasticity Equations, *AWM Research Symposium*, UCLA, Los Angeles, CA, (04/17).
3. Numerical Methods for Coupled Flow and Geomechanics, *Workshop on Applied & Computational Mathematics*, Houston, TX, (03/17).
4. A sequential method for solving the poroelasticity equations, *Finite Element Rodeo Conference*, Houston TX, (03/17).
5. A Discontinuous Galerkin Finite Element Framework for the Direct Numerical Simulation of Flow on High-Resolution Pore-Scale Images, *SPE Reservoir Simulation Conference*, Montgomery TX, (02/17).
6. Numerical Modeling of Viscous Fingering, *Geo-Mathematical Imaging 2016 workshop*, Rice, (04/16).
7. Numerical Methods for Reduced Blood Flow Models, *Finite Element Rodeo*, Texas A& M University, (03/16).
8. Hybrid Parallel Implementation of the DG Method, *Rice Oil and Gas HPC conference*, Rice, (03/16).

9. Numerical Simulations of the Cahn-Hilliard Equation in Porous Domains, *SIAM Geosciences 2015*, Stanford, (06/15).
10. High Order Discretization for Simulating Miscible Displacement Process in Porous Media, *SIAM Geosciences 2015*, Stanford, (06/15).
11. High Order Methods for Flows in Heterogeneous Porous Media, *Advanced Numerical Methods in the Mathematical Sciences*, Texas A& M University, College Station, (05/15). (Invited Speaker)
12. Strongly Scalable High Order Algorithm for Miscible Flooding on Massively Parallel Architecture, *Oil and Gas HPC workshop*, Rice University, (03/15).
13. Scalable High Order Methods for Miscible Flooding, *Finite Element Rodeo*, Southern Methodist University, Dallas, (02/15).
14. Numerical Algorithms for Coupled Free and Porous Medium Flows, *Workshop on Coupling of Free and Porous Medium Flow*, Stuttgart, (03/14).
15. High order methods for reservoir flows, *2014 Rice Oil & Gas HPC Workshop*, Houston (03/14).
16. High Order Methods for Coupled Flow and Transport Problems, *12th U.S. National Congress on Computational Mechanics*, Raleigh (07/13). (Keynote Speaker)
17. Numerical solution of miscible displacement under low regularity, *SIAM Annual Meeting*, San Diego (07/13). (Invited Talk in Minisymposium)
18. Locally Mass Conservative Methods with Discontinuous Galerkin in Time for Miscible Displacement in Porous Media, *SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Padova, Italy (06/13). (Invited Talk in Minisymposium)
19. Convergence of High Order Methods for the Miscible Displacement Problem, *The Mathematics of Finite Elements and Applications 2013 (MAFELAP)*, Brunel University, England (06/13). (Invited Talk in Minisymposium)
20. A Poroelasticity Model for Intestinal Edema, *Finite Element Rodeo and Circus*, Baton Rouge (03/13).
21. Discontinuous Galerkin Methods for Multiphysics Problems, *20th International Conference on Domain Decomposition Methods*, Rennes, France (06/12). (Plenary Speaker)
22. Coupled Free Flows and Porous Media Flows, *2012 John H. Barrett Memorial Lectures Conference*, (05/12). (Invited Speaker)
23. A splitting strategy for the coupled surface and subsurface flow problem, *Workshop on Splitting and Multiscale Methods for Computational PDEs*, Baylor University, Waco, (09/11).
24. Coupling locally mass conservative methods for flow in porous media, *Workshop on Advances in Numerical Analysis & Scientific Computing*, University of Houston, Houston, (04/11). (Plenary Speaker)
25. *Workshop on Analytical and numerical methods for multi-scale systems*, Univ. Heidelberg, (02/11). (Plenary Speaker)
26. On the Coupling of Finite Volume and Discontinuous Galerkin for Reservoir Simulation Problems, *2011 SPE Reservoir Simulation Symposium*, Woodlands, (02/11).
27. Multi-numeric methods for porous media flows, *Scientific Computing Around Louisiana Conference*, Tulane University, New Orleans, (01/11). (Invited Speaker)
28. Weak And Numerical Solutions For Coupled Navier-Stokes, Darcy And Transport Equations, *Joint Mathematics Meetings Conference*, New Orleans (01/11). (Invited Talk in Minisymposium)
29. On the coupled problem of Navier-Stokes, Darcy and transport problems, *SIAM Conference on Analysis of Partial Differential Equations*, Miami (12/09). (Invited Talk in Minisymposium)
30. Numerical Methods for Solving the Miscible Displacement Problem, *1051st AMS Meeting*, Baylor University (10/09). (Invited Talk in Minisymposium)
31. Computational and Applied Mathematics, *Mathematics Leadership Institute, Summer 2009*, Houston (06/09). (Invited Speaker)

32. A Multinumerics Method for Solving a Multiphysics Problem, *The Mathematics of Finite Elements and Applications 2009 (MAFELAP)*, Brunel University, England (06/09).  
(Invited Talk in Minisymposium)
33. A Weak Solution and A Numerical Solution of the Coupled Navier-Stokes and Darcy Equations, *SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Leipzig Germany (06/09). (Invited Talk in Minisymposium)
34. Numerical Solution of the Transport of Contaminants in Surface and Subsurface Flows, *SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Leipzig Germany (06/09).  
(Invited Talk in Minisymposium)
35. On the Modeling of Cell Migration in NEC, *SIAM Life Sciences*, Montreal (08/08).  
(Invited Talk in Minisymposium)
36. On the Coupling of Incompressible Flow with Darcy Flow, *9th United States National Congress on Computational Mechanics*, San Francisco (07/07). (Invited Talk in Minisymposium)
37. A Weak Solution and A Discrete Solution Of The Coupled Darcy Navier-Stokes Problem, *Finite Element Circus*, University of Maryland at College Park (04/07).
38. Adaptive and Implicit High Order Methods for Two-Phase Flow, *SIAM Annual 2006*, Boston (07/06).  
(Invited Talk in Minisymposium)
39. Application of Interior Penalty Galerkin Method to Inverse Problem, *SIAM Annual 2006*, Boston (07/06). (Invited Talk in Minisymposium)
40. Improved Discontinuous Galerkin Methods for Transport Equations with Varying Diffusivity, *The Mathematics of Finite Elements and Applications 2006 (MAFELAP)*, Brunel University, England (06/06). (Invited Talk in Minisymposium)
41. Finite Element Methods for an Inverse Problem, *Finite Element Circus*, University of Maryland at Baltimore County (03/06).
42. On the Choice of Numerical Fluxes for Discontinuous Galerkin Methods for Coupled Hyperbolic-Parabolic Flows, *Finite Element Circus*, Rutgers University (10/05).
43. Modeling Transition Flows Between Advection and Diffusion Regimes, *Eighth U.S. National Congress on Computational Mechanics (USNCCM VIII)*, Austin, Texas (07/05).  
(Invited Talk in Minisymposium)
44. An Operator Splitting Technique for Incompressible Flows, *Third M.I.T. Conference*, Boston, MA, (06/05). (Invited Talk in Minisymposium)
45. Discontinuous Galerkin Methods for Dynamic Viscoelasticity, *Finite Element Circus*, University of Delaware (04/05).
46. A Discontinuous Galerkin Method for the Coupled Problem of Stokes and Darcy, *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS)*, Jyvaskyla, Finland (07/04). (Invited Talk in Minisymposium)
47. A Discontinuous Galerkin Method for Solving the Coupled Darcy and Stokes Problems, *Workshop on Numerical Analysis of Partial Differential Equations*, Universidad de Concepcion, Chile (01/04).  
(Invited Talk in Minisymposium)
48. Coupling DG and MFE for Stokes/Darcy Flow, *Finite Element Circus*, Cornell University (11/03).
49. Coupling conservative methods for Darcy flow and Stokes flow, *European Conference on Numerical Mathematics and Advanced Applications ENUMATH 2003*, Charles University, Prague, Czech Republic (08/03). (Invited Talk in Minisymposium)
50. A Discontinuous Galerkin Discretization of Two-Phase Flow in Porous Media, *SIAM Geosciences*, Austin, Texas (03/03). (Invited Talk in Minisymposium)
51. Discontinuous Finite Element Methods for Solving the Stokes and Navier-Stokes Equations, *982nd AMS Meeting*, University of Central Florida, Orlando, Florida (11/02).  
(Invited Talk in Minisymposium)

52. Superconvergence and H(div) Projection for Discontinuous Galerkin Methods, *Finite Element Circus*, State College, PA (10/02).
53. Applications of Discontinuous Galerkin Methods to Environmental Problems, *Fifth World Congress on Computational Mechanics*, Vienna, Austria (07/02). (Invited Talk in Minisymposium)
54. Miscible Displacement in Porous Media, *XIV International Conference on Computational Methods in Water Resources*, Delft, The Netherlands (06/02). (Invited Talk in Minisymposium)
55. High-Order Discretization of Two-Phase Flow, *Industrial Affiliates Meeting*, Center for Subsurface Modeling, Austin, TX (11/01).
56. Discontinuous Galerkin Methods for Subsurface Flow, *2001 SIAM Annual Meeting*, San Diego, CA (07/01). (Invited Talk in Minisymposium)
57. Discontinuous Galerkin Methods for Fractured Porous Media, *Sixth SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Boulder, CO (06/01). (Invited Talk in Minisymposium)
58. Discontinuous Galerkin Methods for Subsurface Flow and Wave Propagation, *Transport on Unstructured Grids*, US Army Corps of Engineers, Engineers Research and Development Center, Vicksburg, MS (11/00).
59. Discontinuous Galerkin Methods for Subsurface Flow and Wave Propagation, *Industrial Affiliates Meeting*, Austin, TX (10/00).
60. A Posteriori Error Estimates for Discontinuous Galerkin Methods Applied to Elliptic Problems, *p and hp Finite Element Methods: Mathematics and Engineering Practice*, Washington University, St. Louis, MS (05/00-06/00).
61. Discontinuous Galerkin Methods for Flow and Transport Problems in Porous Media, *SuperConvergence in Finite Element Methods*, Texas Tech University, TX (05/00).
62. Discontinuous Galerkin Methods for Flow and Transport Problems in Porous Media, *Finite Elements in Flow Problems 2000*, The University of Texas at Austin, Austin TX (05/00). (Invited Talk in Minisymposium)
63. Discontinuous Galerkin Method for Single Phase Flow, *Fifth SIAM Conference on Mathematical and Computational Issues in the Geosciences*, San Antonio, TX (03/99). (Invited Talk in Minisymposium)
64. Discontinuous Galerkin Method for Single Phase Flow, *Industrial Affiliates Meeting*, Center for Subsurface Modeling, Austin, TX (11/98).
65. Discontinuous Galerkin Methods, *Finite Element Rodeo*, College Station, TX (03/98).

### Workshops Participation

- *Recent Advances and Challenges in Discontinuous Galerkin Methods and Related Approaches*, poster One-dimensional model of blood flow discretized with Runge-Kutta discontinuous Galerkin methods, IMA, Minneapolis, 06/17.
- *Advances in Data-Driven Analytics Applications: From Methodology to Technology* workshop, Houston, 12/16.
- *The OpEd Project* workshop, Rice University, 12/14.
- *Reactive Flows in Deformable Complex Media* workshop at Oberwolfach, 09/14, Oberwolfach, Germany.
- *Rice 2013 Oil & Gas High Performance Computing Workshop*, 03/13, poster.
- *Energy and Environment* workshops, Rice University.
- *Rice 2012 Oil & Gas High Performance Computing Workshop*, 03/12, poster.
- Multiphysics Simulations: Challenges and Opportunities workshop, Institute for Computing in Science, UT (08/11).

- *2008 Center for Inflammation and Regeneration Modeling Retreat*, talk on Signaling modeling (05/08).
- *Network Dynamics and Cell Physiology*, the Institute for Mathematics and its Applications, Minnesota (04/08).
- *Discontinuous Galerkin Methods for Partial Differential Equations*, Banff International Research Station, Banff, Canada (11/07).
- *2007 Center for Inflammation and Regeneration Modeling Retreat*, talk on NEC modeling (05/07).
- *2006 McGowan Institute for Regenerative Medicine Retreat*, poster on agent-based modeling (03/06).
- *Workshop on Compatible Spatial Discretizations for Partial Differential Equations*, the Institute for Mathematics and its Applications, Minnesota; poster on two-phase flow modeling (05/04).
- *Meeting on Discontinuous Galerkin Methods at Oberwolfach*, Oberwolfach, Germany (05/02): talk “A DG Method with Non-Overlapping Domain Decomposition for the Stokes and the Navier-Stokes Problems”.
- *Reactive Flow and Transport Phenomena, Resource Recovery*, Institute for Mathematics and its Applications, University of Minnesota, MN (02/00).
- *Differential Equations and their Applications*, The University of Houston, TX (10/99).
- *Symposium on Discontinuous Galerkin Methods*, Newport, RI (05/99).
- *Specialty Workshop on Adaptive Grids*, The University of Texas at Austin, Austin, TX (03/99).
- *British Petroleum Exploration Training Classes on Fundamentals of Reservoir Simulation*, Austin, TX (09/98).
- *Industrial Affiliates Meeting*, Center for Subsurface Modeling, Austin, TX (11/97): poster on Discontinuous Galerkin for Flow in Porous Media.

#### Awards

- *8th IMACS 2009 most successful papers award*, 2010.
- *4rth IMACS 2007 most successful papers award*, 2008.
- *J.T. Oden Research Faculty Fellowship* recipient, 2004
- *Association for Women in Mathematics* travel grant, 2002.
- *Association for Women in Mathematics* grant to participate in the AWM workshop, SIAM Annual meeting 2001.
- *Continuing University Fellowship*, The University of Texas, 1998.
- *Computational and Applied Mathematics* Fellowships, The University of Texas, 1997-1998.
- *Jean Zellidja* Fellowship from the French Academy, France, 1994.

#### Professional Visits

- IFPEN, Paris, France, Summer 2016.
- Laboratoire Jacques Louis Lions, University Paris VI, 05/14, funded by Paris VI.
- Laboratoire Jacques Louis Lions, University Paris VI, 05/04-06/04, funded by NSF-AWM.
- BICOM, Brunel University, England, 12/03, funded by BICOM.
- ICES, The University of Texas at Austin, 05/03 and 04/04-05/04, funded by ICES.

#### TEACHING

#### Courses



- Undergraduate Course *Senior Design*, CAAM 495 Fall 2015, Fall 2016, CAAM 496 Spring 2016, Spring 2017.
- Graduate course *Numerical Analysis I*, CAAM 453 Fall 2008, CAAM 453/553 Fall 2011, CAAM 553 Fall 2013.
- Graduate course *Numerical Methods for Partial Differential Equations*, M3071, Fall 2007; CAAM 452 Spring 2009. Spring 2010, Spring 2011, Spring 2012, Spring 2013, Spring 2014.
- Graduate course *Finite Element Methods*, M3072, Spring 2003 and Spring 2005; CAAM 552 Fall 2009 and Fall 2012.
- Graduate course *Topics in Num Diff Eqns*, CAAM 652 Spring 2014, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017.
- Graduate seminar *Scientific Computing and Numerical Analysis*, CAAM 699.006 Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012.
- Graduate course *Numerical Methods in Scientific Computing I* M2070, Fall 2003, Fall 2005 and Fall 2006.
- Graduate course *Iterative Methods* M2030, Spring 2008.
- Graduate course *Numerical Methods in Scientific Computing II* M2071, Spring 2004, Spring 2006 and Spring 2007 .
- Graduate course *Advanced Scientific Computing II* M2602, Spring 2006.
- Graduate course *Advanced Scientific Computing III* M2603, Fall 2004.
- Graduate course *Advanced Scientific Computing IV* M2604, Spring 2007.
- Graduate course *Numerical Solutions of Ordinary Differential Equations* M2090, Fall 2004 and Fall 2002.
- Undergraduate course *Introduction to Matrices and Linear Algebra* M0280, Fall 2007.
- Undergraduate course *Numerical Linear Algebra* M1080, Spring 2006.
- Undergraduate course *Matrix Theory and Differential Equations* M0250, Fall 2002, Fall 2003 and Fall 2005. Course leader for Fall 2003 and Fall 2005.
- Independent study *Modeling of Flow and Transport Using Discontinuous Galerkin* M2990, Fall 2004.
- Directed study *Discontinuous Solution of Two-Phase Flow* M3902, Summer 2004 and 2005.
- Directed study *Finite Element Methods* M3902, Summer 2003.

#### DEPARTMENTAL SERVICE

##### Departmental Committees

- 2015-present: Chair of CAAM department, Rice University.
- 2017/2018: Member of Analysis Examination Committee.
- 2016-present: Member of CAAM graduate curriculum committee, Rice University.
- 2009-2013 Chair of CAAM graduate committee, Rice University.
- 2008/2009 Member of CAAM graduate committee, Rice University.
- 2009, 2011-2013: CAAM Numerical Analysis Examination Committee
- 2007/2008 Computing committee (chair), University of Pittsburgh.
- 2007/2008 Graduate committee, University of Pittsburgh.
- 2006/2007 Web site committee, University of Pittsburgh.
- 2005/2007 Undergraduate committee, University of Pittsburgh.
- 2005/2007 Computing committee, University of Pittsburgh.

- 2004/2005 and 2005/2006 Search committee for the tenure-track position in Scientific Computing position, University of Pittsburgh.
- 2003/2004 and 2005/2006 Search committee for the tenure-track position in Mathematical Biology, University of Pittsburgh.
- 2004 Preliminary examination committee, University of Pittsburgh.

#### **Membership to Ph.D. and Master Committees**

- Ph.D.: Xiaodi Deng (CAAM, Rice U.), 2017.
- Ph.D.: Caleb Magruder (CAAM, Rice U.), 2017.
- Ph.D.: Muhong Zhou (CAAM, Rice U.), 2017.
- Ph.D.: Mario Bencomo (CAAM, Rice U.), 2017.
- Ph.D.: Yin Huang (CAAM, Rice U.), 2016.
- Ph.D.: David Medina (CAAM, Rice U.), 2015.
- Ph.D.: Rajesh Gandham (CAAM, Rice U.), 2015.
- Ph.D.: Xin Wang (CAAM, Rice U.), 2012.
- Ph.D.: Drew Kouri (CAAM, Rice U.), 2012.
- Ph.D.: Tommy Binford (CAAM, Rice U.), 2012.
- Ph.D.: Alex Labovschii (U. Pittsburgh), 2008.
- Ph.D.: Monika Neda (U. Pittsburgh), 2007.
- Ph.D.: Judy Day (U. Pittsburgh), 2007.
- Ph.D.: Dejun Xie (U. Pittsburgh), 2007.
- Ph.D.: Gary Hart (U. Pittsburgh), 2007.
- Ph.D.: Gergina Pencheva (U. Pittsburgh), 2007.
- Ph.D.: Leo Rebholz (U. Pittsburgh), 2007.
- Ph.D.: Ahmet Duran (U. Pittsburgh), 2006.
- Ph.D.: Carolina Manica (U. Pittsburgh), 2006.
- Ph.D.: Faranak Pahvleni (U. Pittsburgh), 2004.
- Ph.D.: Adrian Dunca (U. Pittsburgh), 2004.
- Ph.D.: Niyazi Sahin (U. Pittsburgh), 2003.
- Ph.D.: Hattan Tawfiq (U. Pittsburgh), 2002.
- Master: Yabin Zhang (CAAM, Rice U.), 2017.
- Master: Jeremy Tillay (CAAM, Rice U.).
- Master: Thomas Klotz (CAAM, Rice U., 2016).
- Master: Zheng Wang (CAAM, Rice U., 2015).
- Master: Mario Bencomo (CAAM, Rice U., 2015).
- Master: Muhong Zhou (CAAM, Rice U., 2014).
- Master: David Medina (CAAM, Rice U., 2014).
- Master: Caleb Magruder (CAAM, Rice U., 2014).
- Master: Jedidiah Gohlke (CAAM, Rice U.), 2013.
- Master: Yin Huang (CAAM, Rice U.), 2013.
- Master: Nichole Stilwell (CAAM, Rice U.), 2013.
- Master: Millie Mays (CAAM, Rice U.), 2012.

- Master: Drew Kouri (CAAM, Rice U.), 2010.
- Master: Eelco Nedelcoor (CAAM, Rice U., 2009).
- Master: Xin Wang (CAAM, Rice U.), 2009.
- Master: Ethan Hyché (U. Pittsburgh), 2007.

#### **Other Departmental Service**

- Organizer of departmental retreat 2016.
- Organizer of departmental alumni event 2016.
- New CAAM graduate students orientation: 2008, 2009, 2011, 2012, 2015-present.
- New CAAM graduate students evaluation meetings: 2009, 2011, 2012.
- Host for CAAM colloquium speakers: Noel Walkington 2009; Sue Brenner 2010, 2015; Randall LeVeque, Hector Klie 2011; Anita Layton 2012; Shell Lectures Series speakers: Malgozarta Peszynska 2012, Rainer Helmig 2013.
- Host for CAAM visitors: Yoram Vodovotz, Jerome Jaffre, Jean Roberts 2009; Rainer Helmig 2011; Andro Mikelic 2012.
- Member of Graduate Faculty of the University of Pittsburgh, 2006-2008.
- Organizer and responsible for the publication of technical reports for the Department of Mathematics at the University of Pittsburgh (online version 2002-2008; printed version 2006-2008).

### UNIVERSITY SERVICE

#### **Membership to Ph.D. and Master Committees**

- Ph.D.: Xiaoqun Mu, Chemical and Biomolecular Engineering, Rice U., in progress.
- Ph.D.: Carol Downes, Mathematics, Rice U., 2017.
- Ph.D.: JungHwan Park, Mathematics, Rice U., 2017.
- Ph.D.: Le Wang, Chemical and Biomolecular Engineering, Rice U., 2017.
- Ph.D.: Yang Zhou, Civil and Environmental Engineering, Rice U., 2016.
- Ph.D.: Andy Huang, Mathematics, Rice U., 2016.
- Ph.D.: Jorge Acosta, Mathematics, Rice U., 2016.
- Ph.D.: Quentin Funk, Mathematics, Rice U., 2016.
- Ph.D.: Charles Conn, Chemical and Biomolecular Engineering, Rice U., 2014.
- Ph.D.: Letao Zhang, Mathematics, Rice U., 2014.
- Ph.D.: Kai Gong, Chemical and Biomolecular Engineering, Rice U., 2013.
- Ph.D.: Yenny Chandra, Civil and Environmental Engineering, Rice U., 2013.
- Ph.D.: Taylor McNeill, Mathematics, Rice U., 2013.
- Ph.D.: Kidist Terefe Zeleke, Mathematics, U. of Houston, 2012.
- Ph.D.: Fakhri Landolsi, Mechanical Engineering Material Sciences, Rice U., 2011.
- Ph.D.: Cristian Nastase, U. Pittsburgh, 2003.
- Master: Jingchen Ye, Applied Physics, Rice U., 2017.
- Master: David Trevino Garcia, Mechanical Engineering Material Sciences, Rice U., 2012.
- Qualifying exam: Fakhri Landolsi, Mechanical Engineering Material Sciences, Rice U., 2010.

#### **Other University Service**

- Chair's retreat: 05/17.
- VISION 2015: help recruit minorities.
- External member of faculty search committee, Mathematics, 2015-present.
- Panelist in "Choosing and Managing Your Thesis Committee" for STEM workshop panel, Oct 2013.
- Academic Fair, O-week, 2013,2015-present.
- Member of the University Parking Committee, 2013/2014.
- Admitted student reception, 2012, 2013.
- McMurtry College Associate (2009-2013).
- Comprehensive Exam Committee for CEVE, 2012.
- CAAM representative in Rice Admission event, 2012.
- CAAM representative at OwlDays, 2012.
- Mentor in Triad Mentoring program: 2012/2013.
- Interviewer in Future Faculty Workshop 2012.
- Mentor in ADVANCE mentoring program: academic year 2011/2012.
- Postdoc Speed Mentoring Event organized by the Office of Graduate and Postdoctoral Studies and the NSF ADVANCE Program, 2011.
- Negotiating the Ideal Faculty Position workshop organized by ADVANCE 2008 and 2011: I listened to practice talks and gave feedback to speakers.
- Association for Women in Mathematics student chapter: panelist in research mixer/grad school panel, 2011.
- Faculty advisor in Major's Day 2009, 2010.
- Negotiating the Ideal Faculty Position workshop organized by ADVANCE 2009: I served in a panel on "building your lab".
- Founding member of the first student chapter of the United States Association for Computational Mechanics at the University of Texas at Austin (1999-2002).

#### COMMUNITY SERVICE

##### Outreach Activities

- Speaker to sixth graders at YES Prep SouthEast, for Civil Scientist Visit program, 2017.
- Co-organizer of Career panel, SIAM Annual, 2017.
- Speaker at the Tapia Math-Science Scholar Program; a summer program for high school students from Houston (2015).
- Organizer of the Summer Math Days at Rice University; a summer program for 20 high school students from Houston: [www.caam.rice.edu/~riviere/SummerMath.html](http://www.caam.rice.edu/~riviere/SummerMath.html); 2009, 2011, 2015.
- Speaker at the Mathematical Institute for Young Women at Rice University: a Summer program for female high school students, Summer 2010 and Summer 2011.
- Panelist at Promoting Diversity at the Graduate Level in Mathematics: a National Forum workshop, Mathematical Sciences Research Institute, CA, 2008.
- Co-organizer with A. Vainchtein of the Summer Math Days 2006 and 2007: Summer programs for high-school students entering grades 10-12.
- Volunteer at "Expanding Your Horizons in Science and Mathematics", a conference organized to increase the interest of young women in mathematics and science through positive hands-on experience, 1998, 2000.

#### PROFESSIONAL SERVICE

### **Editorial Positions**

- Member of the Editorial Board for Advances in Water Resources (2009-present)
- Member of the Editorial Board for SIAM Journal on Numerical Analysis (2010-present)
- Member of the Editorial Board for International Journal of Computer Mathematics (2010-2015)

### **Review of Schools**

Member of the Advancement Committee for the review of the direction de recherche Mécatronique et Numérique, Institut Français du Pétrole Energies Nouvelles, 2016.

### **External Reviewer for Ph.D. Thesis**

- External reviewer for Ph.D. thesis of C. Gruninger, U. Stuttgart, 2017
- External reviewer for Ph.D. thesis of C. Goll, U. Heidelberg, 2014
- External reviewer for Ph.D. thesis of B.J. Grieshaber, U. Cape Town, 2013
- External reviewer for Ph.D. thesis of R. Rankin, U. Strathclyde, 2008

### **Society Memberships**

- Member of the Society for Industrial and Applied Mathematics
- Member of Association for Women in Mathematics
- Founding member of SIAM Texas-Louisiana Section
- SIAM Geosciences Activity Group Nominating committee, 2016.
- Secretary of the SIAM Geosciences Activity Group, 2013.
- Member of Interpore, 2012-2014
- Member of the American Mathematical Society (2007-2014)
- Member of The Society for Complexity in Acute Illness, 2004-2008.
- Member of International Association for Mathematics and Computers in Simulations, 2008, 2010.

### **Proposals Reviews**

- NSF Panelist (2007, 2008, 2009, 2011, 2014, 2015, 2017).
- DOE Panelist (2009).
- External Reviewer for INdAM Fellowships in Mathematics and/or Applications for Experienced Researchers (2012).
- External Reviewer for Simtech Cluster of Excellence, U. Stuttgart (2012, 2013).
- External Reviewer for Swiss National Science Foundation (2009).
- External Reviewer for NSF (2006, 2009-2011, 2016).
- External Reviewer for DOE (2010, 2011).
- External Reviewer for South Carolina EPSCoR/IDeA GEAR program (2010).
- External Reviewer for ANR (Agence Nationale de Recherche: French Research National Agency) (2008, 2012).
- External Reviewer for Grants Submitted to Etablissement de nouveaux chercheurs program, Fonds de Recherche sur la Nature et les Technologies, Quebec (2005).
- External Reviewer for Grants Submitted to CERG: Research Grants Council, Hong Kong (2005-present).
- External Reviewer for Grants submitted to The Petroleum Research Fund (American Chemical Society), (2005, 2007, 2017).

### **Paper Reviews**

- Reviewer of manuscripts for *American Institute of Aeronautics and Astronautics (AIAA) Journal*, for *Advances in Water Resources*, for *Applicable Analysis*, for *Applications in Mathematics*, for *Applied Mathematics of the Arabian Journal for Science and Engineering*, for *Applied Numerical Mathematics*, for *Computational Geosciences*, for *Computers and Mathematics with Applications*, for *Computer Methods in Applied Mechanics and Engineering*, for *Communications in Numerical Methods in Engineering*, for *Communication in Computational Physics*, for *Electronic Transactions on Numerical Analysis*, for *IMA Journal of Numerical Analysis*, for *International Journal of Numerical Analysis and Modelling*, for *International Journal for Numerical Methods in Engineering*, for *International Journal for Numerical Methods in Fluids*, for *International Journal of Heat and Fluid Flow*, for *International Journal on Finite Volumes*, for *Journal of Applied Numerical Mathematics*, for *Journal of Computational Physics*, for *Journal of Computational and Applied Mathematics*, for *Journal of Engineering Mathematics*, for *Journal of Fluids Engineering*, for *Journal of Scientific Computing*, for *Mathematics and Computers in Simulation*, for *Mathematics of Computation*, for *Mathematical Modelling and Numerical Analysis* previously RAIRO, for *Mathematical and Computer Modelling*, for *Numerical Algorithms*, for *Numerical Methods for Partial Differential Equations*, for *Numerische Mathematik*, for *SIAM Journal on Numerical Analysis*, for *SIAM Journal on Scientific Computing*, for *Society of Petroleum Engineers (SPE) Journal*, for *Quarterly of Applied Mathematics*.
- Reviewer for *Computability in Europe 2009* Proceedings.
- Reviewer for *Mathematical Reviews*.

#### Committees

- Steering Committee, Digital Rock Project, 2016-present.
- Member of SIAM-AWM Committee, 2016-2018.
- Member of Scientific Committee, SIAM Geosciences, 2017.
- Member of Scientific Committee, SimRace, Conference on numerical methods and High performance computing for industrial fluid flows, Paris, December 8-10, 2015.
- Judge for graduate student poster competition, AWM Research Symposium, UCLA 2017.

#### Conferences and Workshops Organized

- Co-organizer of Digital Rock Workshop on Pore-Scale Flow Simulation, Rice University, April 2017.
- Co-organizer of AWM workshop, SIAM Annual, 2017.
- Organizer of the conference Finite Element Rodeo, March 3-4, 2012.
- Co-organizer of the 2012 Oberwolfach workshop on Discontinuous Galerkin Methods, 2012.
- Co-organizer of the workshop on splitting and multiscale methods for computational PDEs, Baylor University, September 16-17, 2011
- Host and local organizer of the conference Finite Element Circus at the University of Pittsburgh, April 16-17, 2004.

#### Mini-symposia and Seminars Organized

- Co-organizer of the AWM Workshop: Career panel on perspectives from women in research, SIAM Annual 2017.
- Co-organizer of the AWM workshop on recent advances in numerical analysis and scientific computing, SIAM Annual 2017.
- Co-organizer of mini-symposia on pore-scale modeling for SIAM Geosciences 2015, 2017.
- Co-organizer of a mini-symposium on discontinuous Galerkin methods (five sessions) for MAFELAP 2009.
- Organizer of a mini-symposium on discontinuous Galerkin methods (six sessions) for the joint 8th World Congress on Computational Mechanics and the 5th European Congress on Computational Methods in Applied Sciences and Engineering, 2008.

- Organizer of a mini-symposium on wound healing for SIAM Life Sciences, 2008.
- Co-organizer of a mini-symposium on discontinuous Galerkin methods for MAFELAP 2006.
- Chair of a DG minisymposium for Third M.I.T. Conference 2005.
- Organizer of a mini-symposium on discontinuous Galerkin methods for the 4th European Congress on Computational Methods in Applied Sciences 2004.
- Organizer of the Computational Mathematics Seminars for Fall 2003, Spring 2004 and Spring 2006.
- Organizer of two minisymposia on Discontinuous Galerkin Methods for Geosciences, SIAM Geosciences 2003 conference.
- Co-organizer of a minisymposium on Discontinuous Galerkin Methods, Fifth World Congress on Computational Mechanics 2002.