Béatrice M. Rivière

March 20, 2007

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Experience

- **Assistant Professor**, Department of Mathematics, The University of Pittsburgh (2002 - present).
- **Adjunct Professor**, McGowan Institute for Regenerative Medicine (2005-present).
- **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

- 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.

Ph.D. Graduate Students

- Yekaterina Epshteyn, Ph.D. Thesis supervisor since 05/04. Yekaterina's research deals with the theory and implementation of discontinuous Galerkin methods for multiphase flows. Yekaterina passed her overview in June 2006. Expected graduation date 2007.
- Qi Mi, Ph.D. Thesis supervisor since 06/04, jointly with Dr. D. Swigon. Qi's research project consists of modeling the inflammatory response in several organs. Qi passed his overview in December 2006. Expected graduation date 2007.
- Prince Chidyagwai, Ph.D. Thesis supervisor since 01/07.
- Songul Kaya, Ph.D. Thesis supervisor jointly with Dr. W. Layton. Graduation December 2004. Thesis title: "Numerical Analysis of a Variational Multiscale Method". Winner of the 2004 Hales Distinguished Research Award for best doctoral dissertation. Assistant professor at Middle East Technical University, Turkey, (2005-present).

M.S. Graduate Student

- Mark Tronzo, M.S. Thesis supervisor since 09/06.
- Michael Chiacchiero, M.S. Thesis supervisor since 01/07.
- Ahmet Izmirlioglu., M.S. Thesis supervisor since 03/07.

Undergraduate Student

William Klieber, Bachelor of Philosophy, Honors College. William's research consists of modeling two-phase flow in two and three dimensions. His work was partially supported by the CRDF grant, and by the Brackenridge fellowship. William successfully defended his thesis on April 21, 2006.

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.

Refereed Journal Publications

1. V. Girault, **B. Rivière**, DG Approximation Of Coupled Navier-Stokes And Darcy Equations By Beaver-Joseph-Saffman Interface Condition, submitted to *SIAM Journal on Numerical Analysis*, 33 pages, 2007.
2. Y. Epshteyn, **B. Rivière**, Analysis of hp Discontinuous Galerkin Methods for Incompressible Two-Phase Flow, submitted to *SIAM Journal on Numerical Analysis*, 41 pages, 2006.
3. J. Proft and **B. Rivière**, Stable Discontinuous Galerkin Methods for Convection-Diffusion Equations, submitted to *SIAM Journal on Numerical Analysis*, 30 pages, 2006.
4. Y. Epshteyn, T. Khan and **B. Rivière**, Inverse Problem in Optical Tomography Using Discontinuous Galerkin Method, submitted to *SIAM Journal on Scientific Computing*, in revision, 13 pages, 2006.
5. 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-β1, to appear in *Wound Repair and Regeneration*, 2007.
6. **B. Rivière**, S. Shaw and J.R. Whiteman, Discontinuous Galerkin Finite Element Methods for Dynamic Linear Solid Viscoelasticity Problems, to appear in *Numerical Methods for Partial Differential Equations*, 23 pages, 2006, also BICOM technical report 05/07.
7. Y. Epshteyn and **B. Rivière**, Estimation of Penalty Parameters for Symmetric Interior Penalty Galerkin Methods, to appear in *Journal of Computational and Applied Mathematics*, 30 pages, 2006, doi: 10.1016/j.cam.2006.08.029.
8. **B. Rivière** and S. Shaw, Discontinuous Galerkin Finite Element Approximation of Nonlinear Non-Fickian Diffusion in Viscoelastic Polymers, to appear in *SIAM Journal on Numerical Analysis*, technical report BICOM 05/06, 21 pages, 2005.
9. Y. Epshteyn and **B. Rivière**, Fully Implicit Discontinuous Finite Element Methods for Two-Phase Flow, to appear in *Applied Numerical Mathematics*, 35 pages, 2006.

10. S. Kaya, W. Layton and **B. Rivière**, Subgrid Stabilized Defect Correction Methods for the Navier-Stokes Equations, 17 pages, to appear in *SIAM Journal on Numerical Analysis*, 2005.
11. 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.
12. 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.
13. **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.
14. 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 no 3, p. 728-743, 2006, also TR-MATH 04-06.
15. 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 no 6, p. 1115-1148, 2005, also TR-MATH 04-08.
16. S. Kaya and **B. Rivière**, A Discontinuous Subgrid Eddy Viscosity Method for the Time Dependent Navier-Stokes Equations, *SIAM Journal on Numerical Analysis*, 43 no 4, p. 1572-1595, 2005, also TR-MATH 03-18.
17. **B. Rivière**, Analysis of a Discontinuous Finite Element Method for the Coupled Stokes and Darcy Problems, TR-MATH 03-11, *Journal of Scientific Computing*, 22 no 1 p. 479-500, 2005.
18. **B. Rivière** and I. Yotov, Locally Conservative Coupling of Stokes and Darcy Flows, *SIAM Journal on Numerical Analysis*, 42 no 5, p. 1959-1977, 2005, also TR-MATH 03-08.
19. 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.
20. **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 no 2 p. 347-376, 2003.
21. P. Bastian and **R. Rivière**, Superconvergence and H(div) Projection for Discontinuous Galerkin Methods, *International Journal for Numerical Methods in Fluids*, 42 no 10 p. 1043-1057, 2003.
22. **B. Rivière**, 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 no 1 p. 141-164, 2003.
23. E. Jenkins, **B. Rivière**, M.F. Wheeler, A Priori Error Estimates for Mixed Finite Element Approximations of the Acoustic Wave Equation, *SIAM Journal on Numerical Analysis*, 40 no 5 p. 1698-1715, 2002.
24. **B. Rivière**, M.F. Wheeler, Coupling Locally Conservative Methods for Single Phase Flow, *Computational Geosciences*, 6 no 3 p. 269-284, 2002.
25. **B. Rivière**, M.F. Wheeler, Discontinuous Galerkin Methods for Flow and Transport Problems in Porous Media, *Communications in Numerical Methods in Engineering*, 18 no 1 p. 63-68, 2002.
26. **B. Rivière**, M.F. Wheeler, V. Girault, *A Priori* Error Estimates for Finite Element Methods Based on Discontinuous Approximation Spaces for Elliptic Problems, *SIAM Journal on Numerical Analysis*, 39 no 3 p. 902-931, 2001.
27. **B. Rivière**, M.F. Wheeler, K. Banas, Part II. Discontinuous Galerkin Method Applied to a Single Phase Flow in Porous Media, *Computational Geosciences* 4 p. 337-349, 2000.
28. **B. Rivière**, M.F. Wheeler, 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.

Refereed Conference Proceedings

1. **B. Rivière**, Analysis of a Multi-Numerics/Multi-Physics Problem, in *Numerical Mathematics and Advanced Applications, ENUMATH 2003*, ed. Feistauer, Dolejsi, Knobloch and Najzar, p. 726–735, Springer-Verlag 2004.
2. **B. Rivière**, M.F. Wheeler, Discontinuous Finite Element Methods for Acoustic and Elastic Wave Problems, *Proceedings of ICM2002-Beijing Satellite Conference on Scientific Computing*, Contemporary Mathematics Series, American Mathematical Society, 329, p. 271–282, 2003.
3. M. Wheeler, O. Eslinger, S. Sun, **B. Rivière**, Discontinuous Galerkin Method for Modeling Flow and Reactive Transport in Porous Media, *Proceedings of 2002 CANUM conference*, series ESAIM, 2002.
4. S. Sun, **B. Rivière**, M.F. Wheeler, A Combined Mixed Finite Element and Discontinuous Galerkin Method for Miscible Displacement Problem in Porous Media, in *Recent Progress in Computational and Applied PDEs,* Kluwer Academic/Plenum Publishers, p. 321-348, 2002.
5. **B. Rivière**, M.F. Wheeler, Non Conforming Methods for Transport with Nonlinear Reaction, *Proceedings of an AMS-IMS-SIAM Joint Summer Research Conference on Fluid Flow and Transport in Porous Media: Mathematical and Numerical Treatment*, ed. Z. Chen and R. E. Ewing, p. 421–432, 2002.
6. **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.
7. **B. Rivière**, M.F. Wheeler, Locally Conservative Algorithms for Flow, *Proceedings of Mathematics of Finite Elements and Applications MAFELAP 1999* ed. J. Whiteman, p. 29-46, 1999.
8. 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.

Other Conference Proceedings

1. 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", 2006.
2. 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.
3. **B. Rivière**, Numerical study of a Discontinuous Galerkin Method for Incompressible Two-Phase Flow, ECCOMAS 2004 Proceedings, 15 pages, 2004, published.
4. 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.
5. **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.
6. 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.
7. **B. Rivière**, M.F. Wheeler, E. Jenkins, Locally Conservative Algorithms for Flow, *Proceedings of the Department of Defense Users Group Meeting*, 2001.
8. 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 (available on CD-ROM).

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. P. Bastian and **B. Rivière**, Discontinuous Galerkin Methods for Two-phase Flow in Porous Media, University of Heidelberg, Technical Report 2004-28, 2004.
2. **B. Rivière**, Mathematics and the Energy Crisis, *Pitt MathZine*, electronic magazine (www.math.pitt.edu/magazine.html), 2002.
3. **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.
4. **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.
5. **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.
6. **B. Rivière**, A Classification of the Riemanian Surfaces, The Pennsylvania State University, *Department of Mathematics Report*, 1996.

Invited Presentations

University Seminars and Colloquia

1. Coupling incompressible flow with porous media flow, University of Pittsburgh, (09/06).
2. Complex flow processes with applications in porous media, University of Pittsburgh, (09/06).
3. High-order discontinuous finite element methods for incompressible flows, Oregon State University, (05/06).
4. Modeling complex flow and transport processes, Oregon State University, (05/06).
5. On the Solution of Complex Flow and Transport Processes, University of Maryland at College Park, (02/06).
6. On the Choice of Numerical Fluxes for Discontinuous Galerkin Methods for Coupled Parabolic-Hyperbolic Regions, Computational Mathematics Seminar, University of Pittsburgh, (10/05).
7. Discontinuous Galerkin for Incompressible Flows, Louisiana State University, (03/05).
8. An Operator Splitting Technique for Solving the Navier-Stokes Equations, Computational Mathematics Seminar, University of Pittsburgh, (10/04).
9. Discontinuous Galerkin Methods for Surface and Subsurface Flows, Université Paris XI, Orsay, France (05/04).
10. A Multiphysics-Multinumerics Approach for Surface and Subsurface Flow, Computational Mathematics Seminar, University of Pittsburgh, (09/03).
11. Analysis of Discontinuous Galerkin Methods for Stokes and Navier-Stokes Equations, Department of Mathematical Sciences, Clemson University, (04/03).
12. A Posteriori Error Estimates for Discontinuous Galerkin Methods, Computational Mathematics Seminar, University of Pittsburgh, (03/03).
13. Discontinuous Galerkin Methods for Porous Media Applications, Mechanical Engineering Seminar Series, University of Pittsburgh, (01/03).

14. Discontinuous Galerkin Methods for Stokes and Navier-Stokes, Computational Mathematics Seminar, University of Pittsburgh, (10/02).
15. Introduction to Discontinuous Galerkin Methods for Elliptic Problems, Computational Mathematics Seminar, University of Pittsburgh, (09/02).
16. Fully Discontinuous Approximations of Stokes and Navier-Stokes problems, Interdisziplinäres Zentrum für Wissenschaftliches Rechnen, University of Heidelberg, Germany (06/02).
17. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, Texas Tech University (02/02).
18. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, University of Washington (02/02).
19. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, University of Delaware (02/02).
20. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, Worcester Polytechnic Institute (02/02).
21. An Introduction to Finite Element Methods, Worcester Polytechnic Institute (02/02).
22. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, University of California at Davis (01/02).
23. Discontinuous Finite Element Methods for Transport and Two-phase Flow Problems, The University of Pittsburgh (01/02).
24. Discontinuous Methods for Modeling Subsurface Phenomena, Clemson University (01/02).
25. Discontinuous Galerkin Methods for Solving Flow and Transport Problems, Oklahoma State University (01/02).
26. Discontinuous Galerkin Applications to Multinumerics and Multiphase Flow, The University of Texas at Austin (11/01).
27. Locally Conservative Methods for Flow in Porous Media, The University of Pittsburgh, Pittsburgh (09/01).
28. Méthodes des éléments finis discontinus pour la simulation des écoulements dans les milieux poreux, Université Paris XI, Orsay, France (03/01).
29. Locally Conservative Methods for Subsurface Flow, Interdisziplinäres Zentrum für Wissenschaftliches Rechnen, University of Heidelberg, Germany (03/01).
30. Méthodes des éléments finis discontinus pour les écoulements dans les milieux poreux, INRIA-Rocquencourt, France (02/01).
31. 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).
32. Transport Schemes for Multicomponent, Multiphase Reactive Flow, ANDRA (French National Agency for Radioactive Waste Management), Châtenay-Malabry, France (02/01).

Conference Lectures

1. Adaptive and implicit high order methods for two-phase flow, *SIAM Annual 2006*, Boston (07/06).
2. Application of interior penalty Galerkin method to inverse problem, *SIAM Annual 2006*, Boston (07/06).
3. Improved discontinuous Galerkin methods for transport equations with varying diffusivity, *The Mathematics of Finite Elements and Applications 2006 (MAFELAP)*, Brunel University, England (06/06).
4. Finite element methods for an inverse problem, University of Maryland at Baltimore County (03/06).
5. On the choice of numerical fluxes for discontinuous Galerkin methods for coupled hyperbolic-parabolic flows, *Finite Element Circus*, Rutgers University (10/05).

6. Modeling Transition Flows Between Advection and Diffusion Regimes, *Eigth U.S. National Congress on Computational Mechanics (USNCCM VIII)*, Austin, Texas (07/05).
7. An Operator Splitting Technique for Incompressible Flows, *Third M.I.T. Conference*, Boston, MA, (06/05).
8. Discontinuous Galerkin Methods for Dynamic Viscoelasticity, *Finite Element Circus*, University of Delaware (04/05).
9. 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).
10. 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).
11. Coupling DG and MFE for Stokes/Darcy Flow, *Finite Element Circus*, Cornell University (11/03).
12. 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).
13. A Discontinuous Galerkin Discretization of Two-Phase Flow in Porous Media, *SIAM Geosciences*, Austin, Texas (03/03).
14. Discontinuous Finite Element Methods for Solving the Stokes and Navier-Stokes Equations, *982nd AMS Meeting*, University of Central Florida, Orlando, Florida (11/02).
15. Superconvergence and H(div) Projection for Discontinuous Galerkin Methods, *Finite Element Circus*, State College, PA (10/02).
16. Applications of Discontinuous Galerkin Methods to Environmental Problems, *Fifth World Congress on Computational Mechanics*, Vienna, Austria (07/02).
17. Miscible Displacement in Porous Media, *XIV International Conference on Computational Methods in Water Resources*, Delft, The Netherlands (06/02).
18. High-Order Discretization of Two-Phase Flow, *Industrial Affiliates Meeting*, Center for Subsurface Modeling, Austin, TX (11/01).
19. Discontinuous Galerkin Methods for Subsurface Flow, *2001 SIAM Annual Meeting*, San Diego, CA (07/01).
20. Discontinuous Galerkin Methods for Fractured Porous Media, *Sixth SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Boulder, CO (06/01).
21. 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).
22. Discontinuous Galerkin Methods for Subsurface Flow and Wave Propagation, *Industrial Affiliates Meeting*, Austin, TX (10/00).
23. 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).
24. Discontinuous Galerkin Methods for Flow and Transport Problems in Porous Media, *SuperConvergence in Finite Element Methods*, Texas Tech University, TX (05/00).
25. 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).
26. Discontinuous Galerkin Method for Single Phase Flow, *Fifth SIAM Conference on Mathematical and Computational Issues in the Geosciences*, San Antonio, TX (03/99).
27. Discontinuous Galerkin Method for Single Phase Flow, *Industrial Affiliates Meeting*, Center for Subsurface Modeling, Austin, TX (11/98).

28. Discontinuous Galerkin Methods, *Finite Element Rodeo*, College Station, TX (03/98).

Workshop Participations

- *2006 McGowan Institute for Regenerative Medecine 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).
- A DG Method with Non-Overlapping Domain Decomposition for the Stokes and the Navier-Stokes Problems, *Meeting on Discontinuous Galerkin Methods at Oberwolfach*, Oberwolfach, Germany (05/02).
- *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.

Conferences Organized

- Host and local organizer of the conference Finite Element Circus (www.math.pitt.edu/~riviere/circus04.html) at the University of Pittsburgh, April 16-17, 2004.

Mini-symposia and Seminars Organized

- Organizer of a mini-symposium on discontinuous Galerkin methods for IACM-ECCOMAS 2008.
- Co-organizer of a mini-symposium on discontinuous Galerkin methods for MAFELAP 2006 (06/06).
- Chair of a DG minisymposium for Third M.I.T. Conference 2005.
- Organizer of a mini-symposium on discontinuous Galerkin methods for ECCOMAS 2004 (07/04).
- 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 conference (03/03).
- Co-organizer of a minisymposium on Discontinuous Galerkin Methods, Fifth World Congress on Computational Mechanics (07/02).

Awards

- *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.

Teaching

- Graduate course *Numerical Methods in Scientific Computing I* M2070, Fall 2003, Fall 2005 and Fall 2006.
- Graduate course *Numerical Methods in Scientific Computing II* M2071, Spring 2004, Spring 2006 and Spring 2007.
- Graduate course *Advanced Scientific Computing II* M2602, 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.
- Graduate course *Finite Element Methods* M3072, Spring 2003 and Spring 2005.
- 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.

Graduate Research Assistant

- Leo Rehbolz, research assistant for Fall 2004. Leo worked on visualization and two-component two-phase flow. His work was supported by the grant CRDF.
- Qi Mi, research assistant for Summer 2005, 2006 and 2007.
- Yekaterina Epshteyn, research assistant for Summer and Fall 2006 and Summer 2007.

Membership to Ph.D. Committees

- Hattan Tawfiq, Graduation Dec 2002; Niyazi Sahin, Graduation Dec 2003. Cristian Nastase, department of Mechanical and Aerospace Engineering at University of Buffalo. Graduation Dec 2003; Adrian Dunca, Graduation May 2004; Faranak Pahvleni, Graduation Aug. 2004; Carolina Manica, Graduation Aug. 2006; Ahmet Duran, Graduation Aug. 2006; Leo Rebholz, Graduation May 2007; Gergina Pencheva, Graduation May 2007; Gary Hart, Overview (11/03); Judy Day, Overview (09/04); Dejun Xie, Overview (04/06); Monika Neda, Overview (06/06).

Membership to M.A. Committees

- Ethan Hyche. Graduation April 2007. Chair of M.A. Committee.

Professional Visits

- 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.

Interdisciplinary Activities

- Participation to the Society for Complexity in Acute Illness meetings, involving researchers from UPMC and the department of Mathematics (04/04-present). Co-chair of the Poster Session and Reception of the 3rd International Conference on Complexity in Acute Illness, 11/04.
- Participation to the FFF seminars series organized by Dr. P. Givi, Department of Mechanical Engineering, University of Pittsburgh, Spring 2003.

Other Professional Activities

- NSF Panelist (2007).
- External Reviewer for NSF (2006).
- 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).
- Reviewer for *Mathematical Reviews*.
- Reviewer of a book for *Mathematics of Computation*.
- Reviewer of manuscripts for *American Institute of Aeronautics and Astronautics (AIAA) Journal*, for *Advances in Water Resources*, for *Applications in Mathematics*, for *Applied Mathematics of the Arabian Journal for Science and Engineering*, for *Applied Numerical Mathematics*, for *Computers and Mathematics with Applications*, for *Computer Methods in Applied Mechanics and Engineering*, for *Communications in Numerical Methods in Engineering*, for *IMA Journal of Numerical Analysis*, 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 *Journal of Applied Numerical Mathematics*, for *Journal of Computational and Applied Mathematics*, for *Journal of Engineering Mathematics*, for *Journal of Fluids Engineering*, for *Journal of Scientific Computing*, for *Mathematics of Computation*, for *Mathematical Modelling and Numerical Analysis* previously RAIRO, for *Mathematical and Computer Modelling*, 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*.
- Member of Graduate Faculty of the University of Pittsburgh, 06/03-present.
- Organizer and responsible for the publication of technical reports for the department of mathematics (www.math.pitt.edu/techreports.html) (online version 2002-present; printed version 2006-present).
- Designer of the Computational and Applied Mathematics web site, constantly updated by the computational and applied mathematics faculty: www.math.pitt.edu/compmath/CompAppMathhome.html.
- Member of the American Mathematical Society, member of the Society for Industrial and Applied Mathematics, member of Association for Women in Mathematics.
- Organizer of discussion meetings involving several research groups from TICAM, on the unifying theme "Discontinuous Galerkin Methods" (2000-2002).
- Organizer and coordinator of the *TICAM Forum*, an open meeting for the discussion of subjects of common interest, related to the finite element methods, mainly for graduate students and researchers (1998-2002).
- Founding member of the first student chapter of the United States Association for Computational Mechanics at the University of Texas at Austin (1999-2002).

Outreach Activities

- Co-organizer with Dr. A. Vainchtein of the Summer Math Days 2006: a Summer program for high-school students (07/06) entering grades 10-12: www.math.pitt.edu/∼riviere/summermathdays06.html. The Summer Math Days 2007 is in preparation.
- 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.

Member of Comprehensive Exams Committees

- for the graduate students Lan Cheng, Faranak Pahlevani, Marie Hufford, Carolina Manica, Leo Rehbolz, Yekaterina Epshteyn, Qi Mi, Alexandr Labovskii, Monika Neda, Fatma Gurel, Dejun Xie, Ahmet Duran, Danail Vassilev, Eugene Trofimov.

Committee Service

- 2006/2007 Web site committee.
- 2005/2007 Undergraduate committee.
- 2005/2007 Computing committee.
- 2004/2005 and 2005/2006 Search committee for the tenure-track position in Scientific Computing position.
- 2003/2004 and 2005/2006 Search committee for the tenure-track position in Mathematical Biology.
- 2004 Preliminary examination committee.

Computer Skills

- Languages: Fortran, C, C++.
- Softwares: LaTeX, Matlab, Mathematica, Tecplot, Word, Excel.
- Operating Systems: UNIX, Linux, Windows.
- Parallel Machines: MPI, IBM SP2, Linux clusters.