CURRICULUM VITAE — GRADY B. WRIGHT

Boise State University
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EDUCATION

University of Colorado – Boulder, Colorado
Ph.D. in Applied Mathematics, May 2003
Advisor: Professor Bengt Fornberg
Dissertation: "Radial Basis Function Interpolation: Numerical and Analytical Developments"

University of Colorado – Boulder, Colorado
M.S. in Applied Mathematics, May 2000

Westminster College – Salt Lake City, Utah
B.S. in Mathematics (*Magna Cum Laude*), May 1997

PROFESSIONAL EXPERIENCE

7/16-Present	**Professor –** Boise State University
7/11-6/16	**Associate Professor –** Boise State University
7/11-Present	**Affiliated Faculty, Center for Geophysical Investigation of the Shallow Subsurface (CGISS) –** Boise State University
1/14-7/14	**Visiting Research Fellow – Mathematical Institute,** University of Oxford
7/07-6/11	**Assistant Professor –** Boise State University
7/06-7/07	**NSF Postdoctoral Fellow –** University of Utah
7/06-8/06	**Visiting Scientist, National Center for Atmospheric Research –** Boulder, CO
7/03-6/06	**NSF VIGRE Assistant Professor (Lecturer) –** University of Utah
9/99–5/03	**NSF VIGRE Graduate Trainee –** University of Colorado, Boulder
8/97 – 12/01	**Software Engineer III –** Ionics Instruments, Boulder, Colorado

SCHOLARLY ACTIVITY

RESEARCH AREAS

Computational Math, Scientific Computing, Numerical Methods for PDEs, Radial Basis Functions, High order and Spectral Methods, Approximation Theory, Mathematics of Data Science, Computational Fluid Dynamics, Computational Geosciences, and Mathematical Biology

GRANTS/AWARDS

- **National Science Foundation VIGRE Graduate Traineeship**, University of Colorado (1999-2003)

- **National Science Foundation VIGRE Postdoctoral Fellowship**, University of Utah (2003-2006)
- **National Science Foundation Postdoctoral Fellowship**, University of Utah (2006-2007)
- **National Science Foundation grant (ATM 0801309).** Collaboration in Mathematical Geosciences: Freedom from Coordinate Systems, and Spectral Accuracy with Local Refinement: Radial Basis Functions for Climate and Space-Weather Prediction. PI. Duration: 9/2006-9/2010. Award to Boise State: $45,040.
- **National Science Foundation grant (DMS 0540779).** Formation and Function of Physiological Gels. Co-PI. Duration: 6/2006-6/2010. Total award: $1,212,067. Award to Boise State University: $45,715.
- **Faculty Development Grant**. Office of the Vice President of Research, Boise State University. 1/2009.
- **National Science Foundation grant (DMS 0934581).** CMG Collaborative Research: Fast and Efficient Radial Basis Function Algorithms for Geophysical Modeling on Arbitrary Geometries. PI. Duration: 9/2009-9/2014. Total award: $1,000,000. Award to Boise State University: $208,360.
- **NVIDIA CUDA Research Center Program.** GPU Computing Research at Boise State University. Co-PI. Duration: 2011-2015.
- **National Science Foundation grant (DMS 1242876).** Pacific Northwest Numerical Analysis Seminar 2012. Co-PI. Duration: 8/2012-8/2013. Award to Boise State University: $8,200.
- **National Science Foundation grant (DMS 1160379).** FRG: Collaborative Research: Chemically-active Viscoelastic Mixture Models in Physiology: Formulation, Analysis, and Computation. PI. Duration: 9/15/2012 – 8/31/2016. Total award: $1,100,000. Award to Boise State University: $107,000.
- **National Science Foundation grant (ACI 1440638).** SI2-SSE: GEM3D: Open-source Cartesian adaptive complex terrain atmospheric flow solver for GPU clusters. Co-PI. Duration: 10/2014-9/2017. Total award Boise State Award: $500,000.
- **NASA Idaho Space Grant Consortium grant (ISGC 3065010).** Research Experience for Undergraduates in Computational Science: Massively Parallel Iterative Solvers for Computational Fluid Dynamics. PI. Duration 5/17 – 4/18. Award to Boise State University: $24,996.
- **National Science Foundation grant (CCF 1717556).** AF: Small: Collaborative Research: Scalable, high-order mesh-free algorithms applied to bulk-surface biomechanical problems. PI. Duration: 8/2017 – 8/2021. Award to Boise State University: $244,417.
- **National Science Foundation grant (DMS 1952674).** Collaborative Research: Optimal-Complexity Spectral Methods for Complex Fluids. PI. Duration: 7/2020 – 7/2023. Award to Boise State University: $100,000.

PUBLICATIONS[1]

JOURNAL ARTICLES (CHRONOLOGICAL ORDER)

1. B. Fornberg, T.A. Driscoll, G.B. Wright, and R. Charles. Observations on the behavior of radial basis functions near boundaries. *Comput. Math. Appl.,* 43 (2002), 473-490.
2. B. Fornberg, G.B. Wright, and E. Larsson. Some observations regarding interpolants in the limit of flat radial basis functions. *Comput. Math. Appl.* 47 (2004), 37-55.
3. B. Fornberg and G.B. Wright. Stable computation of multiquadric interpolants for all values of the shape parameter. *Comput. Math. Appl.* 48 (2004), 853-867.
4. G.B. Wright and B. Fornberg. Scattered node compact finite difference-type formulas generated from radial basis functions. *J. Comput. Phys.* 212 (2006), 99-123.
5. B. Fornberg, E. Larsson, and G.B. Wright. A new class of oscillatory radial basis functions. *Comput. Math. Appl.* 51 (2006), 1209-1222.
6. O.E. Livne and G.B. Wright. Fast multilevel evaluation of smooth radial basis function expansions. *ETNA*. 23 (2006), 263-287.
7. N. Flyer and G.B. Wright. Transport schemes on a sphere using radial basis functions. *J. Comput. Phys.* 226 (2007), 1059-1084.
8. F.J. Narcowich, J.D. Ward, and G.B. Wright. Divergence-free RBFs on Surfaces. *J. Fourier Anal. Appl.* 13 (2007), 643-663.

[1]Preprints available for download at http://math.boisestate.edu/~wright/research/

9. G.B. Wright, R.D. Guy, and A.L. Fogelson. An efficient and robust method for simulating two-phase gel dynamics. *SIAM J. Sci. Comput.*, 30 (2008), 2535-2565.
10. E.J. Fuselier, F.J. Narcowich, J.D. Ward, and G.B. Wright. Error and stability estimates for surface-divergence free RBF interpolants on the sphere. *Math. Comp.*, 78 (2009), 2157-2186.
11. J. Du, A.L. Fogelson, and G.B. Wright. A parallel computational method for simulating two-phase gel dynamics. *Int. J. Numer. Meth. Fluids*, 60 (2009), 633-649.
12. N. Flyer and G.B. Wright. A radial basis function method for the shallow water equations on a sphere. *Proc. Roy. Soc. A,* 465 (2009), 1949-1976.
13. E.J. Fuselier and G.B. Wright. Stability and error estimates for vector field interpolation and decomposition on the sphere with RBFs. *SIAM J. Numer. Anal.*, 47 (2009), 3213-3239.
14. J. Schmidt[2], C. Piret, N. Zhang, B.J. Kadlec, D.A. Yuen, Y. Liu, G.B. Wright, and E.O.D. Sevre. Modeling of tsunami waves and atmospheric swirling flows with graphics processing unit (GPU) and radial basis functions (RBF). *Concurrency Comput.: Pract. Exp.,* 22 (2010), 1813-1835.
15. G.B. Wright, N. Flyer, and D.A. Yuen. A hybrid radial basis function - pseudospectral method for thermal convection in a 3D spherical shell. *Geochem. Geophys. Geosyst.*, 11 (2010), Q07003.
16. R.D. Guy, T. Nakagaki, and G.B. Wright. Flow-induced channel formation in the cytoplasm of motile cells. *Phys. Rev. E*, 84:016310 (2011).
17. G.B. Wright, R.D. Guy, J. Du, and A.L. Fogelson. A high-resolution finite-difference method for simulating two-fluid, viscoelastic gel dynamics. *J. Non-Newton. Fluid Mech.*, 166 (2011), 1137-1157.
18. N. Flyer, E. Lehto, S. Blaise, G.B. Wright, and A. St-Cyr. A guide to RBF-generated finite differences for nonlinear transport: shallow water simulations on a sphere. *J. Comput. Phys.* 231 (2012), 4078–4095.
19. E.J. Fuselier and G.B. Wright. Scattered data interpolation on embedded submanifolds with restricted positive definite kernels: Sobolev error estimates. *SIAM J. Numer. Anal.* 50 (2012), 1753-1776.
20. V. Shankar, G.B. Wright, A.L. Fogelson, and R.M. Kirby. A Study of Different Modeling Choices For Simulating Platelets Within the Immersed Boundary Method. *Appl. Numer. Math.* 63 (2013), 58-77.
21. E.J. Fuselier and G.B. Wright. A High-Order Kernel Method for Diffusion and Reaction-Diffusion Equations on Surfaces. *J. Sci. Comput.* 56 (2013), 535-565.
22. J. Du, R.D. Guy, A.L. Fogelson, G.B. Wright, and J.P. Keener. An interface-capturing regularization method for solving the equations for two-fluid mixtures. *Commun. Comput. Phys.,* 14 (2013), 1322-1346.
23. E. Fuselier, T. Hangelbroek, F.J. Narcowich, J.D. Ward, and G.B. Wright. Localized bases for kernel spaces on the unit sphere. *SIAM J. Numer. Anal.,* 51 (2013), 2538-2562.
24. E. Fuselier, T. Hangelbroek, F.J. Narcowich, J.D. Ward, and G.B. Wright. Kernel based quadrature on spheres and other homogeneous spaces. *Numer. Math.,* 127 (2014), 57-92.
25. V. Shankar, G.B. Wright, A.L. Fogelson, and R.M. Kirby. A radial basis function (RBF)-finite difference method for the simulation of reaction-diffusion equations on stationary platelets within the augmented forcing method. *Int. J. Numer. Meth. Fluids*, 75 (2014), 1-22.
26. P-A. Arrial, N. Flyer, G.B. Wright, and L.H. Kellogg. On the sensitivity of 3D thermal convection codes to numerical discretization: A model intercomparison. *Geosci. Model Dev.*, 7 (2014), 2065-2076.
27. N. Flyer, G.B. Wright, and B. Fornberg. Radial Basis Function-generated Finite Differences: A Mesh-free Method for Computational Geosciences. *Handbook of Geomathematics, 2nd Edition.* Springer 2015. doi: 10.1007/978-3-642-27793-1_61-1.
28. E.J. Fuselier and G.B. Wright. Order-preserving derivative approximation with periodic radial basis functions. *Adv. Comput. Math.* 41 (2015), 23-53.
29. V. Shankar, G.B. Wright, A.L. Fogelson, and R.M. Kirby. A radial basis function (RBF)-finite difference (FD) method for diffusion and reaction-diffusion equations on surfaces. *J. Sci. Comput.,* 63 (2015), 745-768.
30. V. Shankar, G.B. Wright, A.L. Fogelson, and R.M. Kirby. Augmenting the Immersed Boundary Method with Radial Basis Functions (RBFs) for the Modeling of Platelets in Hemodynamic Flows. *Int. J. Numer. Meth. Fluids*, 79 (2015), 536-557.
31. G. B. Wright, M. Javed, H. Montanelli, and L.N. Trefethen. Extension of Chebfun to periodic functions. *SIAM J. Sci. Comput.*, 37 (2015), C554-C573.

32. E.J. Fuselier, V. Shankar, and G. B. Wright. A High-Order Radial Basis Function (RBF) Leray Projection Method for the Solution of the Incompressible Unsteady Stokes. *Comput. Fluids*, 128 (2016), 41-52.
33. A. Townsend, H. Wilber, and G. B. Wright, Computing with functions in spherical and polar geometries I. The sphere. *SIAM J. Sci. Comput.,* 38-4 (2016), C403-C425.
34. E.J. Fuselier and G. B. Wright. A radial basis function method for computing Helmholtz-Hodge decompositions. *IMA J. Numer. Anal.,* 37-2 (2017), 774-797.
35. G. B. Wright and B. Fornberg. Stable computations with flat radial basis functions using vector-valued rational approximations. *J. Comput. Phys.*, 331 (2017), 137-156.
36. A. Townsend, H. Wilber, and G. B. Wright. Computing with functions in spherical and polar geometries II. The disk. *SIAM J. Sci. Comput.,* 39-4 (2017), C238-C262.
37. E. Lehto, V. Shankar, and G.B. Wright. A radial basis function (RBF) compact finite difference (FD) scheme for reaction-diffusion equations on surfaces. *SIAM J. Sci Comput.*, 39-5 (2017), A2129-A2151.
38. V. Shankar and G. B. Wright. Mesh-free semi-Lagrangian methods for transport on a sphere using radial basis functions. *J. Comput. Phys.,* 366 (2018), 170-190.
39. K. P. Drake and G. B. Wright, A fast and accurate algorithm for spherical harmonic analysis on HEALPix grids with applications to the cosmic microwave background radiation. *J. Comput. Phys.*, 416 (2020).
40. K. P. Drake and G. B. Wright. A stable algorithm for divergence-free radial basis functions in the flat limit. *J. Comput. Phys.*, 417 (2020).
41. V. Shankar, G. B. Wright, and A. Narayan. A robust hyperviscosity formulation for stable RBF-FD discretizations of advection-diffusion-reaction equations on manifolds. SIAM J. Sci. Comput., 42(4), A2371-A2401 (2020).
42. K. P. Drake, E. J. Fuselier, and G. B. Wright. A partition of unity method for divergence-free or curl-free radial basis function approximation. SIAM J. Sci. Comput., 43(3), A1950-A1974 (2021).
43. V. Shankar, G. B. Wright, and A. L. Fogelson. An efficient high-order meshless method for advection-diffusion equations on time-varying irregular domains. *J. Comput. Phys.*, 445 (2021).
44. K. P. Drake, E. J. Fuselier, and G. B. Wright. Implicit surface reconstruction with a curl-free radial basis function partition of unity method. *Submitted* (2021)

REFEREED CONFERENCE PROCEEDINGS AND BOOK CHAPTERS

1. G.B. Wright and B. Fornberg. Scattered node mehrstellenverfahren-type formulas generated from radial basis functions. In *Computational Methods*, G. Liu, V. Tan, and X. Han, eds. Springer, Netherlands, 2006, 1391-1395.
2. U. Harlander, G.B. Wright, and C. Egbers. Reconstruction of the 3D flow field in a differentially heated rotating annulus by synchronized particle image velocimetry and infrared thermography measurements. *16th Int. Symp on Appl. Laser Techniques to Fluid Mechanics*, Lisbon, Portugal, July 09 – 12, 2012.
3. D.A. Sanchez[2], C. Gonzalez[2], D.A. Yuen, G.B. Wright, and G. Barnett[2]. High Rayleigh Number Mantle Convection on GPU. *GPU Solutions to Multi-Scale Problems in Science and Engineering,* D.A. Yuen, L. Wang, X. Chi, L. Johnsson, W. Ge, and Y. Shi, eds. Springer, Berlin, 2013, 335-352.
4. U. Harlander, Th. von Larcher, G.B. Wright, M. Hoff, K. Alexandrov, C. Egbers. Orthogonal Decomposition Methods to Analyze PIV, LDV, and Thermography Data of Thermally Driven Rotating Annulus Laboratory Experiments. *Modeling Atmospheric and Oceanic flows: Insights from Laboratory Experiments and Numerical Simulations.* T. von Larcher and P. D. Williams, eds. American Geophysical Union (AGU) Book Series, Wiley, 2014. doi: 10.1002/9781118856024.ch17.

NON-REFEREED ITEMS

1. G. B. Wright and L.N. Trefethen. Periodic Chebfuns. *Chebfun Guide*, T.A. Driscoll, N. Hale, and L.N. Trefethen, eds. Pafnuty Publications, Oxford, 2014, Chapter 11.
2. A. Townsend, H. Wilber, and G. B. Wright. Spherefun. *Chebfun Guide*, T.A. Driscoll, N. Hale, and L.N. Trefethen, eds. Pafnuty Publications, April, 2017, Chapter 17.

[2] Undergraduate student at time of submission.

TECHNICAL REPORTS

1. O.E. Livne and G.B. Wright. Fast multilevel evaluation of 1-D piecewise smooth radial basis function expansions. Manuscript originally refereed and accepted to the *SIAM Proceedings Geometric Design and Computing, Phoenix 2005.* These proceedings were never published.
2. 27 Total Authors. Fostering Interactions Between the Geosciences and Mathematics, Statistics, and Computer Science. *Technical Report UC/CS TR-2012-02*, Dept. Comp. Sci., Univ. Chicago, 2012.

SOFTWARE

- Contributor to the Chebfun open source software project (www.chebfun.org).
- Author of the SpherePts software package (https://github.com/gradywright/spherepts).

PRESENTATIONS

TALKS (CHRONOLOGICAL ORDER)

1. PhD Thesis Defense.
   University of Colorado, Boulder, April 3, 2003.
   Title: Radial Basis Function Interpolation: Numerical and Analytical Developments.
2. Applied Math Seminar.
   University of Utah, September 8, 2003.
   Title: An Introduction to the Radial Basis Function Method.
3. Graduate Student Seminar.
   University of Utah, April 7, 2004.
   Title: Connecting the Dots: The Role of Polynomial Interpolation in Numerical Analysis.
4. Applied Math Student Seminar.
   University of Utah, September 24, 2004.
   Title: Interpolation in Multiple Dimensions via Radial Basis Functions (RBFs)
5. First International Conference on Computational Methods.
   Singapore, December 15-17, 2004.
   Title: Scattered Node Compact Finite Difference-type Formulas Generated from Radial Basis Function.
6. Department of Mathematics Colloquium.
   Colorado School of Mines, Golden, CO, February 7, 2005.
   Title: Scattered Node Finite Difference-Type Formulas Generated from Radial Basis Functions.
7. Department of Mathematics Colloquium.
   Illinois Institute of Technology, Chicago, IL, March 21, 2005.
   Title: Scattered Node Finite Difference-Type Formulas Generated from Radial Basis Functions.
8. SIAM Conference on Geometric Design and Computing.
   Phoenix, AZ, October 30 – November 3, 2005.
   Organizer for minisymposium "Radial Basis Functions: Theory and Computation".
   Title: A Multilevel Method for the Fast Evaluation of Smooth Radial Basis Function Expansions.
9. Department of Mathematics Colloquium.
   Boise State University, February 17, 2006.
   Title: Recent developments in radial basis functions interpolation with applications to the geosciences.
10. Approximation theory seminar.
    University of Utah, October 17, 2006.
    Title: Radial Basis Functions I: An overview.
11. Approximation theory seminar.
    University of Utah, October 31, 2006.
    Title: Radial Basis Functions II: Approximation on the Sphere with Applications to the Geosciences.
12. SIAM Conference on Mathematical and Computational Issues in the Geosciences.
    Santa Fe, NM, March 19-22, 2007.
    Co-organizer for minisymposium "Radial Basis Functions on the Sphere for Geophysical Applications".
    Title: Transport Schemes on the Sphere Using Radial Basis Functions.
13. Applied Math Seminar.

University of Utah, April 16, 2007.
Title: An Efficient and Robust Method for Simulating Two-Phase Gel Dynamics.

14. Graduate Student Seminar.
Boise State University, September 12, 2007.
Title: An Introduction to Radial Basis Function Approximation with Applications to Geophysics.
15. Special colloquium in commemoration of Gene H. Golub.
Boise State University, February 29, 2008.
Title: Probability, linear algebra, and numerical analysis: the mathematics behind Google's PageRank.
16. 10th Copper Mountain Conference on Iterative Methods.
Copper Mountain, Colorado, April 6-11, 2008. Contributed.
Title: A Robust Multigrid Preconditioner for Two Phase Gel Dynamics.
17. Petascale Computing Workshop: Its Impact on Geophysical Modeling and Simulation.
National Center for Atmospheric Research (NCAR) Boulder, CO, May 5-7, 2008. Invited.
Title: Customized Approximation with Radial Basis Functions.
18. PDEs on the Sphere.
Santa Fe, NM, April 27-30, 2009. Invited.
Title: RBF approximation of vector functions and their derivatives on the sphere with applications to solving PDEs.
19. College of Engineering Seminar.
Boise State University, May 14, 2009. Invited.
Title: From biological fluid dynamics to geophysical fluid dynamics: An overview of some new computational methodologies.
20. European Conference on Numerical Mathematics and Advanced Applications (ENUMATH).
Uppsala University, Sweden, June 29-July 3, 2009. Invited.
Title: RBF approximation of vector functions and their derivatives on the sphere with applications.
21. Graduate Student Seminar.
Boise State University, November 18, 2009.
Title: Scattered node finite difference-type formulas generated from radial basis functions with applications.
22. Material Science and Engineering Seminar.
Boise State University, February 12, 2010. Invited.
Title: Numerical modeling of biogels.
23. Mathematics Colloquium
University of Wyoming, April 22, 2010. Invited.
Title: Computational models for gel dynamics.
24. Optimal Configurations on the Sphere and Other Manifolds
Vanderbilt University, May 17-20, 2010. Contributed.
Title: Geophysical modeling on the sphere with radial basis functions.
25. Pacific Northwest Numerical Analysis Seminar
Washington State University, October 2, 2010. Invited.
Title: Computational techniques for simulating gel dynamics.
26. Applied Math Seminar
University of California, Davis, November 17, 2010. Invited.
Title: A computational method for simulating viscoelastic gel dynamics.
27. Applied Math Seminar
University of Utah, January 21, 2011. Invited.
Title: Reconstruction and decomposition of vector fields on the sphere with applications.
28. International Symposium in Approximation Theory
Vanderbilt University, May 17-21, 2011. Invited.
Title: A kernel method for solving parabolic differential equations on surfaces.
29. NSF-CBMS Regional Conference: Radial Basis Functions Mathematical Developments and Applications.
University of Massachusetts, Dartmouth, June 20-24, 2011. Invited supplementary lecture.
Title: An algorithm for stable computations with flat radial basis functions.
30. ICIAM 2011

Vancouver, British Columbia, Canada, July 18-22, 2011.
Co-organizer of minisymposium: Complex Fluid Models and Computational Methods for Gel Mechanics
Title: A Method for Simulating Two-fluid, Viscoelastic Gel Dynamics.

31. Second Annual CAES Workshop on Modeling, Simulation, and Visualization.
    Boise, ID, September 8-9, 2011. Invited.
    Title: Applications of kernel approximation to modeling and simulation.
32. Workshop on Mathematics in the Geosciences.
    Northwestern University, Evanston, IL, October 3-6, 2011. Invited.
    Title: Radial Basis Functions for Computational Geosciences
33. American Mathematical Society Western Section Meeting 2012.
    University of Hawaii, Honolulu, HI, March 3-4, 2012. Invited.
    Title: Solving Partial Differential Equations on Surfaces with Kernels.
34. Computational Math Seminar.
    Arizona State University, March 30, 2012. Invited.
    Title: A high-order kernel method for partial differential equations on surfaces.
35. Applied Math Seminar.
    SUNY Buffalo, April 10, 2012. Invited.
    Title: A high-order kernel method for partial differential equations on surfaces.
36. Eigenvalues/singular values and fast PDE algorithms: acceleration, conditioning, and stability.
    Banff International Research Station, Alberta, Canada, June 24-29, 2012. Invited.
    Title: A Radial Basis Function Partition of Unity Method for Transport on the Sphere.
37. SIAM Annual Meeting 2012
    Minneapolis, MN, USA, July 9-13, 2012. Invited minisymposium talk (MS3).
    Title: A Partition of Unity Method for Divergence-free Approximation of Vector Fields on the Sphere.
38. Workshop: Bridging the Gap Between the Geosciences and Mathematics, Statistics, and Computer Science.
    Princeton University, NJ, USA, Oct 1-2, 2012. Co-organizer and contributed speaker.
    Title: Can Problems in the Geosciences Inspire Fundamental Research in the Mathematical Sciences?
39. 14th International Conference on Approximation Theory
    San Antonio, TX, April 7-10, 2013. Invited plenary speaker.
    Title: Approximation on Surfaces with Kernels: Recent Developments and Applications.
40. SIAM Annual Meeting 2013
    San Diego, CA, USA, July 8-12, 2013. Minisymposium co-organizer (MS10,MS24,MS37) and speaker.
    Title: A comparison between RBF-FDM and RBF-PUM for shallow water flows on the sphere.
41. Seminar, Dept. of Geosciences
    Boise State University, Oct. 21, 2013. Invited.
    Title: Radial basis functions: A mesh-free modeling framework for computational geosciences.
42. Seminar, Numerical Analysis Group
    University of Oxford, Feb. 6, 2014. Invited.
    Title: Approximation on surfaces with radial basis functions: from global to local methods.
43. Seminar, Numerical Analysis Group
    University of Manchester, Mar. 14, 2014. Invited.
    Title: Solving PDEs on surfaces with radial basis functions: from global to local methods.
44. Seminar, Numerical Analysis Group
    University of Padua, Apr. 10, 2014. Invited.
    Title: Solving PDEs on surfaces with radial basis functions: from global to local methods.
45. 8th International Conference on Curves and Surfaces
    Paris, France, June 14, 2014. Invited plenary speaker.
    Title: Kernel based approximation on surfaces: from global to local methods.
46. SIAM Conference on Computational Science and Engineering (CSE) 2015
    Salt Lake City, Utah, March 14-18, 2015. Minisymposium organizer and speaker.
    Title: A rational approximation algorithm for stable computations with flat RBFs.
47. SRC 2015 *Ten Talks*

Boise State University, June 18, 2015. Invited
Title: Computational Models of Biological Gels

48. New Directions in Numerical Computation
University of Oxford, Aug. 25-28, 2015. Contributed.
Title: An Extension of Chebfun to spheres and disks.
49. Mathematics Colloquium
Vanderbilt University, Nov. 11, 2015. Invited
Title: Computing with functions on the sphere using low rank approximations
50. Applied Math Seminar
MIT, Dec. 7, 2015. Invited
Title: Computing with functions on the sphere using low rank approximations.
51. 15th International Conference on Approximation Theory
San Antonio, Texas, May 23, 2016. Invited
Title: Optimal complexity spectral methods for partial differential equations on the sphere and disk.
52. 9th International Conference on Mathematical Methods for Curves and Surfaces
Tønsberg, Norway, June 24, 2016. Invited
Title: Numerically solving time-dependent PDEs on the sphere with a RBF partition of unity method.
53. 4th Dolomites Workshop on Constructive Approximation and Applications
Alba di Canazei, Italy, Sept. 12, 2016. Invited plenary speaker.
Title: Low rank approximation of functions in polar and spherical geometries.
54. Mathematics Colloquium
University of Idaho, April 14, 2017. Invited.
Title: Low rank approximation of functions in polar and spherical geometries.
55. Modeling Complex Fluids and Gels for Biological Applications
University of Utah, May 6, 2017. Invited speaker.
Title: Meshfree methods for numerically solving PDEs on surfaces.
56. IMAGe Theme of the Year 2017: Workshop on Multiscale Geoscience Numerics
National Center for Atmospheric Research, Boulder, Colorado, May 17, 2017. Invited speaker.
Title: Semi-Lagrangian Methods for Transport on a Sphere Using Radial Basis Functions.
57. 27th Biennial Conference on Numerical Analysis
Strathclyde, Scotland, June 24, 2017. Minisymposium co-organizer and speaker
Title: A high-order meshfree method for advection dominated PDEs on surfaces.
58. ICERM Workshop: Localized Kernel-Based Meshless Methods for Partial Differential Equations
Providence, Rhode Island, August 20, 2017. Invited speaker.
Title: Meshfree semi-Lagrangian methods for transport on spheres and other surfaces.
59. 2017 SIAM Pacific Northwest Regional Conference
Oregon State University, October 28, 2017. Invited plenary speaker
Title: Computing with functions in polar and spherical geometries.
60. Scientific Computing Colloquium
Uppsala University, Sweden. January 17, 2018. Invited
Title: Meshfree semi-Lagrangian methods for transport on spheres and other surfaces.
61. International Conference on Spectral and High Order Methods
Imperial College, London, UK, July 9-13, 2018. Invited
Title: Localized high-order meshfree methods for semi-Lagrangian advection on surfaces.
62. Meshfree and Particle Methods: Applications and Theory
Santa Fe, New Mexico, September 10-12, 2018. Invited
Title: Localized high-order meshfree methods for semi-Lagrangian advection on surfaces.
63. SIAM Conference on Computational Science and Engineering (CSE) 2019
Spokane, Washington, February 25 - March 1, 2019. Minisymposium organizer and speaker.
Title: A High-order Meshfree Semi-Lagrangian Method for Advection on Manifolds: Mass-conservation
64. 16th International Conference on Approximation Theory
Nashville, Tennessee, May 19 – 12, 2019. Minisymposium co-organizer and speaker.

Title: Localized Meshfree Semi-Lagrangian Advection Schemes for Transport on Surfaces

65. European Numerical Mathematics and Advanced Applications Conference 2019
    Egmond aan Zee, Netherlands, September 30 – October 4, 2019. Invited.
    Title: Radial basis function finite differences for solving PDEs on surfaces
66. 2nd Biennial Meeting of the SIAM Pacific Northwest Section
    Seattle, Washington, October 18 – 20, 2019. Minisymposium co-organizer and speaker.
    Title: Radial basis function finite differences for solving PDEs on surfaces
67. American Mathematical Society Western Section Meeting 2020.
    University of Utah, Virtual, October 2020. Invited.
    Title: A meshfree partition of unity method for divergence-free/curl-free approximation
68. SIAM Conference on Mathematical & Computational Issues in the Geosciences
    Politecnico di Milano, Italy (Virtual), June 2021. Invited.
    Title: Reconstructing Divergence-Free or Curl-Free Vector Fields using a Meshfree Partition of Unity Method

WORKSHOPS

1. Dolomites Research Week on Approximation
   Alba di Canazei, Italy, Sept. 9-13, 2013. Principal lecturer for 7 tutorials.
   Lecture series: Kernel approximation on the sphere with applications to computational geosciences.
2. Montestigliano Workshop
   Stigliano, Tuscany, Italy, April. 13-19, 2014. Principal lecturer.
   Lecture series: Radial Basis Function Methods for Scientific Computing.

POSTERS

1. SAMSI Conference on Multiscale Model Development and Control Design.
   Research Triangle Park, NC, January 17-20, 2004. Contributed.
   G.B. Wright. Stable computation of flat radial basis functions.
2. AGU Fall Meeting.
   San Francisco, CA, December 15-19, 2008. Contributed.
   G.B. Wright, N. Flyer, and D.A. Yuen, 3-D spherical mantle convection with radial basis functions.
3. Opportunities and Challenges in Computational Geophysics workshop.
   California Institute of Technology, Pasadena, CA, March 30-31, 2009. Contributed.
   G.B. Wright, N. Flyer, and D.A. Yuen. 3-D Spherical Mantle Convection with Radial Basis Function.
4. EGU General Assembly.
   Vienna, Austria, April 19-24, 2009. Contributed. Abstract ID EGU2009-13753
   N. Flyer, G.B. Wright, and D.A. Yuen. High Rayleigh number 3-D spherical mantle convection with radial basis functions.
5. AGU Joint Assembly.
   Toronto, Canada, May 24-27, 2009. Contributed. Abstract ID DI11A-04
   G.B. Wright, N. Flyer, D.A, Yuen, M. Monnereau , and S. Zhang. Onset of Time-Dependent 3-D spherical Mantle Convection using a Radial Basis Function-Pseudospectral Method; Spectral-Finite Volume; Spectral Higher-Order Finite-Difference Methods.
6. Undergraduate Research and Scholars Conference.
   Boise State University, April 20, 2009
   G.A. Barnett and G.B. Wright. Numerical Methods for Thermal Convection with Applications to the Earth's Mantle.
7. AGU Fall Meeting.
   San Francisco, CA, December 14-18, 2009. Contributed. ID DI31A-1600
   G.A. Barnett, G.B. Wright, and D.A. Yuen. GPU implementation for three-dimensional mantle convection at high Rayleigh number.
8. AGU Fall Meeting.
   San Francisco, CA, December 5-9, 2011. Contributed. Abstract ID EP21D-07

K.E. Riley, J.L. Pierce, A.J. Hopkins, and G.B. Wright. Wildfires, debris flows, and climate: Using modern and ancient deposits to reconstruct Holocene sediment yields in central Idaho.

9. AGU Fall Meeting.
   San Francisco, CA, December 5-9, 2011. Contributed. Abstract ID DI23A-2077
   N. Flyer, G.B. Wright, P. Arrial, and L.H. Kellogg. On the instability of classical steady-state solutions for mantle convection in 3D spherical shells.
10. EGU General Assembly 2012.
    Vienna, Austria, April 22-27, 2012. Contributed. Abstract ID EGU2012-5368
    U. Harlander, G. B. Wright, and C. Egbers. Reconstruction of the 3D flow field in a differentially heated rotating annulus laboratory experiment.
11. SIAM Annual Meeting 2012
    Minneapolis, MN, USA, July 9-13, 2012. Contributed.
    G. B. Wright and K. Aiton. A Radial Basis Function Partition of Unity Method for Transport on the Sphere.
12. Pacific Northwest Numerical Analysis Seminar 2012
    Boise, ID, USA, October 27, 2012. Contributed.
    G. B. Wright and K. Aiton. A Radial Basis Function Partition of Unity Method for Transport on the Sphere.
13. AGU Fall Meeting
    San Francisco, CA, December 9-13, 2013. Contributed. Abstract ID DI31A-2193
    P.A. Arrial, N. Flyer, G.B. Wright, L. H. Kellogg. Mantle convection benchmarking in a 3D spherical shell: on the transitional behavior of polyhedral pattern formations.
14. AGU Fall Meeting
    San Francisco, CA, December 9-13, 2013. Contributed. Abstract ID DI31A-2212
    N. Flyer, J. Mead, F.J. Simons, S. Stein, G.B. Wright, D.A. Yuen. CMG++: Consortium for Mathematics in the Geosciences Promoting the development and application of mathematics, statistics, and computational sciences to the geosciences.
15. SIAM Annual Meeting 2016
    Boston, MA, USA, July 11-15, 2016. Contributed.
    K. P. Drake and G. B. Wright. A Stable Algorithm for Divergence and Curl-Free Radial Basis Functions in the Flat Limit.
16. NSF SI2 PI Meeting 2018
    Washington, DC April 30 – May 1, 2018
    J. Hasbestan, S. Aiton, B. G. B. Wright, D. Calhoun, I. Senocak, and B. Peck. Massively Parallel Solvers for Computational Fluid Dynamics on Multi-block Cartesian Grids
17. SIAM Annual Meeting 2018
    Portland, OR, USA, July 9-13, 2018. Contributed.
    K. P. Drake and G. B. Wright. Fast Algorithms for Cosmic Microwave Background Radiation Data on Healpix Points.
18. SIAM Computational Science and Engineering (CSE) 2019
    Spokane, WA, USA, February 25 – March 1, 2019. Contributed.
    S. Aiton, D. Calhoun, G. B. Wright. A Massively Parallel Solver for Poisson's Equation on Block Structured Cartesian Grids.
19. SIAM Computational Science and Engineering (CSE) 2019
    Spokane, WA, USA, February 25 – March 1, 2019. Contributed.
    S. B. Shaw and G. B. Wright. A Comparison of RBF-FD Methods for Solving Partial Differential Equations on Surfaces.
20. SIAM Computational Science and Engineering (CSE) 2019
    Spokane, WA, USA, February 25 – March 1, 2019. Contributed.
    D. Malmuth and G. B. Wright. Meshfree Semi-Lagrangian Schemes for Advection on Surfaces: Polyharmonic Splines Augmented with Polynomials.
21. SIAM Computational Science and Engineering (CSE) 2019
    Spokane, WA, USA, February 25 – March 1, 2019. Contributed.

K. P. Drake and G. B. Wright. Fast Algorithms for Cosmic Microwave Background Radiation Data on Healpix Points.

GRADUATE STUDENTS

- **Chair/Advisor, Master's Thesis Committee for Joseph Lohmeier**, Boise State University, 2009-2011.
- **Chair/Advisor, Master's Thesis Committee for Kevin Aiton**, Boise State University, 2012-2014.
- **PhD Committee, Varun Shankar**, School of Computing, University of Utah, 2011-2014.
- **Chair/Advisor, Master's Thesis Committee for David Sanchez**, Boise State University, 2011-2013.
- **PhD Committee, Arthur Mitrano**, School of Math and Stat., Arizona State Univ., 2014-Present.
- **Chair/Advisor, Master's Thesis Committee, Heather Wilber**, Boise State University, 2014-2016.
- **Chair/Advisor, Master's Thesis Committee, Kathryn Drake**, Boise State University, 2016-2017.
- **Chair/Advisor, Master's Thesis Committee, Daniel Malmuth**, Boise State University, 2017-2019.
- **Chair/Advisor, Master's Thesis Committee, Sage Shaw**, Boise State University, 2017-2019.
- **PhD Advisor, Kathryn Drake,** Boise State University, 2017 – 2020
- **PhD Advisor, Andrew Jones,** Boise State University, 2018 – Present
- **PhD Advisor, Michael Chiwere,** Boise State University, 2020 – Present

UNDERGRADUATE STUDENTS

- **Advisor, NSF REU Project for Gregory Barnett**, Boise State University, AY 2008-2009.
    - Dr. Barnett finished his PhD in Applied Mathematics from the University of Colorado, Boulder in June 2015.
- **Advisor, NSF REU Project for Kevin Aiton**, Boise State University, 2010-2011.
    - Dr. Aiton finished his PhD in Applied Mathematics from the University of Delaware in 2019.
- **Advisor, NSF REU Project for Tommy Long**, Boise State University, Fall 2011.
- **Advisor, NSF REU Project for Scott Aiton**, Boise State University, Summer 2013-2014. Fall 2016-2020

SERVICE

PROFESSIONAL SERVICE

CONFERENCE/WORKSHOP ORGANIZATION

- **Co-Organizer, NSF REU Summer Program on Inverse Problems**, University of Utah, Summer 2004.
- **Minisymposium Organizer, SIAM Conference on Geometric Design and Computing 2005**, Phoenix, AZ.
- **Minisymposium Organizer, SIAM Conference on Mathematical and Computational Issues in the Geosciences 2007**, Santa Fe, NM.
- **Minisymposium Organizer**, **International Congress on Industrial and Applied Mathematics 2011**, Vancouver, BC.
- **Minisymposium Co-Organizer**, **14th International Conference on Approximation Theory 2013,** San Antonio, TX.
- **Co-organizer, Workshop: Bridging the Gap Between the Geosciences and Mathematics, Statistics, and Computer Science**, Princeton University, Fall 2012.
- **Co-organizer, 25th Annual Pacific Northwest Numerical Analysis Seminar**, Boise State University, Fall 2012.
- **Minisymposium Co-Organizer, SIAM Annual Meeting 2013**, San Diego, CA.
- **Minisymposium Organizer, 8th International Conference on Curves and Surfaces 2014**, Paris, France.
- **IMA Hot Topics Workshop Co-Organizer, "Impact of Waves Along Coastlines"**, IMA, University of Minnesota, October 2014.
- **Conference Co-organizer, CMG++ Roadmap Workshop**, Boise State University, Sept. 18-19, 2014.

- **Minisymposium Co-Organizer, SIAM Computational Science and Engineering 2015**, Salt Lake City, five-part minisymposium.
- **Conference Co-Organizer, Computational Biofluids in Physiology 2015**, Salt Lake City, May 14-15.
- **Minisymposium Organizer, 9th International Conference on Curves and Surfaces 2016**, Tønsberg, Norway.
- **Minisymposium Organizer, 27th Biennial Conference on Numerical Analysis** 2017, Strathclyde**,** Scotland.
- **Minisymposium Organizer, SIAM Computational Science and Engineering 2019**, Spokane, two-part minisymposium.
- **Minisymposium Co-Organizer, International Conference on Approximation Theory 16 (AT16),** Vanderbilt, two-part minisymposium.
- **Conference Co-Organizer, Biennial SIAM Pacific Northwest Section Meeting**, Seattle University, Oct. 18-20, 2019.

REFEREE/REVIEWER

- **Panel and mail reviewer:** US National Science Foundation (NSF), Natural Sciences and Engineering Research Council (NSERC) of Canada, Research Grants Council (RGC) of Hong Kong
- **Tenure evaluation letter writer.**
- **Referee for the following journals:**
  Journal of Scientific Computing, IMA Journal of Numerical Analysis, SIAM Journal of Scientific Computing, SIAM Journal of Numerical Analysis, Journal of Computational Physics, Journal of Computational Biology, Advances in Computational Mathematics, Computer Methods in Applied Mechanics and Engineering, International Journal for Numerical Methods in Fluids, Journal of Computational and Applied Mathematics, Numerical Methods for Partial Differential Equations, Computers and Mathematics with Applications, Boundary Value Problems, Academic Press, Numerical Algorithms, Springer Lecture notes in Computer Science, Applied Numerical Mathematics.

COMMUNITY SERVICE

- **Classroom volunteer**, Liberty Elementary School, Boise, 2011-Present.
- **Hiring Committee Numerical Analysis Group**, University of Oxford, Oxford UK, 2014.
- **Presentation on fractals for 4-6 graders**, Liberty Elementary School, Boise, Spring 2015.

UNIVERSITY SERVICE

STUDENTS

- **Mathematics Academic Advisor**, Boise State University, Fall 2007-present.
- **Master's Thesis Committee for Garrett Saunders**, Boise State University, 2008-2009.
- **Master's Thesis Committee for Jean Schneider**, Boise State University, 2011-2012.
- **Master's Thesis Committee for Chad Hammerquist**, Boise State University, 2011-2012.
- **Master's Thesis Committee for John Hutchins**, Boise State University, 2012-2013.
- **Master's Thesis Committee for Talin Masihimirzakhanian**, Boise State University, 2016-2017.

COMMITTEES

- **Applied Math Committee**, Boise State University, Fall 2007-present.
- **Core Course Subcommittee of the Graduate Committee**, Boise State University, Fall 2007.
- **Applied Math Subcommittee of the Graduate Committee**, Boise State University, Fall 2007.
- **Visiting Position Hiring Committee**, Boise State University, Spring 2008.
- **MATH 333 Curriculum Committee**, Boise State University, Spring 2008-Fall 2008.
- **Applied Math Hiring Committee**, Boise State University, Fall 2009-Spring 2010.
- **Natural Sciences Curriculum Committee**, Boise State University, Fall 2009-Spring 2013.

- **University Curriculum Committee**, Boise State University, Fall 2009-Spring 2013.
- **Math Department Workload Policy Committee**, Boise State University, Fall 2012-Spring 2013.
- **Department Chair Selection Committee,** Boise State University, 2014.
- **Department Tenure Progress Review Committee,** Boise State University, 2014-2016 (Chair 2016).
- **Department Salary Committee,** Boise State University, 2016.
- **Computing Colloquium Committee,** Boise State University, 2016-2019.
- **Mathematics Graduate Committee,** Boise State University, 2016-2019.
- **Department Hiring Committee (TT),** Boise State University, 2017-2018 (Chair).
- **Department Hiring Committee (Lecturer),** Boise State University, 2017.
- **Tenure and Promotion Policy Committee,** Boise State University, 2017-2018.
- **Computing Admissions Committee,** Boise State University, 2018-present.
- **Personnel and Budget Committee,** Boise State University, 2018-present.
- **Department Tenure Progress Review Committee,** Boise State University, 2019.
- **Colloquium Organizer,** Boise State University, 2019-present.
- **Department Hiring Committee (TT),** Boise State University, 2019-present.

ACADEMIC DEVELOPMENT

- **MATH 365 Intro to Computational Math:** developed course and continue to refine it.
- **Computational Science and Engineering Minor:** assisted Dr. Senocak with developing this new minor and serving as one of the math department contacts for students pursuing it.

HONORS

- Invited Plenary Speaker, 2017 SIAM Pacific Northwest Regional Conference
  Oregon State University, October 27-29, 2017.
- Invited Plenary Speaker, 4th Dolomites Workshop on Constructive Approximation and Applications
  Alba di Canazei, Italy, Sept. 8-13, 2016.
- Invited Plenary Speaker, 8th International Conference on Curves and Surfaces, Paris, June 12-18, 2014.
- Invited Plenary Speaker, 14th International Conference on Approximation Theory, San Antonio, TX, April 7-10, 2013.
- Outstanding instructor of mathematics, University of Utah (Fall 2006)
- Outstanding instructor of mathematics, University of Utah (Spring 2005)

PROFESSIONAL MEMBERSHIP

- **Society for Industrial and Applied Mathematics (SIAM)**, 2000-Present.
- **American Geophysical Union**, 2009-Present.