DEPARTMENT OF MATHEMATICS

RECENT FACULTY PUBLICATIONS

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Research Interests and Recent Publications of Faculty

Each of the following sections of this document contains key words on research interests, and a list of recent publications for each faculty member of the Department of Mathematics. Please contact the faculty members (`http://www.math.wsu.edu/faculty`) directly for more information about their research interests and publications.

K. A. Ariyawansa

Optimization Algorithms • High Performance Computing
Operations Research • Statistical Inference

1. On the complexity of the translational-cuts algorithm of Burke, Goldstein, Tseng and Ye for convex minimax problems, (with P.L. Jiang), *J. Optimization Theory and Its Applications*, **107** (2000), 223–243.

2. Special Issue of *Mathematical Programming, Series B*, titled Studies in Algorithmic Optimization: Festschrift in Honor of William C. Davidon (with R.B. Mifflin and J.L. Nazareth) Editor, **87**(2) (2000), 156 pp.

3. A collection of multistage stochastic linear programming test problems (Version 1) (with A.J. Felt), **Technical Report 00-3**, Department of Pure and Applied Mathematics, Washington State University, Pullman, WA, 102 pp. (An abridged version of this is Item 10 which appeared in *INFORMS Journal on Computing*.)

4. A characterization of convexity-preserving maps from a subset of a vector space into another vector space (with W.C. Davidon and K.D. McKennon), *Journal of the London Mathematical Society*, **64** (2001), 179–190.

5. On a characterization of convexity-preserving maps, Davidon's collinear scalings and Karmarkar's projective transformations (with W.C. Davidon and K.D. McKennon), *Mathematical Programming, Ser. A*, **90** (2001), 153–168.

6. Test set for stochastic linear programming (with A.J. Felt), `http://www.uwsp.edu/math/afelt/slptestset.html`, April 2001. (This is a software package.)

7. SLPlib: Input routines and data structures for stochastic linear programming (with A.J. Felt), `http://www/uwsp.edu/math/afelt/slpinput.html`, June 2001. (This is a software package.)

8. CPA: Cutting plane algorithms for two-stage stochastic programming (with A. J. Felt and J. J. Sarich), `http://www-neos.mcs.anl.gov/neos/solvers/SLP:CPA/`, November 2002. (This is a software package.)

9. A note on line search termination criteria for collinear scaling algorithms (with W. L. Tabor), *Computing*, **70** (2003), 25–39.

10. On a new collection of stochastic linear programming test problems (with A. J. Felt) *INFORMS Journal on Computing*, **16**(3) (2004), 291–299. (This is an abridged version of Item 3.)

11. A safeguarded linesearch algorithm based on conic interpolation (with N. Begashaw), *Proceedings of the Tenth International Conference on Information System Analysis and Synthesis, Vol. III*, (2004), 263–268.

12. A family of stochastic programming test problems based on a model for tactical manpower planning (with C. Cacho and A. J. Felt), *Journal of Mathematical Modeling and Algorithms*, **4**(4) (2005), 369–390.

13. Stochastic semidefinite programming: a new paradigm for stochastic optimization (with Y. Zhu), *4OR—Quarterly Journal of Belgian, French and Italian Operations Research Societies*, **4** (2006), 239–253.

14. A class of collinear scaling algorithms for bound-constrained optimization: convergence theorems (with W. L. Tabor), *Journal of Mathematical Analysis and Applications*, **334** (2007), 716–737.

15. A class of volumetric center decomposition algorithms for stochastic quadratic programming (with Y. Zhu), *Applied Mathematics and Computation*, **186** (2007) 1683–1693.

16. A network model of geometrically constrained deformation of granular materials, (with L. Beryland and A. Panchenko), *Networks and Heterogeneous Media*, **3(1)** (2008) 125–148.

17. A class of collinear scaling algorithms for bound-constrained optimization: derivation and computational results (with W. L. Tabor), *Journal of Computational and Applied Mathematics,* **230(1)** (2009) 143–163.

Thomas J. Asaki

Applied Optimization • Image and Signal Analysis

1. A numerical study of the dependence of the surface temperature of beta layered regions on absolute thickness (with P.S. Ebey and J.K. Hoffer), *Fusion Technology*, **37** (2000), 32-37.

2. Optical resonant ultrasound spectroscopy for fluid properties measurement (with T.C. Hale), *IEEE Ultrasonics, Ferroelectrics and Frequency Control*, **48** (2001), 879-885.

3. Resonant ultrasonic vibration detection study (with T.C. Hale), *Quantitative nondestructive evaluation*, AIP Conference Proceedings, **615** (2002), 992-998.

4. Information extraction from muon radiography data (with K. Borozdin, R. Chartrand, N. Hengartner, G. Hogan, C. Morris, W. Priedhorsky, R. Schirato, L. Schultz, M. Sottile, K. Vixie, B. Wohlberg and G. Blanpied), *ISAS/CITSA 2004: International Conference on Cybernetics and Information Technologies, Systems and Applications and 10th International Conference on Information systems Analysis and Synthesis, Proceedings: Communications, Information and Control Systems, Technologies and Applications*, **2** (2004), pp 2730.

5. Abel inversion using total-variation regularization (with R. Chartrand, K.R. Vixie and B. Wohlberg), *Inverse Problems*, **21**(6) (2005), 1895-1903.

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7. Optimizing the tracking efficiency for cosmic ray muon tomography (with J.A. Green, C. Alexander, J. Bacon, G. Blanpied, K. Borozdin, A. Canabal-Rey, M. Cannon, R. Chartrand, D. Clark, C. Espinoza, E. Figueroa, A. Fraser, M. Galassi, J. Gomez, J. Gonzales, A. Green, N. Hengartner, G. Hogan, A. Klimenko, P. McGaughey, G. McGregor, J. Medina, C. Morris, K. Mosher, C. Orum, F. Pazuchanics, W. Priedhorsky, A. Sanchez, A. Saunders, R. Schirato, L. Schultz, M. Sossong, M. Sottile, J. Tenbrink, R.V. de Water, K. Vixie, and B. Wohlberg), *IEEE Nuclear Science Symposium Conference Board*, (2006).

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9. A variational approach to reconstructing images corrupted by Poisson noise (with T. Le and R. Chartrand), *Journal of Mathematical Imaging and Vision*, **27** (2007), 257-263.

10. Quantitative object reconstruction using Abel transform x-ray tomography and mixed variable optimization (with M.A. Abramson, J.E. Dennis, Jr., K.R. O'Reilly and R.L. Pingel), *SIAM Journal on Imaging Sciences*, **1**(3) (2008), 322-342.

Kevin D. Cooper

Numerical Analysis • Differential Equations

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Sandra Clement Cooper

Analytic Theory of Continued Fractions • Padé Approximation
Approximation Theory

1. A Comparison of Two Definitions for Orthogonal Laurent Polynomials (with Monte Cheney and Mike Witsoe), *Communications in the Analytic Theory of Continued Functions, Volume VIII*, Sp. 2000, 28-56.

2. Activity Based Instruction in Elementary Mathematics, (with Kimberly Vincent, Duane DeTemple and Verna Adams), Addison - Wiley Publishing, to appear March 2005.

Robert Dillon

Numerical Partial Differential Equations • Mathematical Biology • Computational Biofluids

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2. An integrative model of internal axoneme mechanics and external fluid dynamics in ciliary beating, (with Lisa Fauci), *Journal of Theoretical Biology*, **207** (2000), 415-430.

3. Mathematical modeling of vertebrate limb development, in H. G. Othmer and P. K. Maini, editors, *Pattern Formation and Morphogenesis: Model systems*, IMA Volumes in Mathematics and its Applications, Springer-Verlag, New York, **121** (2001), 39-57.

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5. Spatial pattern formation and morphegenesis in development: Progress and perspectives for two model systems (with Reka Albert, Chetan Gadgil and Hans G. Othmer), in: Morphogensis and Pattern Formation in Biological Systems - Experiments and Models T. Sekimura, et al, eds. Springer, NY, pp. 21-23, (2003).

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Alan Genz

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3. Numerical Computation of Critical Values for Multiple Comparison Problems, (with F. Bretz), in *Proceedings of the Statistical Computing Section*, American Statistical Association, Alexandria, VA (2000), pp. 84–87.

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Richard Gomulkiewicz

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7. Coevolutionary between hosts and parasite with partially overlapping geographic ranges (with S. L. Nuismer and J.N. Thompson), *Journal of Evolutionary Biology.* **16** (2003), 1337 - 1345.

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Matthew Hudelson

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Christy Jacobs

Collegiate Mathematics Education • Technology in the Classroom • Theoretical

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Anna Johnston

Cryptology

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2. On the Cryptographic Value of the qth Root Problem, International Conference on Information and Computer Security, 1999.
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Michael Kallaher

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Applied Analysis • Partial Differential Equations • Control Theory • Swimming Phenomenon

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Libby Knott

K-16 Mathematics Education • Professional Development

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