

MATHEMATICS AND STATISTICS

Department Chair:

Dr. J. Scott Carter

Professors:

Dr. Satya N. Mishra

Dr. Madhuri Mulekar

Dr. Cornelius Pillen

Dr. Vasilii Prokhorov

Dr. Alvin P. Rainosek

Dr. Daniel Silver

Dr. Susan G. Williams

Dr. Xin-Min Zhang

Associate Professors:

Dr. Steve Brick

Dr. Jörg Feldvoss

Dr. Boris Kalinin

Dr. Victoria Sadovskaya

Assistant Professors:

Dr. Joshua Barnard

Dr. David Benko

Dr. M. Audi Byrne

Dr. Elena Galaktionova

Dr. Nutan Mishra

Dr. Iain Moffatt

Dr. Gabriella Segalla-Pickett

Dr. Yorck Sommerhäuser

Dr. Bin Wang

Professorial Lecturer

Dr. Frank Jellett

Instructors:

Mrs. Cynthia A. Crumb

Ms. Sonna Farmer

Mr. Kent Murdick

Dr. Ameina Summerlin

Secretaries:

Sandy House, M.Ed.

Cynthia Schneider, Ph.D. =

MATHEMATICS AND STATISTICS: HIGHLIGHTS

The Department of Mathematics and Statistics had an excellent academic year in 2008–2009. Highlights include a very successful colloquium series with internationally-known presentations on a wide range of topics: algebraic classification, tumor growth, symmetries of matrix groups over finite fields, two-stage experimental design, algebraic K-theory, equilibrium using family data from complex surveys, isoperimetric inequalities in geometric group theory, non-parametric smoothing in measurement errors, matrix factorizations, statistical mechanics, and coding theories. These colloquia bring new frontiers in research to the university's front door, improve our basic understanding, and provide opportunities for collaborative research. Other research guests spoke about nano-technology and the biological applications of graph theory to our Mobile Math Circle. The department co-hosted the annual international conference Geometry Group Theory on the Gulf Coast held in Texas, the Statistics, Combinatorics, Mathematics, and Applications conference held in Prague, and the Southern Regional Algebra Conference held here in our department. We hosted the ninth annual Mobile Mathematics Olympiad. Several of our faculty co-organized a conference in honor of Ed. Dudewicz in Syracuse, N.Y.

We are very proud of our majors and minors. **Henry Mitchell** won the Christopher Nash Award with **Chinedu Moneke** coming in second. **Jasmit Shah** won the Sushila Mishra Memorial Award. During the 2008–2009 academic year more than 15 mathematics and statistics students graduated fulfilling the major; several earned double majors. Graduate students **James Douglas** and **Nhiem Nguyen** completed their Master's degrees.

Grants support a number of our faculty activities. **Scott Carter**, **Boris Kalinin**, **Madhuri Mulekar**, **Dan Silver**, and **Susan Williams** all have their research funded. Several faculty have other grant proposals pending. **Scott Carter**, **Cornelius Pillen**, and **Vasiliy Prokhorov** received a grant from the Alabama Space Grant Consortium for the Mobile Mathematics Circle. **Cornelius Pillen** and **Vasiliy Prokhorov** received a grant from Alabama EPSCoR for graduate student support of the Mobile Math Circle to help expand it into the public schools. A number of faculty have successfully attracted funds from both the college and the university to support our research and our colloquium series.

Over 26 refereed papers written by USA math/stat faculty were accepted or published during the last year; the best journals in the field accepted many of these papers. We spoke in more than 8 different countries, 21

different states and the District of Columbia. If we had earned electoral votes for every state and district in which we gave talks, we would have won red states and blue states with 339 total electoral votes capturing California, Texas, Illinois, Florida, New York, Ohio, and Pennsylvania. Our foreign policy extended from India to Brazil, from Poland to China, from Germany to Japan, throughout the USA and into Canada.

Our faculty routinely review papers for Mathematical Reviews and Zentralblatt der Mathematik. This centralized, internationally-renowned Indices helps researchers in the field by giving summaries of other researchers' published results. New features of these indices allow us to compute the number of citations to the authors and the collaboration distance between any two mathematicians.

Several top-ranked journals have called upon our faculty to referee important articles.

Many details of our accomplishments are outlined below. The department is proud of our students and our faculty.

Mathematics and Statistics: Peer-Reviewed Journal Articles

David Benko

Benko, D., & Earnst, C., & D. Lanphier (2009) Asymptotic Bounds on the Integrity of Graphs and Separator Theorems for Graphs, *SIAM. J. Discrete Math*, 23, 265–277.

Benko, D., & Kroó, A. (2009) A Weierstrass-type theorem for homogeneous polynomials. *Trans. Amer. Math. Soc.*, 361, 1645–1665.

Benko, D., & Biles, D. C., & Robinson, M. P., & Spraker, J. S. (2008) Nyström methods and singular second-order differential equations, *Comput. Math. Appl.* 56, 1975--1980.

Benko, D., & Biles, D. C., & Robinson, M. P., & Spraker, J. S. (2009), Numerical Approximation for Singular Second Order Differential Equations, *Mathematical and Computer Modeling*, 49, 1109–1114.

Audi Byrne

Kiskowski, M.A., & Kenworthy, A. (2009). On the use of Ripley's K function and its derivatives to analyze domain size, *Biophysical Journal*.

J. Scott Carter

Carter, J. S., Elhamdadi, M., Saito, M., Silver, D., & Williams, S. (2008) Virtual knot invariants from group bigandles and their cocycles, arXiv:math/0703594, Journal of Knot Theory and its Ramifications.

Carter, J. S., Elhamdadi, M., Saito, M., Karadayi, E., & Crans, A. (2008, accepted). Cohomology of Frobenius Algebras and the Yang Baxter Equation, arXiv:math/0705.3231, Communications in Contemporary Mathematics, 10 (1), 791–814.

Boris Kalinin

Kalinin B., Katok A., Rodriguez Hertz F. (2008) New progress in nonuniform measure and cocycle rigidity. Electronic Research Announcements in Mathematical Sciences, 15, 79 – 92.

Kalinin, B., Sadovskaya, V. (2009). On Anosov diffeomorphisms with asymptotically conformal periodic data. Ergodic Theory and Dynamical Systems, 29, 117 – 136.

Nutan Mishra

Mishra, N., Sarvate D., Chisholm A., & Raab J., (2008). A note on non-regular planar graphs. Journal of Combinatorial Mathematics and Combinatorial Computing, 66, 17–31.

Satya Narayan Mishra

Mulekar, M. S., & **Mishra, S. N.** (2008). Selection Using Overlap Coefficient, to appear in the American Journal of Mathematical and Management Sciences, Volume 28.

Moffatt, Iain

Moffatt, I., A new proof that alternating knots are non-trivial, Fundamentals of Mathematics (in press).

Moffatt, I., Unsigned state models for the Jones polynomial, Annals of Combinatorics. (in press).

Madhuri S. Mulekar

Mulekar, M.S., Gonzales, S., and Aryal, S. (2008). Bias and variance estimates for the overlap of two exponential populations, *American J. of Mathematical and Management Sciences*, 28, 61–79.

Mulekar, M.S., & Mishra, S. N. (2008). Selection Using Overlap Coefficient, to appear in the *American Journal of Mathematical and Management Sciences*, Volume 28.

Mulekar, M.S., & Siegel, M. (2007). Estimating effect of sample size on the location, spread, and shape of the sampling distribution, *Mathematics Teacher*, in Press.

Victoria Sadovskaya

Kalinin, B., & **Sadovskaya, V.** (2008). On Anosov diffeomorphisms with asymptotically conformal periodic data. *Ergodic Theory and Dynamical Systems*, 29, 117–136.

Daniel Silver

Silver, D. S., & Williams, S. G. (2009). Twisted Alexander polynomials and representation shifts, *Bull. London Math. Soc.* doi: 1112/blms/bdp029. Advance Access.

Hirasawa, M., Murasugi, K., **Silver, D.S.** (2008), When does a satellite fiber?, *Hiroshima Mathematical Journal*, 38, (3), 411–423.

Silver, D. S., (2008) The last poem of James Clerk Maxwell, *Notices of the American Mathematics Society*, 55, (10), 1266–1270.

Bin Wang

Wang, B., & Sun, J. (2008). Inferences from Biased Samples with a Memory Effect. *Journal of Statistical Planning and Inferences.* doi:10.1016/j.jspi.2007.12.017.

Zhang, X.-M., Hitt, R., **Wang, B.**, & Ding, J. (2008). J. Sierpinski Pedal Triangle. *Fractals*, 16 (2), 141–150.

Susan Williams

Silver, D. S., & **Williams, S. G.** (2009). Twisted Alexander polynomials and representation shifts, *Bull. London Math. Soc.* doi: 1112/blms/bdp029. Advance Access.

Xin-Min Zhang

Zhang, X.-M., Hitt, R., Wang, B., & Ding, J. (2008). J. Sierpinski Pedal Triangle. *Fractals*, 16 (2), 141–150.

Mathematics and Statistics: Peer-Reviewed Book Chapters

Daniel Silver

Silver, D. S., & Williams, S. G. (2009). Nonfibered knots and representation shifts. Golasinski, M. et al (Eds.) *Algebraic Topology—Old and New*, Banach Center, 85, 101–107.

Susan Williams

Silver, D. S., & **Williams, S. G.** (2009). Nonfibered knots and representation shifts. Golasinski, M. et al (Eds.) *Algebraic Topology—Old and New*, Banach Center, 85, 101–107.

Marcus, B. & **Williams, S. G.** (2008). Symbolic dynamics. In E. M. Izhikevich (Ed.), *Scholarpedia* 3(11):2923. Online.

Yorck Sommerhäuser

Sommerhäuser, Y., and Zhu, Y., Hopf algebras and congruence subgroups. *Memoirs of the American Mathematical Society*, in Press.

Francis Jellett

Banach, S, (1932) *Theory of Linear Operations...* (F. Jellett Trans.) Mineola, N.Y: Dover (Original work published Elsevier 1987).

Mathematics and Statistics: Non-Peer Reviewed Journal Articles

Madhuri Mulekar

Mulekar, M.S., Kimball, S., and Sowell, J.V. (2008). Comparison of soil temperatures at Pascagoula and Agricola, MS, 2008 Proceedings of the Joint Statistical Meetings at Salt Denver, CO.

Mulekar, M.S. (2008). COPSS Fisher Lecturer: Ross Prentice, *IMS Bulletin*, 37 (5), 5.

Mathematics and Statistics: Reviews

Joshua Barnard

Barnard, J. B. (2009). [Review of the article An obstruction to the strong relative hyperbolicity of a group, by J. Anderson, J. Aramayona, & K. Shackleton, *J. Group Theory* 10 (2007), no. 6, 749–756]. *Mathematical Reviews* MR2364824 (2009c:20075).

Jörg Feldvoss

Feldvoss, J. (2008). [Review of the paper “Lie algebras of small dimension” by H. Strade in: *Lie Algebras, Vertex Operator Algebras and Their Applications*, Raleigh, NC, 2005 (eds. Y.-Z. Huang and K. C. Misra), *Contemp. Math.*, 442, Amer. Math. Soc., Providence, RI, 2007, 233–265], *Mathematical Reviews* MR2372566 (2009a:17027).

Feldvoss, J. (2009). [Review of the paper “The cohomology of the Heisenberg Lie algebras over fields of finite characteristic” by G. Cairns and S. Jambor, *Proc. Amer. Math. Soc.* 136 (2008), 11, 3803–3807], *Mathematical Reviews* MR2425718.

Feldvoss, J. (2008). [Review of the paper “Representations of finite Lie algebras and geometry of reductive Lie algebras” by B. Shu, in: *Proceedings of the International Conference on Complex Geometry and Related Fields*, Shanghai, China, 2004 (eds. Z. Chen, S.-L. Tan, J. Wang and S. S.-T. Yau), *AMS/IP Studies in Advanced Mathematics*, 39, Amer. Math. Soc., Providence, RI & International Press, Somerville, MA, 2007, 277–287], *Zentralblatt für Mathematik Zbl.* 1137.17009.

Feldvoss, J. (2008). [Review of the paper “A family of transitive modular Lie superalgebras with depth one” by W. Liu and Y. Zhang, *Sci. China, Ser. A: Math.* 50 (2007), 10, 1451–1466], *Zentralblatt für Mathematik Zbl.* 1137.17018.

Feldvoss, J. (2008). [Review of the paper “Dérivations de l'anneau des coordonnées de l'espace quantique symplectique” by L. Ben Yakoub and A. Louly, *Comm. Algebra* 34 (2006), 6, 2295–2302], *Zentralblatt für Mathematik Zbl.* 1146.16022.

Feldvoss, J. (2009). [Review of the book “An invitation to quantum groups and duality. From Hopf algebras to multiplicative unitaries and beyond” by T. Timmermann, *EMS Textbooks in Mathematics*, European

Mathematical Society, Zürich, 2008], Zentralblatt für Mathematik Zbl. pre05246363.

Feldvoss, J. (2009). [Review of the paper “An extended Freudenthal magic square in characteristic 3” by I. Cunha and A. Elduque, *J. Algebra* 317 (2007), 2, 471–509], Zentralblatt für Mathematik Zbl. pre05227519.

Feldvoss, J. (2009). [Review of the paper “Support varieties for modules over Chevalley groups and classical Lie algebras” by J. F. Carlson, Z. Lin, and D. K. Nakano, *Trans. Amer. Math. Soc.* 360 (2008), 4, 1879–1906], Zentralblatt für Mathematik Zbl. pre05229022.

Feldvoss, J. (2009). [Review of the paper “The small quantum group and the Springer resolution” by R. Bezrukavnikov and A. Lachowska, in: *Quantum Groups, Proceedings of a Conference in Memory of Joseph Donin, Haifa, Israel, July 5–12, 2004* (eds. P. Etingof, S. Gelaki, and S. Shnider), *Israel Mathematical Conference Proceedings, Contemp. Math.*, vol. 433, Amer. Math. Soc., Providence, RI, 2007, pp. 89–101], Zentralblatt für Mathematik Zbl. pre05238955.

Feldvoss, J. (2009). [Review of the paper “Twisted Whittaker model and factorizable sheaves” by D. Gaitsgory, *Selecta Math. (New Ser.)* 13 (2008), 4, 617–659], Zentralblatt für Mathematik Zbl. pre05294542.

Iain Moffatt

Moffatt, I. (2009). [Review of “Colored Turaev–Viro invariants of twist knots” by Koda.] Zentralblatt für Mathematik Zbl. DE055220758.

Moffatt, I. (2009). [Review of “On graphs for which every planar immersion lifts to a knotted spatial embedding.” by Decelles, Foisy, Versace, Wilson.] Zentralblatt für Mathematik Zbl. 05320748X.

Moffatt, I. (2009). [Review of “Mutant knots with symmetry,” by Morton. Zentralblatt für Mathematik Zbl. DE05500703X.

Moffatt, I. (2009). [Review of “On the relation between the WRT invariant and the Hennings invariant” by Chen, Kuppum, Srinivasan] Zentralblatt für Mathematik Zbl. DE055007076.

Cornelius Pillen

Pillen C., (2009) [Review of the paper “Fixed vectors for elements in modules for algebraic groups” by Suprunenko, I. D., Zalesski. *Internat. J.*

Algebra Comput.17 (5–6), 1249–1261. Mathematical Reviews MR2355694 (2008k:20105).

Vasiliy Prokhorov

Prokhorov, V.A. (2008). [Review of the paper “Uniform convergence of Pade–Chebyshev approximants of a meromorphic function” by O.L.Ibryaeva, East J 14 no.1, 103–129], Mathematical Reviews MR2391626

Prokhorov, V.A. (2008). [Review of the paper “Pade approximants of the Mittag–Leffler functions” by Starovoitov, A.P., Starovoitova, N.A., Mat. Sb. 198 (2007), no.7, 109–122], Mathematical Reviews MR2354536.

Prokhorov, V.A. (2008). [Review of the paper “Jackson–type inequalities in $L_2[-1, 1]$ and exact values of n –widths of function classes” by Vakarchuk, S.B., Ukr. Mat. Visn. 3 (2006), no.1, 116–133], Mathematical Reviews MR2331170.

Yorck Sommerhäuser

Sommerhäuser, Y. (2008). [Review of the paper “Induced modules of semisimple Hopf algebras.” by Hu, Jun, Yinhua Zhang. Algebra Colloq. 14, 571–584] Mathematical Reviews. MR2352888 (2009b:16088).

Xin–Min Zhang

Zhang, X.–M. (2008). [Review of the paper “A Sharpened version of the fundamental triangle inequality” by Wu, Shanhe, Mathematical Inequalities & Applications, 11 (3) 477–482.] Mathematical Reviews MR2431212 (2009e:26027)

Zhang, X.–M. (2009). Xu, Jianhong (2008). [Review of the paper “Generalized Newton–like inequalities,” by Xu, Jianhong, Journal of Inequalities in Pure and Applied Mathematics, 9 (3) 1–10.] Mathematical Reviews MR2333749.

Mathematics and Statistics: Editorship of Books and Journals

J. Scott Carter

Carter, J. S. (Managing Ed.) (2007–2009). Journal of Knot Theory and its Ramifications, Singapore: World Science.

Satya Narayan Mishra

Mishra, S. N. (Ed.) (2003–2008). American Journal of Mathematical and Management Sciences, American Sciences Press, Inc, Columbus, OH.

Madhuri Mulekar

Mulekar, M. S., (Co-ED.) (2007–2009). American Journal of Mathematical & Management Sciences, American Sciences Press, Inc, Columbus, OH.

Mulekar, M. S., (Assoc. Ed.) (2007–2009) Sequential Analysis: Design, Methods, and Applications, Taylor & Francis Group, Philadelphia, PA, 2008–09.

Daniel Silver

Silver, D. (1995–2009) (Assoc. Ed.) Journal of Knot Theory and its Ramifications, Singapore: World Science.

Mathematics and Statistics: Abstract

Cornelius Pillen

Bendel, C.P., Nakano, D.K., **Pillen, C.** (2009) Vanishing ranges for the cohomology of finite groups of Lie type, (Abstract), Special Session on Brauer Groups, Quadratic Forms, Algebraic Groups, and Lie Algebras, 2009 Spring Southeastern Meeting of the American Mathematical Society.

Mathematics and Statistics: Other Performances, Productions and Recitals

J. Scott Carter

Carter, J. S. (Rhythm Guitar), Carter, A. R. L., Jellett, F., Murdick, K. (2008–2009) Bordello Rhythm [Dixieland Jazz Band], Mobile, AL, (Several busking performances).

Carter, J. Scott (2009) Basic Definitions of Linear Algebra. Instructional Video publicly available on http://www.youtube.com/watch?v=wwZV7FZcaJw&feature=channel_page

Carter, J. Scott (2009) Example Computations with the Chain Rule. Instructional Video publicly available on

http://www.youtube.com/watch?v=IApiSXg4yXE&feature=channel_page

Carter, J. Scott (2009) Adding Consecutive Odd Numbers. Instructional Video publicly available on
http://www.youtube.com/watch?v=2gC5eVRatOO&feature=channel_page

Carter, J. Scott (2009) Solving Inequalities Using Sign Charts. Instructional Video publicly available on
http://www.youtube.com/watch?v=rYIUgBXNrfE&feature=channel_page

Carter, J. Scott (2009) Graphing a Sine. Instructional Video publicly available on
http://www.youtube.com/watch?v=MzP83I_FjCU&feature=channel_page

Carter, J. Scott (2009) Count-by. Instructional Video publicly available on
http://www.youtube.com/watch?v=lwYeHK67v4k&feature=channel_page

Carter, J. Scott (2009) Quandles Part II. Instructional Video publicly available on
http://www.youtube.com/watch?v=XloZ0nsBrdo&feature=channel_page

Francis Jellett

Carter, J. S., Carter, A. R. L., **Jellett, F.**, (Valve Trombone), Murdick, K. (2008–2009) Bordello Rhythm [Dixieland Jazz Band], Mobile, AL, (Several busking performances).

Kent Murdick

Carter, J. S., Carter, A. R. L., Jellett, F., **Murdick, K.** (Banjo) (2008–2009) Bordello Rhythm [Dixieland Jazz Band], Mobile, AL, (Several busking performances).

Mathematics and Statistics: Recordings

J. Scott Carter

Carter, J. S., Carter, A. R., Carter, A. L., (2009) The 1980s condensed (Willy Wonka). On http://www.youtube.com/watch?v=YIsolDZMhXw&feature=channel_page

Carter, J. S., Carter, A. R., Carter, A. L., (2009) Proselyte. On http://www.youtube.com/watch?v=RleCAM1LYLw&feature=channel_page

Carter, J. S. (Rhythm Guitar), Carter, A. R. L., Jellett, F., Murdick, K. (2008) Bordello Rhythm [Dixieland Jazz Band], "Take the A-Train," (busking). On http://www.youtube.com/watch?v=MmFk9KDTLw0&feature=channel_page

Carter, J. S. (Rhythm Guitar), Carter, A. R. L., Jellett, F., Murdick, K.. (2008) Bordello Rhythm [Dixieland Jazz Band], "Down by the Riverside," (busking). On http://www.youtube.com/watch?v=OYhmSZtj-us&feature=channel_page
Francis Jellett

Carter, J. S., Carter, A. R. L., **Jellett, F.** (Valve Trombone), Murdick, K. (2008) Bordello Rhythm [Dixieland Jazz Band], "Take the A-Train," (busking). On http://www.youtube.com/watch?v=MmFk9KDTLw0&feature=channel_page

Carter, J. S., Carter, A. R. L., **Jellett, F.** (Valve Trombone), Murdick, K. (2008) Bordello Rhythm [Dixieland Jazz Band], "Take the A-Train," (busking). On http://www.youtube.com/watch?v=MmFk9KDTLw0&feature=channel_page

Kent Murdick

Carter, J. S., Carter, A. R. L., Jellett, F., **Murdick, K.** (Banjo), (2008) Bordello Rhythm [Dixieland Jazz Band], "Take the A-Train," (busking). On http://www.youtube.com/watch?v=MmFk9KDTLw0&feature=channel_page

Carter, J. S., Carter, A. R. L., Jellett, F., **Murdick, K.** (banjo), (2008) Bordello Rhythm [Dixieland Jazz Band], "Take the A-Train," (busking). On http://www.youtube.com/watch?v=MmFk9KDTLw0&feature=channel_page

Mathematics and Statistics: Presentations

David Benko

Benko, David. Resident scholar at the Indiana University–Purdue University, Fort Wayne. Colloquium presentation The integrity of graphs. 3/9/2009–3/18/2009:

Scott Carter

Carter, J. S. (2008) Diagrammatics of Cohomology, Joint International Meeting of the American Mathematical Society and the Brazilian Mathematical Society #1040, June 4–7, 2008.

Carter, J. S. (2008) A Sphere Eversion, Conference on Algebraic and Geometric Topology Gdansk, Poland, June 9–13, 2008.

Carter, J. S. (2008) Diagrammatic Cohomology and Knot Invariants, Conference Invariants in Low Dimensional Topology, Oberwolfach, Germany, May 4–10, 2008.

Carter, J. S. (2009) An Explicit Sphere Eversion 50 Years after Smale's Theorem, Winter Meeting of Knots in Washington #27, Washington, DC. January 9–11, 2009.

Carter, J. S. (2009) An Explicit Eversion of the 2–sphere, 2009 Spring Sectional Meeting of the AMS (#1047). March 28, 2009.

Cyndi Crumb

Crumb, Cynthia. (2008). Simpson's Rule from the Numbers, at the Alabama Council of Teachers of Mathematics Fall Forum at Auburn University, Montgomery. October 24, 2008.

Feldvoss, Jörg

Feldvoss, J. (2008). Support Varieties and Representation Type of Finite Quantum Groups, Special Session on Hopf Algebras and Quantum Groups, 2008 Spring Western Section AMS Meeting, Claremont McKenna College, Claremont, CA. May 3, 2008

Feldvoss, J. (2008). Leibniz Algebras, 2008 Southern Regional Algebra Conference, University of Colorado, Colorado Springs, CO. September

Feldvoss, J. (2008). Approximation of Square Roots: From the Babylonians until Today, MAA Florida Chapter Local Meeting, University of

West Florida, Pensacola, November.

Boris Kalinin

Kalinin, B. (2008) Nonuniform Measure Rigidity. Invited Rocky Mountain Conference on Dynamical Systems, Park City, Utah, May 2008.

Kalinin, B. (2008) Periodic data and rigidity for Anosov diffeomorphisms. Invited talk at Geometric Structures and Rigidity Workshop, Bedlewo, Poland, July 2008.

Kalinin, B. (2008) Livsic Theorem for matrix cocycles. Invited talk at Workshop in Dynamical Systems and Related Topics the Pennsylvania State University, October 2008.

Kalinin, B. (2009) Smooth rigidity of hyperbolic Z^k actions on tori and Nilmanifolds. Invited talk at Bloomington Geometry Workshop Indiana University, Bloomington, April 2009.

Mishra, N.

Mishra, N. (2008). Comparison of bootstrap and generalized bootstrap methods for estimating percentiles. Presented at the international conference in the honor of Professor E. J. Dudewicz, Syracuse University NY. July 19.

Mishra, N. (2008). Groups divisible designs with two graphs and block size five with fixed block configuration (2,3). Presented in Session III at the International Conference on Interdisciplinary Mathematical and Statistical Techniques, University of Memphis, Memphis, TN. May 17.

Mishra, N. (2008). Groups divisible designs with two graphs and block size five with fixed block Configuration (1,4). Pre-International Congress of Mathematics Convention, The Delhi University. Delhi, India. Dec. 20.

Iain Moffatt

Moffatt, I. (2008). On generalized duality of embedded graphs. Presented at Combo in VT, Saint Michael's College, Colchester, VT. July 25.

M.S. Mulekar

Mulekar M.S. (2008). Issues involved in undergraduate research in statistics, International Conference on Interdisciplinary Mathematical and Statistical Techniques, Memphis, MS, May.

Mulekar, M.S. and Siegel, M. (2008). Estimating effect of sample size on the location, spread, and shape of the sampling distribution, (Poster) Professional Night, Statistical papers Night, Louisville, KY, June.

Mulekar, M.S., Richardson, S., and Kimball, S. (2008). Similarities and differences in daily weather at Agricola and Pascagoula, MS., (Poster) Statistical Papers Night, Louisville, KY, June.

Mulekar, M.S., and Fukasawa, T. (2008). Estimating bias in similarity measures for the Pareto populations, E.J. Dudewicz Honor Conference, Syracuse, NY, July.

Mulekar, M.S., Kimball, S., and Sowell, J.V. (2008). Comparison of soil temperatures at Agricola and Pascagoula, (Poster) Environmental Statistics Section 2008 Joint Statistical Meetings, Denver, Co, August.

Mulekar, M.S., and Richardson, S. (2008). How good is water in the Dog River Watershed? Bays and Bayous Conference, Biloxi, 2008, Oct.

Kimball, S.K., Blackwell, K., Dougherty, C., and **Mulekar, M.S.**, (2008). The Center for Hurricane Intensity and Landfall Investigation (CHILI), (Poster) Bays & Bayous, Biloxi, MS, Oct.

Mulekar, M.S. (2008). Teaching statistics using meteorological data, MAA Florida Chapter Meeting, Pensacola, FL, Nov.

Mulekar, M.S. (2009). Assessing practical usefulness of approximations to mean and variance of index of dissimilarity, University of Alabama, Tuscaloosa, AL, Feb.

Garcia, A. and **Mulekar, M.S.** (2009). Using Index of Dissimilarity to Describe Social or Economic Segregation, (Poster) 16th USARC Research Forum, University of South Alabama, Mobile, AL, April.

Pereira De Andrade, N. and **Mulekar, M.S.** (2009). A necessary condition for computation of overlap measure, (Poster) 16th USARC Research Forum, University of South Alabama, Mobile, AL, April.

Cornelius Pillen

Pillen, C. (2009), Vanishing ranges for the cohomology of finite groups of Lie type, Special Session on Brauer Groups, Quadratic Forms, Algebraic

Groups, and Lie Algebras, 2009 Spring Southeastern Meeting of the American Mathematical Society, Raleigh NC.

Prokhorov, Vasily

Prokhorov, D.V., **Prokhorov, V.A.** (2009). On some symmetric bilinear forms and meromorphic continuation of analytic functions. Joint American Mathematical Society and Mathematical Association of America meeting, Washington DC, January 8.

Rainosek, Alvin

Rainosek, Alvin P. (2008). Core States Vibrio Vulnificus Control Program, ISSC, Olive Branch, MS. September 9.

Rainosek, Alvin P. (2008). Acceptance Sampling Plans by Attributes with Examples and Confidence Statements, ISO, Beijing, China, October 7.

Daniel Silver

Hillman, J.A., Williams, S. G. & **Silver, D. S.** (2009). Twisted Blanchfield Pairings. Joint Mathematics Meeting, Washington, DC.

Williams, S. G. & **Silver, D. S.** (2009). On a theorem of Burde and de Rham, Fukuoka, Japan.

Yorck Sommerhäuser

Sommerhäuser, Y. (2008). The Hopf symbol. Spring Western Sectional Meeting of the American Mathematical Society, Claremont, May 3.

Sommerhäuser, Y. (2008). Frobenius–Schur indicators and congruence subgroups. First Canadian Hopf Algebra Conference, Fredericton, September 6.

Sommerhäuser, Y. (2008). Hopf algebras, Frobenius–Schur indicators, and the modular group. Southern Regional Algebra Conference, Colorado Springs, September 28.

Bin Wang

Wang, B. (2008). Bootstrapping percentiles with generalized bootstrap. IMST 2008–FIM XVI, May 16–18. The University of Memphis, Memphis, TN.

Wang, B. (2008). Rare event estimation in the presence of biased sampling. 2008 Alabama EPSCoR annual conference and Stakeholder symposium. July 22–24, 2008. Montgomery.

Susan Williams

Williams, S. G. & Silver, D. S. (2009). Riley polynomials of 2–Bridge Knots. Paper presented at Knots in Washington XXVII, Washington, DC.

Williams, S. G. & Silver, D. S. (2009). Twisted Alexander polynomials and 2–Bridge Knots. Paper presented at Low Dimensional Topology and Number Theory, Fukuoka, Japan.

Xin–Min Zhang

Zhang, Xin–Min (2008), Generalized Chaos Game and Sierpinski Pedal Triangles, Invited AMS–SMA Joint Meeting, December 17–21, Shanghai, PRC.

Mathematics and Statistics: Grants

J. Scott Carter

Carter, J. Scott, Collaborative Research: Algebraic Structures and Cohomology Theories Associated to Knottings, National Science Foundation, \$103,468, 8–11–06 through 8–31–09

Carter, J. Scott, Mobile Mathematics Circle, Alabama Space Grant Consortium, \$5000, 07–08

Carter, J. Scott, Mobile Mathematics Circle, Alabama Space Grant Consortium, \$3000, Fall 2008

Jörg Feldvoss

Feldvoss, Jörg, Colloquium Series and Algebra Seminar, ASSDA, \$1500, 12–07

Feldvoss, Jörg, Leibniz Algebras, Special Faculty Development Fund., \$1000, 10–08

Feldvoss, Jörg, Special Faculty Development Fund., Mathematics Colloquium Series and Algebra Seminar, \$1500, 12-08

Boris Kalinin

Kalinin, Boris, Measure rigidity and smooth rigidity of abelian actions, NSF, \$87,140, 09-1-07 to 08-31-2010

Iain Moffat

Moffatt, Iain, Arts and Sciences Support and Development Award, \$11,020, 01-09

Moffatt, Iain, Special Faculty Development Fund, \$1000, 09-08

Madhuri Mulekar

Shevde, L., Samant, R., Tucker, A., and **Mulekar, M.S.**, Crosstalk between cancer cells and bone via the hedgehog pathway determines bone metastasis, Department of Defense, \$440000, 5/7/07-6/6/10

Pannell, L., **Mulekar, M.S.**, Profiling Urine Glycosylation of PSA and other Glyco-Biomarkers in prostate cancer, National Institute of Health, \$363,825, 3/1/08-1/31/10

Kimball, S., Blackwell, K., Dougherty, C., and **Mulekar, M.S.**, USA Center for Hurricane Intensity and Landfall Research, NOAA, \$505,136, 2008-09

Kimball, S., Blackwell, K., and **Mulekar, M.S.**, Coastal and Inland Hurricane Monitoring and Prediction Program, NOAA, \$648,300, 2009-10

Samant, R., King, J., **Mulekar, M.S.**, and Shevde, L., Effect of large isoform of MRJ (DNAJB6) on malignant activity of breast cancer, National Institute of Health - RO1, \$1,712,500, 06-08

Cornelius Pillen

Pillen C., Colloquium Series and Algebra Seminar, ASSDA, \$1500, 12-07

Pillen C., Mobile Mathematics Circle,, Alabama Space Grant Consortium, \$5000, 07-08

Pillen, C. , Special Faculty Development Fund., Mathematics Colloquium Series and Algebra Seminar, \$1500, 12-08

Vasiliy Prokhorov

Prokhorov V., Mobile Mathematics Circle, Alabama Space Grant Consortium, \$5000, 07-08

Yorck Sommerhäuser

Sommerhäuser, Y., Colloquium Series and Algebra Seminar, ASSDA, \$1500, 12-07

Sommerhäuser, Y., Mobile Mathematics Circle, Mathematics Colloquium Series and Algebra Seminar, \$1500, 12-08.