

DEPARTMENT OF MATHEMATICS AND STATISTICS

ANNUAL REPORT FOR 2007

The continued emphasis on professional development has had a positive effect on the faculty collectively and individually. This is reflected in the atmosphere of the department where day-to-day activities are focused on issues related to research and instruction.

Several tenure track faculty members have significant professional accomplishments this year. These include the publication of research papers in major journals; external and internal grants and grant proposals; awards of grants from NIH, NSA, and NSF and several internal grants; the presentation of research papers at professional meetings; publication of these presentations in proceedings of major conferences; and the presentation of colloquia at other universities. In addition the faculty have made important contributions to the profession as research paper referees, research publication reviewers, grant proposal reviewers, session panelists, conference organizers, session organizers, session chairs, national test scorers, journal editors, and national organization officers.

Students

Doctoral

[Chen] Hai Deng, *Identifying calcium-binding sites and predicting disulfide connectivity.*

Masters

[Arav]

- Crystal Monterz Gordon, co-directed with Dr. F. J. Hall, *The Square Root Function of Matrices.*
- Wasuta Renkjumnong, *Singular Value Decomposition and Principal Component Analysis in Image Processing.*
- Nathalie Nicholle Smalls, *The Exponential Function of Matrices.*

[Chen]

- Xin Wei, *An optimal solution on screening and treatment of Chlamydia Trachomatis and Nesseria gonorrhoeae.*

- Brain Cook, *An extension of Ramsey's theorem to multipartite graphs.*

[Enescu] Brandon Meredith, *Polynomial Functions over Rings of Residue Classes of Integers.*

[Hall] Nilay Demir , *Spectrally arbitrary and inertially arbitrary sign pattern matrices.*

[Hsu]

- Huayan Chai, *Longitudinal Curves for Behaviors of Children Diagnosed with a Brain Tumor.*
- Kouadio Dongo, *Forecasting the Chinese Futures Market Prices of Soya Bean and Green Bean Commodities.*
- Hailun Wang, *Some Conclusions of Statistical Analysis of the Spectroscopic Evaluation of Cervical Cancer.*
- Lu Wang, *Studies of Factors Affecting Recurrence of Myoma After Myomectomy.*
- Ying Shen, *Using Individual Growth Model to Analyze the Change in PPVT Scores of Survivors of Childhood Brain Tumors.*

[Qin]

- Nelly E. Belinga-Hill, *Empirical Likelihood Confidence Intervals for Generalized Lorenz Curve.*
- Angela E.Davis, *Empirical Likelihood Confidence Intervals for the Sensitivity of a Continuous-Scale Diagnostic Test.*
- Suqin Yao, *Empirical Likelihood-based Confidence Intervals for the Difference between two Sensitivities of Continuous-Scale Diagnostic Tests at a Fixed Level of Specificity.*
- Yan Yuan, *Empirical Likelihood-based Nonparametric Inference for the Difference between two Partial AUC's.*
- Xinjian Zhang, *HIV/AIDS Relative Survival Analyses.*

[Shilnikov] Tatiana I. Alashchenko, *A mechanism of co-existence of bursting and silent regimes of activities of a neuron (Physics).*

[Yichuan Zhao]

- Duytrac Nguyen, *Omnibus tests for comparison of competing risks with covariate effects via additive risk.*

- Kenita Hall, *Analyzing the behavior of rats using repeated measurements.*
- Ali Jinnah, *Inference for Cox proportional regression model via a new version of empirical likelihood.*

Grants

[Arav] Brains and Behavior Program Seed Grant, Georgia State University, *Tunable 3 Dimensional Neuron Reconstruction from 2 Dimensional Contour* (with S. Belkasim (PI), B. Antonsen)

[Bakonyi] U.S.--Europe Cooperative Research Grant, National Science Foundation.

[Belykh]

- Brains and Behavior Program Seed Grant, Georgia State University, *Synchronization in networks of bursting neurons* (with A. Shilnikov).
- Cariplo Foundation, Italy, *Pattern formation in ecological networks.*
- Invited Speaker Grant from Katholieke Universiteit Leuven (KU Leuven) , *International Symposium on Synchronization in Complex Networks*, Leuven, Belgium, July 2-4 2007.

[Chen]

- National Science Foundation, *Graph Computing on Finding Long Cycles and Small Dense Subgraphs with Applications.*
- The Centers of Disease Control and Prevention , *STD transmission Model.* PI, (with Guoyu Tao).
- GSU RPE, *Bioinformatics*, Co-PI (with Irene Weber (PI), R. Horison(Co-PI), Yi Pan (Co-PI).

[Enescu] National Security Agency, Young Investigators Grant ,(PI), *Special chapters in the theory of rings of positive characteristic.*

[Ghosh] National Institute of Health Grant, *Hierarchical Nonlinear Models in Pharmacology of HIV.* PI of a subcontract.

[Hsu]

- Spectrix, *Cervical Cancer Diagnosis study.*
- Saint Joseph Hospital , *Statistical Analysis on the Recurrence of Myoma After Myometomy.*

[Li] NNSF of China, Support for an academic visit to Tongji University, Co-PI.

[Miller] NSF PRISM, *An Algebra Intervention at Carver Early College*, PI (with D. Vidakovic (PI) and K. White (co-PI)).

[Montiel] GSU Internal mentoring grant, *The Four Parameters of Language Learning to Measure Fluency in Mathematical Discourse Using Qualitative and Categorical Techniques of Analysis* (mentor: Dr. Draga Vidakovic).

[Patyj] National Science Foundation Grant DMS-0600059, PI.

[Qin]

- National Science Foundation, *Empirical Likelihood Based Statistical Methods for Diagnostic Systems*, PI.
- Travel award to attend the *2007 Taipei International Statistical Symposium and ICSA International Conference*, Taipei, June 25-27, 2007.

[Shilnikov]

- The Neuroscience Institute short visit grant, San Diego, CA, August 10, 2007.
- Institute for Mathematics and Its Application conference and travel grant. *RNA in Biology, Bioengineering and Nanotechnology*, October 29-November 2, 2007.
- Center for Neuromics, *Visiting scientist travel support for collaboration and work on bursting neurons. Dr Burylko (Ukraine) (with I. Belykh)*.
- GSU Brains and Behavior Program, *Functional significance of connectivity for information processing in dynamical networks*.
- See [Belykh].

[Smirnova]

- AIM/NSF Travel Grant to attend *Workshop High-Order Methods for Computational Wave Propagation and Scattering*, Palo Alto, California, September 10-14, 2007.
- NSF Travel Grant to attend *International Conference Applied Inverse Problems: Theoretical and Computational Aspects*, June 25-29 (2007). Vancouver, BC, Canada.
- GSU Brains and Behavior Seed Grant *Modeling and Simulations for Noninvasive Brain Imaging Using Near Infrared Light*, PI, (Co-PI: V. Apalkov).

- GSU Research Initiation Grant.

[Vidakovic]

- NSF Robert Noyce Scholarship Program, *Robert Noyce Urban Mathematics Educator Program (UMEP)*, Co-PI (with C. Thomas and P. Junor).
- Travel support by NSF project to *Linear Algebra Project meeting*, February 2007, NewYork, NY.
- See [Miller, Montiel].

[Yao]

- National Science Foundation, *Tight closure and primary decomposition in Commutative Algebra*, PI.
- GSU Research Initiation Grant, *Embedding theorems and their application to test exponents*.

[Yi Zhao] National Security Agency, *Turan-type problems on hypegraphs*, PI.

[Yichuan Zhao]

- Travel Support to *SAMSI Summer Program on Challenges in Dynamic Treatment Regimes and Multistage Decision-Making*, SAMSI, Research Triangle Park, NC, June18 2007 – June 29 2007.
- NSF-Sponsored Travel Support to *Conference on Current and Future Trends in Nonparametrics*, Oct 10 2007 to Oct 12 2007.
- National Security Agency funded project *Empirical likelihood based inference in survival analysis*, PI.
- Faculty Mentoring Grant, *Statistical Analysis of High Dimensional Microarray Gene Expression Data*. (Mentor: Dr. G. Chen).
- GSU Underrepresented faculty program.

Faculty Publications, Performances, and Exhibitions

Departmental faculty members published numerous research papers in prestigious, refereed, international journals.

Books and Mongraphs

[Bakonyi] *Structured Matrices, and Dilations: the Tiberiu Constantinescu Memorial Volume* (Eds. **M. Bakonyi**, A. Gheondea, M. Putinar, and J. Rovnyak), Theta Foundation, Bucharest, 2007, distributed by the American Mathematical Society

Publications

[Arav]

- **M. Arav**, F. E. Castillo Santos, S. Reich and A. J. Zaslavski, A Note on Asymptotic Contractions, *Fixed Point Theory and Applications*, Volume 2007, Article ID 39465, (2007)1-6.
- **M. Arav**, S. Reich and A. J. Zaslavski, Uniform Convergence of Iterates for a Class of Asymptotic Contractions, *Fixed Point Theory*, **8 (1)** (2007) 3-9, 2007.
- **M. Arav**, **J. Bevis**, **F. J. Hall**, Inherited LU-Factorizations of Matrices, *Linear Algebra and Its Applications*, **427** (2007) 26-41.
- T. I. Seidman, H. Schneider, and **M. Arav**, Comparison theorems using general cones for norms of iteration matrices, *Linear Algebra and its Applications* **399** (2007) 169-186.

[Bakonyi]

- **M. Bakonyi** and D. Timotin, Extensions of positive definite functions on free groups, *J.Functional Analysis*, **246 (1)** (2007), 31-49.
- **M. Bakonyi** and K.N. Stovall, Stability of Dynamical Systems via Semidefinite Programming, in Recent Advances in Matrix and Operator Theory, *The Proceedings of IWOTA 2005, in Operator Theory: Advances and Applications*, Birkhauser Verlag, Basel, **178**,2007.
- **M. Bakonyi** and D. Timotin, The central completion of a positive block operator matrix, in *Operator Theory, Structured Matrices, and Dilations: the Tiberiu Constantinescu Memorial Volume* (Eds. **M. Bakonyi**, A. Gheondea, M. Putinar, and J. Rovnyak), Theta Foundation, Bucharest, 2007.

[Belykh]

- **Belykh**, M. Hasler, V. Belykh, When symmetrization guarantees synchronization in directed networks, *Int. Journal of Bifurcation and Chaos*, **V. 17** (2007) pp. 3387-3395.
- M. Hasler, **I. Belykh**, and V. Belykh, Classes of stochastically switched (blinking) systems, *Proceedings of the 2007 International Symposium on Circuits and Systems (ISCAS-2007)*, New Orleans, IEEE Press, pp. 1665-1668, 2007.
- **I. Belykh**, Patterns of synchrony in bursting neuronal networks, *Abstracts of the International Symposium on Synchronization in Complex Networks (SynCoNet 2007)*, Leuven, Belgium, pp. 2-3, Katholieke Universiteit Leuven Press, 2007.

- **I. Belykh**, V. Belykh, M. Hasler, Synchronization Stability in Oscillator Networks: Solution for Asymmetrical Configurations, *Proceedings of the 3rd IFAC conference "Periodic Control Systems*, St. Peterburg, Russia, International Federation of Automatic Control Press, pp. 1-6, 2007.

[Chen]

- **G. Chen**, X. Li, Z. Wu, and X. Xu, The neighborhood union of independent sets and hamiltonicity of graphs, *Discrete Math.* **307** (2007), no. 17-18, 2226 -2234.
- **G. Chen** and R.H. Schelp, Decomposition of bipartite graphs into special subgraphs *Discrete Applied Mathematics*, **155** (2007), no. 3, 400-404.
- **G. Chen**, R. Gould, K. Kawarabayashi, K. Ota, A. Saito, I. Schiermeyer, The Chvatal-Erdos Condition and 2-Factors with a Specied Number of Components, *Discussiones Mathematicae Graph Theory* **27** (2007) no. 3, 401-407.

[Enescu]

- **F. Enescu**, Briançon-Skoda for Noetherian filtrations, *Analele Stiintifice Univ. Ovidius Seria Math* (special issue dedicated to D. Popescu) , **XV** (2007), fasc. 1, 91—96.
- C. Ciuperca , **F. Enescu** and S. Spiroff, Asymptotic growth of powers of ideals, *Illinois Jour. Math* (special issue dedicated to P. Griffith), **51** (2007), no. 1, 29--39 (electronic)

[Fang]

- E.A. Werner, M.M. Myers, W.P. Fifer, B. Cheng, **Y. Fang**, R. Allen, and C. Monk, Parental predictors of infant temperament, *Developmental Psychobiology* **49** (2007) , 474-484.
- R.P. Sloan, P.A. Shapiro, R.E. DeMeersman , P.S.McKinley, K.J. Tracey, I. Slavov, **Y. Fang**, and F.D. Flood, Aerobic Exercise Attenuates Inducible TNF Production in Humans, *Journal of Applied Physiology* **103** (2007), 1007-1011.
- H. Yegen, D. Lederer, D. Arcasoy, J. Wilt, **Y. Fang**, E. Bagiella, J. Sonett, F. Dovidio, S. Kawut, Risk factors for venous thromboembolism (VTE) in lung transplant recipients, *Chest* **132** (2007) , 547-554.
- Y. Wang, **Y. Fang**, and M. Jin , A ridge penalized principal-components approach based on heritability for high-dimensional data. *Human Heredity* **64** (2007), 182-191.

[Ghosh]

- **P. Ghosh**, H. Chakraborty, and M. Branco, Bivariate Random Effect model using Skew Normal Distribution, *Statistics in Medicine*, **26** (2007), 1255-1267.

- **P. Ghosh** and F. Vaida, Random Change point Modelling of HIV Immunologic Responses, *Statistics in Medicine*, **26** (2007), 2074-2087.
- **P. Ghosh** and G. Rosner, A Semiparametric Bayesian Approach to Average Bioequivalence, *Statistics in Medicine*, **26** (2007), 1224-1236.

[Hall] **F. J. Hall** and **Z. Li**, Sign pattern matrices, Chapter 33 in the *Handbook of Linear Algebra*, published by Chapman & Hall/CRC, 2007.

[Han] **J. Han**, Parametric latent class joint model for a longitudinal biomarker and recurrent events, *Statistics in Medicine*, **26** (2007); 5285-5302.

[Hattingh]

- **J.H. Hattingh**, E. Jonck, E. Joubert and **A.R. Plummer**, Total restrained domination in trees, *Discrete Mathematics*, **307** (2007) 1643-1650.
- P. Dankelmann, D. Day, **J.H. Hattingh**, M. A. Henning, L R. Markus and H. C. Swart, On equality in an upper bound for the restrained and total domination numbers of a graph, *Discrete Mathematics* **307** (2007) 2845-2852.

[Hsu] **Y.-S. Hsu**, J. Laures and C. Heim. Assessing Cortisol Reactivity to a Linguistic Task as a Marker of Stress in Individuals with Left Hemisphere Stroke and Aphasia, *Journal of Speech, Language, Hearing Research*, **50** (2007), 493-505.

[Li] Y. Gao, **Z. Li** and Y Shao, Sign Patterns Allowing Nilpotence of index 3, *Linear Algebra and Its Applications* **424** (2007), 55-70.

[Liu]

- **J. Liu** and X. Wang, Assessing Students' Collaboration in Electronic Portfolio Construction, *National Educational Computing Conference* , June 2007.
- **J. Liu** and X. Wang, Collaboration of Pre-Service Teachers in Electronic Portfolio Construction: Effects and Implications, *Global Chinese Journal of Computers in Education* **5** (2007).

[Montiel] **D. Vidakovic**, **M. Montiel**, **N. Patterson** and T.Uygur, The relationship between students' understanding of functions in Cartesian and polar coordinate systems. *Presented at the Research in Undergraduate Mathematics Education Conference*, San Diego, CA (2007).

[Patyi]

- L. Lempert and **I. Patyi**, Analytic sheaves in Banach spaces, *Ann. Sci. École Norm. Sup., Sér.* **4, 40** (2007), 453-486.

- **I. Patyi**, On complex Banach submanifolds of a Banach space, *Contemp. Math.*, **435** (2007), 343–354.

[Qin]

- X.H. Zhou and **G.S. Qin**, A supplement to “A New Confidence Interval for the Difference Between Two Binomial Proportions of Paired Data”. *J Statist Plan Infer* **137** (2007), 357-358.
- **G.S. Qin**, and **Y.C. Zhao**, Empirical likelihood inference for the mean residual life under random censorship. *Statistics & Probability Letter* **77** (2007), 549-557.
- **Y.C. Zhao and G.S. Qin**, Simultaneous confidence band for a linear functional of cumulative hazard function via empirical likelihood. *Communication in Statistics, Theory and Methods* **36** (2007), 313-327.

[Shilnikov]

- **P. Channell**, G. Cymbalyuk and **A.L. Shilnikov**, Homoclinic chaos on a spike adding route into bursting in a neuronal model, *Physics Review Letters*, **98** (2007), 134101.
- **P. Channell**, G. Cymbalyuk and **A.L. Shilnikov**, Applications of the Poincare mapping technique to analysis of neuronal dynamics, *Neurocomputing*, **70** (2007) (10-12), 2007.
- L.P. Shilnikov and **A.L. Shilnikov**, Bifurcation, *Scholarpedia*, **2(8)** (2007) 1891.

[Smirnova]

- **A.B. Smirnova**, R.A. Renaut and T. Khan, Convergence and Application of a Modified Iteratively Regularized Gauss-Newton Algorithm, *Inverse Problems*, **23** (2007), N4, 1547-1563.
- R.G. Airapetyan and **A.B. Smirnova**, On Dynamical Systems Method for Solving Nonlinear Operator Equations, *Intern. Journal of Pure and Appl. Math*, **36** (2007), N1, 63-74.
- A.B. Bakushinsky and **A.B. Smirnova**, Iterative regularization and generalized discrepancy principle for monotone operator equations. *Numerical Functional Analysis and Optimization*, **28 (1-2)** (2007) 13-25.

[Stewart]

- **M. Stewart**, A Generalized Isometric Arnoldi Algorithm, *Linear Algebra and its Applications*, **423** (2007) 183-208.
- **M. Stewart**, Signal Processing, a chapter in the *Handbook of Linear Algebra*, CRC Press, 2007.

[Vidakovic]

- L. Cooley, W. Martin, **D. Vidakovic**, and S. Loch, S. Coordinating learning theories with linear algebra. *International Journal for Mathematics Teaching and Learning* [on-line journal], University of Plymouth: U.K. <http://www.cimt.plymouth.ac.uk/journal/default.htm> .
- P.A. Junor-Clarke, C.D. Thomas, and **D. Vidakovic**, Recruitment of future highquality urban mathematics teachers: a process of instrument development, *Online Journal of Urban Learning, Teaching and Research*, American Educational Research Association.

[Xiao]

- **Y. Xiao**, A. Gordon and A. Yakovlev, A C++ Program for the Cramer von Mises Two-Sample Test, *Journal of Statistics Software*, **17(8)** (2007) <http://www.jstatsoft.org>.
- L. Klebanov, G. Glazko, P. Salzman, A. Yakovlev and **Y. Xiao**, A Multivariate Extension of the Gene Set Enrichment Analysis, *Journal of Bioinformatics and Computational Biology*, **5(5)** (2007), 1139-1153.

[Zhang]

- M. A. Gilligan, J.M. Neuner, **X. Zhang**, R.A. Sparapani, P.W. Laud, and A.B. Nattinger, Relationship of hospital volume of breast cancer operations and five-year survival after treatment for early stage breast cancer. *American Journal of Public Health* **97** (2007) 539-544.
- C.D. Derby, C.E. Klicklighter, P.M. Johnson and **X. Zhang**, Chemical composition of inks of diverse marine mollusks suggests convergent chemical defenses. *Journal of Chemical Ecology*, DOI 10.01007/s10886-007-9279-0.
- **X. Zhang**, F.R. Loberizab, J.P. Klein and M.J. Zhang, A SAS macro for estimation of direct adjusted survival curves based on a stratified Cox model. *Computer Methods and Programs in Biomedicine* **88** (2007) 95-101.

[Yi Zhao]

- D. Mubayi and **Y. Zhao**, On the VC-dimension of Uniform Hypergraphs, *Journal of Algebraic Combinatorics*, **25** (2007), no 1, 101-110 .
- D. Mubayi and **Y. Zhao**, Co-degree density of hypergraphs, *Journal of Combinatorial Theory A* **2.114** (2007) no 6, 1118-1132.
- P. Keevash and **Y. Zhao**, Codegree problems for projective geometries, *Journal of Combinatorial Theory B*, **97** (2007) no 6, 919-928.

- D. Mubayi and **Y. Zhao**, Forbidding complete hypergraphs as traces, *Graph and Combinatorics* **23** (2007) no 6, 667-679.

[Yichuan Zhao]

- X. Chen, **Y. Zhao**, Y.-Q. Zhang and R. Harrison. Combining SVM classifiers using genetic fuzzy systems based on AUC for gene expression data analysis. *Proceedings of International Symposium on Bioinformatics Research and Applications*, the Springer Verlag Lecture Notes in Bioinformatics Series, **4463** (2007), 496—505, 2007.
- N. Glenn and **Y. Zhao**. Weighted empirical likelihood estimates and their robustness properties, *Computational Statistics and Data Analysis*, **51** (2007), 5130—5141.
- Y. Qiu, Y.-Q. Zhang and **Y. Zhao**. Statistical genetic interval-valued fuzzy systems with prediction in clinical trials, *Proceedings of IEEE-Granular Computing*, Silicon Valley, CA, November, **2—4**, 129—132, 2007.
- S. Yang and **Y. Zhao**. Testing treatment effect via empirical likelihood using weighted log rank tests, *Statistics and Probability Letters*, **77** (2007), 1385—1393.
- **Y. Zhao** and Y. Huang. Test-based interval estimation under the accelerated failure time model, *Communications in Statistics—Simulation and Computation*, **36**(2007), 593—605.
- **Y. Zhao** and W. Jian. Analysis of longitudinal data in the case-control studies via empirical likelihood, *Communications in Statistics—Simulation and Computation*, **36**(2007), 565—578, 2007.

Professional Conferences and Public Events

Departmental faculty members presented several papers at professional meetings and conferences and, in addition, presented colloquia at other universities.

Conferences

[Arav]

Robert C. Thompson Matrix Meeting 2007, Auburn University, Auburn, AL, **invited talk**.

[Bakonyi] Modern Analysis and Applications (conference dedicated to the centenary of M.G. Krein), Odessa, Ukraine

[Belykh]

- Int. Symposium on Synchronization in Complex Networks (SynCoNet-2007), Leuven, Belgium , July 2-4 2007. **Invited talk:** “Patterns of synchrony in bursting neuronal networks.”
- 2007 SIAM Conference on Applications of Dynamical Systems, Snowbird, USA, May 28-June 1, 2007 . (Minisymposium "Structure and Dynamics of Complex Networks." **Co-organizer**) . **Invited talk:** “David vs. Goliath: When inhibition synchronizes strongly desynchronizing networks of bursting neurons” (joint with A. Shilnikov).
- Italian Society for Chaos and Complexity meeting, Politecnico di Milano, Italy, May 16 2007. **Invited talk:** “Induced synchronization of neuronal networks with strongly desynchronizing connections.”
- Int. Conference “Coherent behavior in neuronal networks,” Palma de Mallorca, Oct 17-20, 2007. **Contributed talk:** “Bursting rhythmogenesis and synchronization in inhibitory CPG networks” (joint with A. Shilnikov).
- The 2007 IEEE International Symposium on Circuits and Systems (ISCAS-2007), New Orleans, May, 29, 2007. **Invited talk:** “Classes of stochastically switched (blinking) systems” (joint with M. Hasler and V. Belykh).
- 3rd IFAC conference “Periodic Control Systems,” St. Peterburg, Russia, August, 29, 2007. **Contributed talk:** “Synchronization Stability in Oscillator Networks: Solution for Asymmetrical Configurations” (joint with M. Hasler and V. Belykh).

[Chen]

- Circumferences of 3-connected graphs without K_3 -minor, The Joint Mathematics Meetings (AMS 113), New Orleans, LA, January, **invited talk.**
- Minimal generators of cut-ideals of graphs without K_4 -minors, AMS Spring Central Section Meeting (AMS 1025), Oxford, OH, March, **invited talk.**
- Minimal generators of cut-ideals of graphs without K_4 -minors, International Symposium on Graph Theory and Combinatorial Algorithms, Beijing, China, July, **invited talk.**
- Partitioning tournaments into two transitive subtournaments , AMS Fall Southeastern Meeting (AMS 1033), Murfreesboro, TN, November, **invited talk.**
- A web-based customizable decision-making tool to optimize health resources: the example of screening and treating asymptomatic women for sexually transmitted diseases, Social and Behavioral Science Symposium(CDC and GSU), Atlanta, November, **invited talk.**

[Enescu] Local cohomology and F-stability, International Conference on Homological and Combinatorial aspects in Commutative Algebra, Busteni, Romania, July.

[Fang] Testing for familial aggregation when the population size is known, Joint Statistical Meeting, Seattle WA, August.

[Ghosh] Semiparametric Bayesian approach to crossover design, Joint Statistical Meeting, July.

[Hall] Interlacing results on matrices associated with graphs, **invited talk** given at The 16th International Workshop on Matrices and Statistics, June, Windsor, Canada.

[Li]

- Inertial Arbitrary Sign Pattern Matrices, Fourteenth International Linear Algebra Society Conference, Shanghai, July.
- Spectrally Arbitrary Tree Sign Pattern Matrices, invited talk at Robert C. Thompson Matrix Meeting, Auburn, March.

[Jiawei Liu] A Generalized AIC and its application to model selection, Joint Statistical Meeting.

[Miller] Creating your own exercise problems with MML exercise builder, **invited talk** at the Pearson Publishing Math Technology Forum: Successes and Challenges in the use of Math Technology Resources.

[Montiel] D. Vidakovic, M. Montiel, N. Patterson, and T. Uygur, The relationship between students' understanding of functions in Cartesian and polar coordinate systems. Presented at the Research in Undergraduate Mathematics Education Conference, San Diego, CA.

[Qin]

- Comparison of Nonparametric Confidence Intervals for the Area Under the ROC Curve of a Continuous-Scale Diagnostic Test, International Biometric Society Eastern North American Region Spring Meeting with IMS and Section of ASA, Atlanta, Georgia, USA, March.
- Inferences in Censored Cost Regression Models with Empirical Likelihood, 11th Biennial CDC&ATSDR Symposium on Statistical Methods, Decatur, Georgia, USA, April.
- Empirical Likelihood-based Confidence Intervals for the Partial Area Under the ROC Curve, **invited talk** at The 2007 Taipei International Statistical Symposium and ICOSA International Conference. Taipei, June.
- Empirical Likelihood-Based Inference for the Partial Area Under the ROC curve, JSM 2007, American Statistical Association, Salt Lake City, USA, July.

[Shilnikov]

- Belykh and A.L. Shilnikov. Bursting rhythmogenesis and synchronization in inhibitory CPG networks. Synergetics: Self-Organization Principles in Animate and Inanimate Systems, Physikzentrum Bad Honnef, Germany, October.
- Belykh and A.L. Shilnikov. Bursting rhythmogenesis and synchronization in inhibitory CPG networks. Coherent Behavior in Neuronal Networks, Mallorca, Spain, October.
- P. Channel, G. Cymbalyuk and A.Shilnikov Homoclinic Chaos on a Spike Adding Route into Bursting Neurons. SIAM Conference on Applications of Dynamical Systems, Salk Lake City, Utah, May.
- P. Channel, G. Cymbalyuk and A.Shilnikov, Complex homoclinic bifurcations of periodic orbits for onset on bursting in a neuron model. Dynamics Days 2007, Boston, January.

[Smirnova] A.B.Smirnova and R.A.Renaut 'Iteratively Regularized Gauss Newton with Parameter Decomposition', *International Conference on Applied Inverse Problems*, Vancouver, BC, Canada, June.

[Tuncer] Differential Equations and Computational Simulations, "Finite element method on arbitrary surfaces," University of Alabama, Birmingham, AL, November.

[Vidakovic]

- C. D.Thomas, P.A. Junor Clarke, and D. Vidakovic, Significance of an Urban Collaboration on Mathematics Teaching. Proceedings of the American Educational Research Association annual conference in Chicago, Illinois, USA.
- C.D. Thomas, P.A. Junor Clarke, and D. Vidakovic. The Power Within: A Professional Learning Community for Urban High Quality Mathematics Teaching. American Association of Colleges for Teacher Education (AACTE) annual conference, New York.

[Xiao]

- Shot Noise Processes, The Institute of Statistical Science, Academia Sinica Taipei International Statistical Symposium and ICOSA International Conference in 2007 Conference Location:Taipei, Taiwan.
- Shot Noise Processes, University of Science and Technology of China, Hefei, Anhui, P.R.China, The 15th International Conference of Forum for Interdisciplinary Mathematics on Interdisciplinary Mathematical & Statistical Techniques, Shanghai, China, May 2007.

[Yao]

- **Invited** to give a 20-minutes talk at the Special Session on Commutative Algebra and algebraic geometry at the Spring Southeastern Section Meeting of AMS, Davidson College, Davidson, NC, March.
- **Invited** to give a 20-minutes talk at the Special Session on commutative algebra at the Fall Eastern Section Meeting of AMS, Rutgers University-New Brunswick, Busch Campus, New Brunswick, NJ, October.

[Zhang] Directed adjusted survival curves based on different reference populations, Joint Statistical Meeting Salt Lake City, UT, August.

[Yi Zhao]

- **Invited** talk, AMS Central Sectional Meeting, Chicago, IL, October.
- **Invited talk**, International Conference on Graph Theory & Combinatorics, Taipei, Taiwan, June.

[Yichuan Zhao]

- Empirical likelihood based inference for the calibration regression model with lifetime medical cost, Conference on Current and Future Trends in Nonparametrics, University of South Carolina, Columbia, SC, October, **invited**.
- Empirical likelihood inference for the calibration regression model with censored lifetime medical cost, Annual Meeting of the American Statistical Association, Salt Lake City, UT, July, contributed.
- Empirical likelihood inference for the Cox model with time dependent coefficients via local partial likelihood, Annual Meeting of the American Statistical Association, Salt Lake City, UT, July 29 (with Y. Sun and R. Sundaram), contributed.
- Omnibus tests for comparison of competing risks via additive risk model, SAMSI Summer Program on Challenges in Dynamic Treatment Regimes and Multistage Decision-Making, SAMSI, Research Triangle Park, NC, June contributed.
- Analyzing the behavior of rats by repeated measurements, Brains and Behavior Spring Retreat, Georgia State University, Atlanta, GA, June, contributed.
- Analysis of additive risk model with high dimensional covariates using partial least squares. International Chinese Statistical Association Applied Statistics Symposium, Raleigh, NC, June, contributed.
- Empirical likelihood inference for the calibration regression model with censored lifetime medical cost, The 15th International Conference of the Forum for Interdisciplinary Mathematics on Interdisciplinary Mathematical & Statistical Techniques, Shanghai, China, May, invited.

- Empirical likelihood inference for the calibration regression model with censored lifetime medical cost. Eastern North American Region (ENAR) Spring Meeting, Atlanta, GA, March, contributed.

Colloquia and Seminar Presentations

[Bakonyi] “Extensions of Positive Definite Functions on Groups”, given at:

- Indiana University, Bloomington (seminar)
- Georgia Institute of Technology (seminar)
- University of Houston (seminar)
- University of Connecticut (colloquium)

[Belykh] Center for Nonlinear Studies, Georgia Institute of Technology, April. Talk: “Synchronized bursting in synaptically coupled neuronal networks.”

[Chen]

- Toric Cut Ideals of Graphs with Forbidden Minors, Middle Tennessee State University, Murfreesboro, TN, April.
- Finding long cycles in 3-connected graphs, Hubei University, Wuhan, China. July
- Circumferences of 3-connected graphs, China Three Gorges University, Yichang, China, July.

[Enescu]

- A question on F-injectivity with implications for F-stability, GSU-USC Joint Commutative Algebra Seminar, University of South Carolina, November.
- Frobenius depth, GSU-USC Commutative Algebra Seminar, University of South Carolina. July.
- Hilbert-Kunz multiplicities, Colloquium, North Dakota State University, March.

[Ghosh] Bayesian Approach to dose-response studies, Novartis Pharmaceuticals, August.

[Hattingh] “Recent results on total restrained domination in graphs”, invited seminar at the Applied Mathematics Seminar of the University of Stellenbosch, South Africa, March.

[Hsu] Classification Analysis of the Spectroscopic Evaluation of Cervical Cancer, invited talk at Harbin Medical University, May.

[Li]

- Spectrally and Inertially Arbitrary Sign Pattern Matrices, Tongji University, Shanghai, July.
- Rational Solutions of Certain Matrix Equations, Tongji University, Shanghai, July.
- Rational Solutions of Certain Matrix Equations, Lanzhou University, Lanzhou, July.

[Patyi]

- Feb. Colloquium, Kent State University, Kent, OH.
- May Analysis Seminar, University College Dublin, Ireland.
- June Algebraic Geometry and Differential Topology Seminar, Rényi Institute, Budapest, Hungary.

[Shilnikov]

- University Libre de Bruxelles, Neuronal motifs: Bursting rhythmogenesis, synchronization and its regulation, Brussels, Belgium. November, **Invited**.
- Utrecht University, Complex bifurcations in slow-fast systems of neuronal types, Utrecht, the Netherlands, November, **Invited**.
- The Institute of Medicine, Julich Research Center, Synchronization of inhibitory networks. Julich, Germany, November, **Invited**.
- Joint colloquium of Weierstrasse Institute and Free University of Berlin. Complex homoclinic bifurcations in slow-fast systems for neurons dynamics. Berlin, Germany. October, **Invited**
- Department of Theory of Oscillations, University of Nizhny Novgorod, Origin of Bursting, its Regulation in Neuronal models/networks of Hodgkin-Huxley formalism. Nizhny Novgorod, Russia, September.
- Quantitative Biology Institute and Biophysics Seminar Series. Routes to bursting in neuronal models. University of Athens, Athens, OH, May, **Invited**.

- School of Mathematics CDSNS Colloquium, Gatech, Complex homoclinic bifurcations of periodic orbits for onset on bursting in a neuron model, Atlanta, GA, February, **Invited**.
- Colloquium of Department of Mathematical Sciences at Indiana University-Purdue University Indianapolis, Homoclinic chaos on routes into bursting in slow-fast models of neurons, Indianapolis, IA, January . **Invited** .

[Tuncer]

- Dokuz Eylul University, Izmir, Turkey, December.
- Koc University, Istanbul, Turkey, December.
- Ekonomi ve Teknoloji University, Ankara, Turkey, December.

[Vidakovic] Constructivism: APOS, an example of constructivist theory, **seminar talk** in the Department of Mathematics at the University of Sao Paolo, Brazil.

[Yao] 50-minutes colloquium at the Math Department of Clemson University.

[Yi Zhao]

- Seminar, University of California, San Diego, December .
- Seminar, Emory University, March.
- Seminar, University of South Carolina, March.

[Yichuan Zhao]

- Empirical likelihood inference for the calibration regression model with censored lifetime medical cost, School of Applied Mathematics, University of Electronic Science and Technology of China, Chengdu, China, May.
- Empirical likelihood inference for censored median regression with weighted hazard functions, Department of Mathematics, Zhejiang University, Hangzhou, China, May.