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# Doctoral Degrees Conferred

2013–2014

## ALABAMA

### Auburn University (12)

DEPARTMENT OF MATHEMATICS AND STATISTICS

*Asplund, John*, 5-cycle systems

*Denhere, Melody*, Robust statistical methods for the functional logistic model

*Harmon, Henry*, Some geometry of symmetrized tensor spaces

*He, Xin*, Lebesgue approximation of superprocesses

*Hughes, Glenn*, Completeness properties in function spaces with the compact-open topology

*Indika, Kodithuwakku Arachchige Avantha*, Orthogonal bases of certain symmetry classes of tensors associated with Brauer characters

*Jones, Cadavious*, Security and secure-dominating sets in graphs

*Kong, Liang*, Spatial spread dynamics of monostable equations in locally inhomogeneous habitats

*Miakonkana, Guy-vanie Marcias*, Non-parametric rank based inferences for generalized linear models, longitudinal data analysis, and variable selection

*Mijena, Jebessa*, Space-time fractional Cauchy problems and trace estimates for relativistic stable processes

*Sawant, Pallavi*, Robust methods for multivariate functional data analysis

*Sturm, Frank*, Pseudo-solenoids are not continuously homogeneous

### University of Alabama (6)

DEPARTMENT OF MATHEMATICS

*Acharyya, Amrita*, Coverings of profinite graphs

*Chen, Qiang*, Calculus of variations and optimal control

*DarAssi, Mahmoud*, Investigation of the heat and mass transfer in a liquid suspension of small particles

*Das, Bikash*, Cofinite graphs and their profinite completions

*Maxwell, Mary*, Using Bayesian techniques with item response theory to analyze mathematics tests

*Schweiger, Adam*, Gravity, surfactants, and instabilities of two-layer shear flows

### University of Alabama at Birmingham (9)

DEPARTMENT OF BIOSTATISTICS

*Mehta, Tapan*, The apparent change in obesity-mortality associations: Methodological issues in survival analyses with censored outcomes

*Seals, Samantha*, Spatial analysis of cardiovascular MRI data

*Wu, Guodong*, Quantification and association analysis for next-generation sequencing data

*Yan, Qi*, Statistical methods for set-based association tests in genetic studies

DEPARTMENT OF MATHEMATICS

*Chapman, Jacob*, Spectral properties of random block operators

*Korepanov, Alexey*, Small perturbations in hard balls dynamics

*Mahato, Ajay*, The inverse volatility problem for American options

*Ptacek, Ross*, Laminations and the dynamics of iterated cubic polynomials

*Wyatt, Mitchell*, Uniqueness of potential in Schrödinger's equation with one boundary measurement

### University of Alabama-Tuscaloosa (1)

INFORMATION SYSTEMS STATISTICS AND MANAGEMENT SCIENCE DEPARTMENT

*Xu, Jie*, Three essays on improving ensemble models

## ARIZONA

### Arizona State University (14)

SCHOOL OF HUMAN EVOLUTION AND SOCIAL CHANGE

*Cruz-Aponte, Maytee*, Epidemic dynamics of metapopulation models

*Luli, Dori*, A neuronal network model of *Drosophila* antennal lobe

*Morales-Butler, Emmanuel*, Applications of nonlinear systems of ordinary differential equations and Volterra integral equations to infectious disease epidemiology

*Patterson-Lomba, Oscar*, On the dynamics of infectious diseases in modern landscapes: Urban settings and drug resistance

SCHOOL OF MATHEMATICAL AND STATISTICAL SCIENCES

*Bowling, Stacey*, Conceptions of function composition in college precalculus students

*Elledge, Shawn*, On minimal levels of Iwasawa towers

*Halani, Aviva*, Students' ways of thinking about combinatorics solution sets

*Ismay, Chester*, Testing independence of parallel pseudorandom number streams: Incorporating the data's multivariate nature

*Jin, Wen*, Persistence of discrete dynamical systems in infinite dimensional state spaces

*Liu, Hao*, Spatial spread of rabies in wildlife

*Molla, Theodore*, On tiling directed graphs with cycles and tournaments

*Valdivia, Arturo*, Alternative methods via random forest to identify interactions in a general framework and variable importance in the context of value-added models

*Young, Jonathan*, Dependent models of signal transduction networks

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The above list contains the names and thesis titles of recipients of doctoral degrees in the mathematical sciences (July 1, 2013, to June 30, 2014) reported in the 2015 Annual Survey of the Mathematical Sciences by 197 departments in 143 universities in the United States. Each entry

contains the name of the recipient and the thesis title. The number in parentheses following the name of the university is the number of degrees listed for that university.

Zhang, Jun, A continuous latent factor model for non-ignorable missing data in longitudinal studies

**University of Arizona** (18)

DEPARTMENT OF MATHEMATICS

Gilbert, Michael, Investigating the relationship between restriction measures and self-avoiding walks

Herrera-Valdez, Marco, Geometry and non-linear dynamics underlying excitability phenotypes in biophysical models of membrane potential

Islambekov, Umar, Lieb-Robinson bounds for the Toda lattice

Leslie, Martin, Hypermap-homology quantum codes

Thomas, Matthew, Analyzing conceptual gains in introductory calculus with interactively-engaged teaching styles

PROGRAM IN APPLIED MATHEMATICS

Bailey, Brenae, Stochastic models of -1 programmed ribosomal frameshifting

Comeau, Darin, Conceptual and numerical modeling of ice in a global climate framework

Dinius, Joseph, Dynamical properties of a generalized collision rule for multi-particle systems

Hariprasad, Daniel, Dynamics and lateral migration of red blood cells in Stokes flow

Hyman, Jeffrey, Heterogeneities and structures of flow through explicit porous microstructures

Kent, Stuart, Multi-scale conformal maps and free boundary problems

Love, David, Data-driven methods for optimization under uncertainty with application to water allocation

Lyttle, David, Modeling inhibition-mediated neural dynamics in the rodent spatial navigation system

Mann, Sarah, The original view of Reed-Solomon coding and the Welch-Berlekamp decoding algorithm

Pennybacker, Matthew, A numerical study of pattern-forming fronts in phyllotaxis

Stockbridge, Rebecca, Bias and variance reduction in assessing solution quality for stochastic programs

Yang, Bole, Asymptotic behaviors of CMV matrices and discrete nonlinear Schroedinger equations

STATISTICS GIDP

Fang, Qijun, Hierarchical Bayesian benchmark dose analysis

**ARKANSAS**

**University of Arkansas at Fayetteville** (4)

DEPARTMENT OF MATHEMATICAL SCIENCES

Foster, Newton, General sampling schemes for the Bergman spaces

Fulmer, Shanda, Closed-range composition operators on weighted Bergman spaces and applications

Tinker, Michael, The Szegő kernel of certain polynomial models and heat kernel estimates for Schrödinger operators with reverse holder potentials

Whittle, Carrie, The word problem for the automorphism groups of right-angled Artin groups is in P

**CALIFORNIA**

**California Institute of Technology** (6)

APPLIED AND COMPUTATIONAL MATHEMATICS DEPARTMENT

Amlani, Faisal, A new high-order Fourier continuation-based elasticity solver for complex three-dimensional geometries

Ci, Maolin, Multiscale model reduction methods for deterministic and stochastic partial differential equations

Sanan, Patrick, Geometric elasticity for graphics, simulation, and computation

Tavallali, Peyman, Sparse Time-Frequency Data Analysis: A multi-scale approach

Tyranowski, Tomasz, Geometric integration applied to moving mesh methods and degenerate lagrangians

DEPARTMENT OF MATHEMATICS

Daigle, Gerald, On the local Tamagawa number conjecture for Tate motives

**Claremont Graduate University** (13)

INSTITUTE OF MATHEMATICAL SCIENCES

Abouali, Mohammad, Investigating Castillo-Grone's mimetic difference operators in development of geophysical fluid dynamic models implemented on GPGPUS

Akhter, Sajia, Finding a novel way for fast sequence alignment and exploiting information theory in bacterial genomes and complete phages

Chaumont, Nicolas, Modeling animal interactions with their environment

Chen, Jerry, Role of the micro: RN A miR-124 in the regulatory network governing PNS development in Ciona intestinalis

Franklin, Michael, Electrowetting-based microfluidics: Modeling and simulation

Garcia-Cardona, Cristina, Multiclass learning on graphs: Diffuse interface models and beyond

Nachawati, Susan, DNA visualization with Sacks Spiral methods: An application in genomic engineering

Recova, Leandro, Applications of Morse theory to semilinear elliptic boundary value problems

Seguritan, Victor, Neural network predictions of protein function

Sharpsten, Lucie, Predicting glaucoma progression using random forests for correlated binary response based on longitudinally collected standard automated perimeter data

Teagle-Hernandez, Allen, Very efficient numerical solutions via the "Mehrstellen" methods in 1D, 2D, and 3D for complex differential equations demonstrated for acoustic and related fields

Thomas, Mary, Parallel implementation of the curvilinear ocean and atmospheric (UCOAM) model and supporting computational environment

Zajac, Peter, Globally accessible finite element based web solver for the vibrational Schrödinger equation and application to HC<sub>3</sub>O and ZnCl<sub>2</sub>+

**Naval Postgraduate School** (1)

DEPARTMENT OF APPLIED MATHEMATICS

Chung, Jong, Affine equivalence and constructions of cryptographically strong Boolean functions

**Stanford University** (19)

DEPARTMENT OF MATHEMATICS

Adams, Henry, Evasion paths in mobile sensor networks

Buchholtz, Ulrik, Unfolding of systems of inductive definitions

Carlotta, Alessandro, Rigidity and flexibility phenomena in general relativity

Grigoriev, Ilya, Relations among characteristic classes of manifold bundles

Ha, Junsoo, Some problems in multiplicative number theory

Haber, Nicholas, Microlocal analysis of Lagrangian submanifolds of radial points

Levin, Brandon, G valued flat deformations and local models

Li, Xiaodong, Sparse and low rank structures in robust principal component analysis, compressed sensing with corruptions, and phase retrieval

Lipnowski, Michael, Equivariant torsion and base change

Malkiewich, Cary, Duality and linear approximations in Hochschild homology, K theory, and string topology

Murphy, Daniel, Algebraic modular forms on definite orthogonal groups

Petrow, Ian, Moments of automorphic L functions and related problems

DEPARTMENT OF STATISTICS

Basak, Anirban, Probability models on large random graphs and matrices

Gavish, Matan, Topics in matrix inference

Grazier G'Sell, Maxwell, Inference for correlation-based hierarchical clustering of variables

Head, Austen, Statistical methods on graphs

Lim, Michael, The group-lasso: Two novel applications

*Mukherjee, Sumit*, Estimation in exponential families with unknown normalizing constant  
*Sun, Nike*, Gibbs measures and phase transitions on locally tree-like graphs

**University of California, Berkeley** (39)

DEPARTMENT OF MATHEMATICS

*Beraldo, Dario*, Loop group actions on categories and Whittaker invariants  
*Booher, Adam*, Super flatness  
*Bray, Nicolaus*, Methods for measurement and interpretation of gene expression  
*Charalambidis, Marko*, External problems in analysis  
*Chirvasitu, Alexandru*, Linearly reductive quantum groups: Descent, simplicity and finiteness properties  
*Choi, Keon*, The embedded contact homology of toric contact manifolds  
*Daub, Michael*, Complex and  $p$ -adic computations of Chow-Heegner points  
*Do, Hanh*, Monoidal structure in mirror symmetry and noncommutative geometry  
*Flock, Taryn*, On extremizers for certain inequalities of the  $k$ -plane transform  
*Forman, Noah*, Instruction sets for walks and the quantile path transformation  
*Froehle, Bradley*, High-order discontinuous Galerkin fluid-structure interaction methods  
*Haken, Ian*, Randomizing reals and the first order consequences of 2-randoms  
*Hurtado-Salazar, Sebastian*, Homomorphisms between groups of diffeomorphisms  
*Kaspar, David*, Exactly solvable stochastic models in elastic structures and scalar conservation laws  
*Mannisto, Peter*, Albanese and Picard 1-motives in positive characteristic  
*McDougal, Shawn*, Representing Sato-Levine invariants by Whitney tower intersections  
*Miles, Andrew*, Moduli of elliptic curves via twisted stable maps  
*Nguyen, Khoa*, Arithmetic dynamics of diagonally split polynomial maps  
*Ren, Qingchen*, Computations and moduli spaces for non-Archimedean varieties  
*Rodriguez, Jose*, Numerical algebraic geometry for maximum likelihood estimation  
*Solis, Pablo*, Wonderful loop group embeddings and applications to the moduli of  $G$ -bundles on curves  
*Tener, James*, Construction of the unitary free fermion Segal conformal field theory  
*Trang, Nam*, Generalized Solovay measures, the HOD analysis and the core model induction  
*Tucker Simmons, Matthew*, Quantum algebras associated to irreducible generalized flag manifolds

*Vianna, Renato*, On exotic Lagrangian tori in  $\mathbb{C}p^2$   
*Watson, Nathaniel*, Non-simplicial nerves of two-dimensional categorical structures  
*Westrick, Linda*, Computability in ordinal ranks and symbolic dynamics  
*Yu, Thanh*, Combinatorial patterns in syzygies

DEPARTMENT OF STATISTICS

*Bean, Derek*, Non-gaussian component analysis  
*Bhattacharyya, Sharmodeep*, A study of high-dimensional clustering and statistical inference on networks  
*Huoh, Yu-Jay*, Sensitivity analysis of stochastic simulator with information theory  
*Loh, Po-Ling*, High-dimensional statistics with systematically corrupted data  
*Long, James*, Prediction methods for astronomical data observed with measurement error  
*Sapp, Stephanie*, Subsemble: A flexible ensemble prediction method  
*Tran, Ngoc*, Topics in tropical linear algebra and applied probability

GROUP IN BIostatISTICS

*Brown, Daniel*, Applications of causal inference in problems of occupational health  
*Decker, Anna*, Semiparametric prediction, variable importance, and effect estimation in trauma care  
*Eliseeva, Ekaterina*, Machine learning and causal inference methods for the derivation of exposure-response curves  
*Pozzi, Luca*, Topics in evidence synthesis

**University of California, Davis** (16)

DEPARTMENT OF MATHEMATICS

*Brummitt, Charles*, Models of systemic events: Interdependence, contagion and innovation  
*Chong, Eun A.*, Nonlinear equations of mixed type and transonic flows  
*Kwok, Ricky*, On the distribution of the leading particle in the ASEP with step initial condition and the self-adjoint ASEP  
*Li, Lingyun*, Central limit theorem for linear statistic of eigenvalues of large random matrices  
*O'Brien, Matthew*, Scalable domain decomposed Monte Carlo particle transport  
*Reed, Matthew*, The central limit theorem for linear spectral statistics of submatrices of the Gaussian Wigner random matrices

DEPARTMENT OF STATISTICS

*Chou, Elizabeth*, Computed data-geometry based supervised and semi-supervised learning in high dimensional data

*Dienes, Christopher*, On-line monitoring in linear time series models  
*Dienes, Erin*, An information theoretic approach to biomarker validation  
*Huang, Chun-Jung*, Spatial-temporal models for image data analyses  
*Jin, Yin*, Estimating component reliability using system lifetime data  
*Noguchi, Kimihiro*, Exploratory analysis and modeling of financial time series  
*Tao, Wenwen*, Represent derivatives and time dynamics for longitudinal data  
*Wang, Ru*, High-dimensional graphical models learning  
*Xu, Cong*, Semiparametric analysis of incomplete survival data  
*Zhou, Siyuan*, Semiparametric modeling of non-autonomous dynamical systems

**University of California, Irvine** (10)

DEPARTMENT OF MATHEMATICS

*Abatzoglou, Alexander*, A CM elliptic curve framework for deterministic primality proving on numbers of special form  
*Feng, Jie*, Matrix factorization and its application in blind source separation and finance  
*He, Fei*, Regularity of the Ricci flow and rigidity of Ricci solitons  
*Holben, Ryan*, Lowering the consistency strength of square principles at singular cardinals  
*Long, Xiaolong*, Constructing sparse and fast mean reverting portfolios  
*Ryerson, Shane*, Ultrasensitivity and parameter variability in independent multisite systems  
*Said, Mustafa*, Almost commuting elements in non-commutative symmetric operator spaces  
*Sun, Zheng*, Modeling of stem cells  
*Wang, Dongyong*, Numerical methods for reaction diffusion systems in high spatial dimensions  
*Wang, Lihan*, Hodge theory on compact symplectic manifolds with boundaries

**University of California, Los Angeles** (22)

DEPARTMENT OF MATHEMATICS

*Alexander, Damon*, Limiting evolution of families of parabolic differential equations  
*Barekat, Farzin*, Applications of stochastic simulation and compressed sensing to large systems  
*Chen, Xiaojing*, Global Torelli theorem for projective manifolds  
*Das, Shagnik*, Extensions of classic theorems in extremal combinatorics  
*David, Guy*, Lipschitz maps in metric spaces  
*Hayes, Benjamin*, Extended von Neumann dimension for representations of groups and equivalence relations

*Howes, Russell*, Virtual node methods for incompressible flow

*Kinneberg, Kyle*, A coarse entropy-rigidity theorem and discrete length-volume inequalities

*Kostic, Tijana*, Threshold dynamics for statistical density estimation and graph clustering

*Li, Yingkun*, Mock-modular forms of weight one

*Murphy, Jason*, Nonlinear Schrödinger equations at non-conserved critical regularity

*Richelson, Silas*, Cryptographic protocols with strong security: Non-malleable commitments, concurrent zero-knowledge and topology-hiding multi-party computation

*Ricketson, Lee*, Two approaches to accelerated Monte Carlo simulation of Coulomb collisions

*Rodgers, Bradley*, The statistics of the zeros of the Riemann zeta-function and related topics

*Sanders, Beren*, Higher comparison maps for the spectrum of a tensor triangulated category

*Schaeffer, Hayden*, Variational models for fine structures

*Skoufranis, Paul*, Approximations in operator theory and free probability

*Ventullo, Kevin*, On the Gross-Stark and Iwasawa main conjectures

*Yang, Yi*, Fast and robust algorithms for compressive sensing and other applications

*Zahl, Joshua*, Maximal functions, incidence theorems, and efficient partitions of Euclidean space

*Zhao, Bin*, Local indecomposability of Hilbert modular representations and Mumford-Tate conjecture

DEPARTMENT OF STATISTICS

*Levinson, Matthew*, Penalized Bayesian model selection and prediction for gene regulation in higher organisms

**University of California, Merced (4)**

DEPARTMENT OF APPLIED MATHEMATICS

*Loffeld, John*, Design, implementation and performance of exponential integrators for high performance computing applications

*Rohde, Shelley*, Modeling diffuse reflectance measurements of light scattered by layered tissues

*Sahin, Derya*, Modeling light propagation in luminescent media

*Vaz, Garnet*, Graph based scalable algorithms with applications

**University of California, Riverside (4)**

DEPARTMENT OF MATHEMATICS

*Kim, Chunghoon*, Deformations of compact holomorphic Poisson manifolds and algebraic Poisson schemes

DEPARTMENT OF STATISTICS

*Guo, Li*, Near uniformly minimum variance quadratic unbiased estimation of variance components in mixed effects models

*Yue, Liu*, Estimation of two popular econometric models: Random effects panel data model and simultaneous equations model

*Xin, Zhang*, Sequential procedures for nonparametric statistical process control and longitudinal data classification

**University of California, San Diego (10)**

DEPARTMENT OF MATHEMATICS

*Briggs, Christopher*, Uniform exponential growth in algebras

*Gao, Teng*, A rearrangement inequality for diffusion process

*Meredith, Michael Brandon*, Mirror symmetry on toric varieties via tropical geometry

*Mihalik, Adam*, Adaptive methods in the finite exterior calculus framework

*Rodriguez, Ryan*, Preperfectoid algebras

*Timmons, Craig*, Extremal graphs and additive combinatorics

*Walsh, Katherine P.*, Patterns and stability in the coefficients of the color Jones polynomial

*Wang, Li*, Semidefinite relaxation approach to polynomial optimization and its extension

*Wildman, Chad*, Global existence and dispersion of solutions to nonlinear Klein-Gordon equations with potential

*Zhang, Zezhou*, Nonassociative algebra and groups with property

**University of California, Santa Barbara (7)**

DEPARTMENT OF MATHEMATICS

*Flores, Cynthia*, On decay properties of solutions to the Benjamin-Ono equation

*Harrison, Martin*, Quadratic convexity and sums of squares

*Jaramillo, Andrew*, Unipotent radicals of the standard Borel and parabolic subgroups in quantum special linear groups

*Jaramillo, Maree*, The structure of fundamental groups of smooth metric measure spaces

*Plunkett, Patrick*, Spatially adaptive numerical methods for stochastic biophysical processes

*Sigurdsson, Jon Karl*, Continuum and coarse-grained modeling of lipid bilayer membranes

*Speer, Timothy*, Isometries of the Hilbert metric

**University of California, Santa Cruz (9)**

APPLIED MATHEMATICS AND STATISTICS DEPARTMENT

*Anderson, Ross*, Uncertainty-anticipating stochastic optimal feedback control of autonomous vehicle models

*Beltran, Francisco*, Quantifying the impact of climate change on oceanic variables

*Guenther, John*, Optimization with global sensitivity analysis and optimum characterization

*Poynor, Valerie*, Bayesian nonparametric gamma mixtures for mean residual life inference

DEPARTMENT OF MATHEMATICS

*Brasher, Reuben*, Asymptotics of determinants of a class of perturbed Toeplitz matrices

*Dods, Victor*, What happens when you push a cubic meter of Jello into a wormhole

*Laber, Robert*,  $C$ -graded vertex algebras and their representations

*Magee, Michael*, Quantitative spectral gap for thin groups of hyperbolic isometries

*Perepelitsky, Philipp*,  $P$ -permutation equivalences between blocks of finite groups

**University of Southern California (11)**

DEPARTMENT OF MATHEMATICS

*Avdek, Russell*, Liouville hypersurfaces and connect sum cobordisms

*Bañuelos, Selenne*, Structured two-stage population model with migration between multiple patches in a periodic environment

*Bilal, Taylan*, Some computations for bivariant cycle cohomology

*Chubatiuk, Alona*, Nonparametric estimation of an unknown probability distribution using maximum likelihood and Bayesian approaches

*Ericksen, Adam*, The geometry of motivic spheres

*Marinov, Radoslav*, Applications of Stein's methods on statistics of random graphs

*Ostrovskiy, Vitalli*, Point singularities on 2D surfaces

*Pike, John*, Eigenfunctions for random walks on hyperplane arrangements

*Wasilewska, Katarzyna*, Limiting distributions and error terms for the number of visits to balls in mixing dynamical systems

*Xu, Li*, Parameter estimate for hyperbolic SPDE's with stochastic coefficients

*Yildirim, Gokhan*, On the depinning transition of the directed polymer in a random environment with a defect line

## COLORADO

### Colorado School of Mines (1)

DEPARTMENT OF APPLIED MATHEMATICS AND STATISTICS

*Probst, Alexandre*, A tablet-PC software application for statistics classes

### Colorado State University (12)

DEPARTMENT OF MATHEMATICS

*Maple, Jennifer*, Steady state Hopf mode interaction in anisotropic system

*Munoz-Alicea, Roberto*, HIV-1 gag trafficking and assembly; mathematical models and numerical simulations

*Ross, Dustin*, Open and closed Gromov-Witten theory of three dimensional toric Calabi-Yau orbifolds

*Salvi, Niketa*, Two-step coding theorem in the nearly continuous category

*Springer, Bethany*, Nearly continuous Kakutani equivalence

*Strickland, Christopher*, The mathematical modeling and analysis of nonlocal invasions and savanna population dynamics

*Ziegelmeier, Lori*, Exploiting geometry, topology and optimization for knowledge discovery in big data

DEPARTMENT OF STATISTICS

*Hanks, Ephraim*, Statistical models for animal movement and landscape connectivity

*He, Zonglin*, Nonparametric regression with categorical covariates

*Schliep, Erin*, Spatial probit models for multivariate ordinal data: Computational efficiency and parameter identifiability

*Wang, Huan*, Shape restricted spline regression and hypothesis tests in the presence of correlation

*Wang, Yuan*, Linear system design for compression and fusion

### University of Colorado, Boulder (11)

DEPARTMENT OF APPLIED MATHEMATICS

*Galanthay, Theodore*, On adaptive use of information in habitat selection

*Garcia, Jose*, Beta-plane approximation of wind-driven ocean circulation using a first order system least-squares formulation

*Jones, Tobias*, Algebraic multigrid methods for parallel computing, systems, and graphs

*Rasca, Anthony*, Modeling solar wind mass-loading due to dust in the solar corona

*Sen, Amrik*, A tale of waves and eddies in a sea of rotating turbulence

*Webb, Adrean*, Stokes drift and meshless wave modeling

DEPARTMENT OF MATHEMATICS

*Andrews, Scott*, Type-free approaches to supercharacter theories of unipotent groups

*Feaver, Amy*, Euclid's algorithm in multi-quadratic fields

*Keller, Justin*, Generalized supercharacter theories and Schur rings for Hopf algebras

*Purkis, Benjamin*, Projective multiresolution analyses over irrational rotation algebras

*Wayne, David*, The  $K$ -theory of filtered deformations of graded polynomial algebras

### University of Colorado, Denver (8)

DEPARTMENT OF BIostatistics AND Informatics

*Brinton, John*, Statistical methods for cancer screening

*Kreidler, Sarah*, Calculating power for the general linear multivariate model and the general linear mixed model

*Kroehl, Miranda*, On the use of lasso regression for mediation analysis with application to microbiota data

*Ringham, Brandy*, Reducing decision errors in repeated measures studies with missing data

DEPARTMENT OF MATHEMATICS AND STATISTICAL SCIENCES

*Erbes, Catherine*, Extremal problems for degree sequences

*Lowery, Bradley*, Topics in communication-avoiding algorithms and stability analysis

*Morris, Timothy*, New results on cycle structures of graphs

*Nabity, Matthew*, On accelerating the nonsymmetric eigenvalue problem in multicore architectures

### University of Denver (1)

DEPARTMENT OF MATHEMATICS

*Trujillo, Timothy*, Topological Ramsey spaces, associated ultrafilters, and their applications to the Tukey theory of ultrafilters and Dedekind cuts of non-standard arithmetic

### University of Northern Colorado (3)

SCHOOL OF MATHEMATICAL SCIENCES

*Dibbs, Rebecca*, The effects of formative assessment on students' Zone of Proximal Development in introductory calculus

*Glassmeyer, David*, Secondary teacher models of quantitative reasoning

*Roberson, Lee*, Building bridges: Connecting collegiate athletic and mathematics cultures

## CONNECTICUT

### University of Connecticut, Storrs (16)

DEPARTMENT OF MATHEMATICS

*Baldenko, Alex*, The top Lyapunov exponent of symplectic stochastic differential equations: Theory and numerics

*Canakci, Ilke*, Snake graph calculus and cluster algebras from surfaces

*Gunathilaka, Unawatuna Gamage Asiri*, Property and casualty claim cost management

*Kelleher, Daniel*, Geometric techniques in analysis on fractals

*Lamoureux, Matthew*, Stirling's formula in number fields

*Li, Ji*, Topological and isotopic equivalence with applications to visualization

*Lu, Lu*, On the integrated squared error of the linear wavelet density estimator

DEPARTMENT OF STATISTICS

*Boyko, Jennifer*, Handling data with three types of missing values

*Chaurasia, Ashok*, Model selection procedures for incomplete data

*Jiang, Xun (Tony)*, A new class of link functions for modeling categorical data with applications in biology

*Liao, Gong-Yi*, Residual likelihood based clustering models

*Pare, Valerie*, Impact of prior distribution uncertainty in multiple imputation inference

*Rayaprolu, Sairam*, Multiple testing under dependence with approximate posterior likelihood

*Shang, Hongwei*, A two-step estimation procedure and a goodness-of-fit test for spatial extremes models

*Viran Muthu Poruthotage, Sankha*, Multiple crossing fixed-size sequential confidence regions for the mean vector and regression parameters under multivariate normality

*Wang, Xiao (Leo)*, Scan statistics for normal data

### Wesleyan University (4)

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

*Bourdon, Abbey*, A uniform version of a finiteness conjecture for elliptic curves with complex multiplication

*Graham, Bonita*, A construction of rigid analytic cohomology classes for split reductive algebraic groups

*Ricci, James*, Finiteness results for regular ternary quadratic polynomials

*White, David*, Monoidal Bousfield localizations and algebras over operads

**Yale University (7)**

BIostatistics Division

*Ryslik, Gregory*, Identification of non-random somatic mutation clustering while accounting for protein tertiary structure: Extensions, novel methodologies and applications to identifying oncogenic driver mutations

Department of Mathematics

*Banerjee, Soumya*, Tropical geometry over higher dimensional local fields

*Frailley, Conor*, Representations of the general linear groupoid over a non-Archimedean local field

*Li, Han*, Some effective results in homogeneous dynamics and number theory

*Shen, Linhui*, Geometry of canonical bases and mirror symmetry

Department of Statistics

*Cho, Sanghee*, High-dimensional regression with random design, including sparse superposition codes

*Wang, Xiaofei*, Generalized Bayesian change point analysis via product partition models

**DELAWARE**

**Delaware State University (2)**

Department of Mathematical Sciences

*Chen, Feiyu*, Simulation of partial volume averaging in a software breast phantom

*Zeng, Fang*, Direct methods for interior inverse scattering problem

**University of Delaware (7)**

Department of Mathematical Science

*Deng, Quan*, Tear film modeling in 1D and 2D moving geometry with high-order method

*Fu, Zhixing*, Contributions to the study of the hybridizable discontinuous Galerkin method

*Han, Qunhui*, Analysis and simulation of exit time problems

*Li, Jing*, Staggered-grid FDTD method for ultrasound propagation through cancellous bone

*Lu, Sijiang*, Delta BEM discretization of transient and harmonic waves

*Wu, Fan*, Strongly regular graphs, association schemes and Gauss sums

*Xiao, Zunlei*, Gaussian and related processes: Lower tail probability and application

**DISTRICT OF COLUMBIA**

**George Washington University (12)**

Department of Mathematics

*Herning, Joseph*, Spectrum and factors of substitution dynamical systems

*Maeda, Kai*, Self-distributed magmas and their Richter's degrees

*Xie, Lu*, Analysis of the long range interaction in the ternary system

Department of Statistics

*Biswas, Bipasa*, Statistical analysis of DNA copy number variation with sequencing data

*Chowdhury, Mohammed*, Nonparametric smoothing estimation of conditional distribution functions with longitudinal data and time-varying parametric models

*Kalpathy, Ravi*, Perpetuities in fair leader election algorithms

*Qing, Siyu*, Longitudinal weight calibration with estimated control totals for cross sectional survey data: Theory and applications

*Temprosa, Marinella*, An imputation-estimation algorithm using time-varying auxiliary covariates for a longitudinal model when outcome is missing by design

*Xu, Ruihua*, Analysis of mixed types of traits in genetic association studies and application to genome-wide association studies

*Xu, Wenjing*, Statistical properties of biostatistical methods for correlated processes with application to data arising in the legal settings

*Yang, Mengta*, Depth functions, multidimensional medians, and tests of uniformity on proximity graphs

*Zhang, Fanni*, Concordant integrative analysis of multiple gene expression data sets

**Howard University (7)**

Department of Mathematics

*Foster, Bertrum*, Rational points and isogenies of the Holm curves over finite fields

*Fulton, Kourtney*, Continuous homomorphism from  $\beta S$  to  $S^*$

*Kayende, Oliver*, Character sum bounds and hyperforms on binary group algebras

*Miabey, Teylama*, Spectral analysis for finite rank perturbations of diagonal operators in non-Archimedean Hilbert space

*Nelson, Valerie*, Existence results for some higher-order abstract differential equations with applications to PDEs

*Peters, Monique*, Characterizing differences between the left and right operations on  $\beta S$

*Phulara, Dev*, A generalization of the Central Sets Theorem with applications and some additive and multiplicative Ramsey numbers

**FLORIDA**

**Florida Atlantic University (1)**

Department of Mathematical Sciences

*Zhang, Wei*, Detection of multiple change-points in hazard models

**Florida Institute of Technology (1)**

Department of Mathematical Sciences

*Alharthi, Nadiyah*, A piecewise WKB approximation for One-Turning-Point Sturm-Liouville equations and asymptotics for eigenvalues

**Florida State University (28)**

Department of Mathematics

*Amusan, Ibukun*, Parameter estimation for a stochastic volatility model with coupled additive and multiplicative noise

*Daou, Arij*, From songs to ion channels and mathematical modeling

*Garreau, Pierre*, Jump dependence and multidimensional default risk: A new class of structural models with stochastic intensities

*Geng, Jian*, Calibration of local volatility models and proper orthogonal decomposition reduced order modeling for stochastic volatility models

*He, Yanyan*, Uncertainty quantification and data fusion based on Dempster-Shafer theory

*Huang, Wanwan*, Stochastic modeling of financial derivatives

*Huang, Wen*, Optimization algorithms on Riemannian manifolds with applications

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*Marriott, John*, Geometric optimal control with an application to imaging in nuclear magnetic resonance

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*Liu, Zhenia*, Conditional persistence for random walks

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*Balint, Gergely*, Non-adaptive group testing Steiner systems and Latin squares

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*Coti Zelati, Michele*, Differential inclusions and variational inequalities related to the primitive equations of the atmosphere

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*Du, Roufei*, Functional profiling of next-generation sequencing

**Louisiana State University, Baton Rouge (6)**

DEPARTMENT OF MATHEMATICS

*Blanton, Jacob*, Reformulations for control systems and optimization problems with impulses

*Dribus, Benjamin*, On the infinitesimal theory of Chow groups

*Eakins, Evan*, Constructive aspects of Kochen's theorem on  $p$ -adic closures

*Latin, Ladorian*, A semigroup/Laplace transform approach to approximating flows

*McGuire, Trevor*, Combinatorial free resolutions of ideals with monomial and binomial generators

*Peng, Yun*, Ito formula and Girsanov theorem on a new Ito integral

**Louisiana Technology University (4)**

PROGRAM OF MATHEMATICS AND STATISTICS

*Bracey, Scarlett*, Modeling and control of nanoparticle bloodstream concentration for tumor therapies

*Han, Fei*, Numerical simulation of hydrogen absorption/desorption processes in cylindrical metal-hydrogen reactors for hydrogen storage

*Shi, Liwei*, A mathematical model and numerical method for thermoelectric DNA sequencing

*Wang, Yifan*, Numerical solutions for problems with complex physics in complex geometry

**Tulane University (2)**

DEPARTMENT OF MATHEMATICS

*Luo, Qingyang*, Integrated analysis of clinical and longitudinal genomic data

*Xiang, Tian*, Global dynamics of the local and nonlocal Patlak-Keller-Segel chemotaxis system

**University of Louisiana at Lafayette (4)**

DEPARTMENT OF MATHEMATICS

*Delcambre, Mark*, Finite difference schemes for a structured model of mycobacterium marinum

*LeBlanc, Richard L.*, Baer and Rickart properties in modules and an associated radical

*Muniswamy, Sowmya*, Analytical and numerical approach to Caputo fractional differential equations via generalized iterative schemes with applications

*Wang, Yi*, Analysis and numerical schemes for certain structured population models

**MARYLAND**

**Johns Hopkins University, Bloomberg School of Public Health (4)**

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*Krall, Jenna*, Statistical methods for linking the chemical composition of particulate matter to health outcomes

*Maas, Paige*, Synthesizing data sources to develop and update risk models

*Shou, Haochang*, Statistical methods for structured multilevel functional data: Estimation and reliability

*Wei, Yingying*, Integrative statistical models for genomic signal detection

**Johns Hopkins University, Baltimore (10)**

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*Adali, Sancar*, Joint optimization of fidelity and commensurability for manifold alignment and graph matching

*Qin, Yichen*, Robust inference via Lq-likelihood

*Sussman, Daniel*, Foundations of adjacency spectral embedding

*Wang, Qi*, Optimization with discrete simultaneous perturbation stochastic approximation using noisy loss function measurements

*Zheng, Fang*, Algebraic approaches for constructing multi-D wavelets

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*Chen, Xuehua*, An improvement on eigenfunction restriction estimates for compact boundaryless Riemannian manifolds with nonpositive sectional curvature

*Karami, Arash*, Zeros of random Reinhardt polynomials

*Shao, Peng*, Sobolev resolvent estimates of the Laplace-Beltrami operator on compact Riemannian manifolds

*Sinclair, Duncan*, Heat kernels on Riemannian polyhedra and heat flows into NPC manifolds

*Xiao, Ling*, Flow problems in hyperbolic space

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*Ayyala, Deepak Nag*, High dimensional time series: Mean vector testing and testing for autocorrelation matrices

*Cornwell, David*, Amplified quantum transforms

*Jacobs, Justin*, Nonparametric Bayesian density estimation on Riemannian manifolds

*Mbodj, Malick*, Ellipsoidal tolerance regions and simultaneous tolerance intervals for some multivariate normal population

*Raim, Andrew*, Computational methods in finite mixtures using approximate information and regression limited to the mixture mean

*Trott, David*, Top heavy and special Bishop-Phelps cones, Lyapunov rank, and related topics

*Zimmer, Zachary*, Tolerance intervals under some discrete models, zero-inflated models and mixture models

**University of Maryland,  
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STATISTICS, AND SCIENTIFIC  
COMPUTATION

- Andrews, Travis*, Frame multiplication theory for vector-valued harmonic analysis
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- Cloninger, Alexander*, Exploiting data-dependent structure for improving sensor acquisition and integration
- Doster, Timothy*, Harmonic analysis inspired data fusion with applications in remote sensing
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- Wickman, Clare*, An optimal transport approach to some problems in frame theory
- Yu, Wei-Hsuan*, Spherical two-distance sets and related topics in harmonic analysis

**MASSACHUSETTS**

**Boston University** (9)

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- Benes, Gregory*, Stability of multi-solutions in the TODA model and torus canards in neuroscience models
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- Fitzgibbon, Elizabeth*, Rational maps: The structure of Julia sets from accessible Mandelbrot sets
- Gonzalez Ramirez, Laura*, Existence and stability of traveling waves in a biologically constrained model of seizure wave propagation

*Liu, Chong*, Functional principal component and factor analysis of spatially correlated data

*Nikolaev, Nikolay*, Some methods for robust inference in econometric factor models and in machine learning

*Viles, Weston*, Network data analysis

*Ward, Brandon*, Observables in the BC system

*Zelinsky, Joshua*, Variations on the Artin primitive root conjecture

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*Fang, Yu*, Automorphic construction of units in a totally real field

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*Zhang, Yurong*, Iwasawa main conjecture for Eisenstein series  $E_{k+z, 2, 1, \epsilon}$

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*Alexeeff, Stacey*, Measurement error in environmental exposures: Statistical implications for spatial air pollution models and gene environment interaction tests

*Barnett, Ian*, SNP-set tests for sequencing and genome-wide association studies

*Bind, Marie-Abele*, Statistical methods to investigate the role of genetic and epigenetic mechanisms in air pollution and temperature health effects

*Braun, Danielle*, Statistical methods to adjust for measurement error in risk prediction models and observational studies

*Cudhea, Frederick*, A novel method for modeling hierarchical developmental toxicity data and calculating joint risk BMDs based on the Plackett-Dale distribution

*Dai, Wei*, Robust approaches to marker identification and evaluation for risk assessment

*Dean, Natalie Exner*, Surveillance methods for monitoring HIV incidence and drug resistance

*Huang, Norman*, Graph-based support vector machines for patient response prediction using pathway and gene expression data

*Lin, Xinyi*, Statistical methods for high-dimensional data in genetic epidemiology

*Meyer, Mark*, Function-on-function regression with public health applications

*Mitchell, Shira*, Capture-recapture estimation for conflict data and hierarchical models for program impact evaluation

*Mukherjee, Rajarshi*, Statistical inference for high dimensional problems

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*Antonakoudis, Stergios*, The complex geometry of Teichmüller space

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*Woolf, Matthew*, Relative Jacobians of linear systems

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*Keating, Ailsa Macgregor*, Symplectic properties of Milnor fibres

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*Oza, Anand*, A trajectory equation for walking droplets: Hydrodynamic pilot-wave theory

*Park, Jennifer*, Effective Chabauty for symmetric powers of curves

*Tsybaliuk, Oleksandr*, The affine Yangian of  $\mathfrak{gl}_1$  and the infinitesimal Cherednik algebras

*Tucker, George*, Statistical methods to infer biological interactions

**Northeastern University (6)**

DEPARTMENT OF MATHEMATICS

*Appel, Andrea*, Monodromy theorems in the affine setting

*Duke, Andrew*, Cube-like regular incidence complexes

*Kesir, Mustafa*, A mathematical model of redox/methylation metabolism in human neuronal cells

*Veetel, Bindu*, On the regularity of solutions to the Beltrami equation in the plane

*Yang, Yaping*, Three contributions to topology, algebraic geometry and representation theory: Homological finiteness of abelian covers, algebraic elliptic cohomology theory and monodromy theorems in the elliptic setting

*Zhao, Gufang*, Deprived category and cohomology of resolution of singularities: Examples from representation theory

**Tufts University (3)**

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*Friedhoff, Stephanie*, Design and analysis of multigrid methods for parabolic problems

*Hao, Ning*, Moving from matrix to tensor-based analysis and algorithms for applications in imaging science and beyond

*Offerman, Christine*, Multi-temporal wave equations on flat and compact symmetric spaces

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*Aiello, Domenico*, Galois theory of iterated morphisms on reducible elliptic curves and Abelian surfaces with real multiplication

*Chen, Dechang*, Isoperimetric inequality and area growth of surfaces with bounded mean curvature

*Friedlander, Holley*, Twisted Weyl group multiple Dirichlet series over the rational function field

*Gassert, Thomas*, Prime decomposition in iterated towers and discriminant formulae

*Herr, Daniel*, Open books on contact three orbifolds

*Kazanova, Anna*, Degenerations of Godeaux surfaces and exceptional vector bundles

*Koonz, Jennifer*, Properties of singular Schubert varieties

*Li, Jingran*, Conditional Gaussian fluctuations and refined asymptotics of the spin in the phase-coexistence region

*Li, Kai*, Discrete parity-time symmetric nonlinear Schrödinger lattices

*Mohr, Luke*, Martingale central limit theorem and nonuniformly hyperbolic systems

*Rana, Julie*, Boundary divisors in the moduli space of stable quintic surfaces

*Yan, Dong*, Dark-bright solitons and vortices in Bose-Einstein condensates

DEPARTMENT OF PUBLIC HEALTH BIostatISTICS

*Yu, Shuli*, Evaluating predictors of individual dietary intake latent values under different mixed models

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*Zheltukhin, Sergey*, Preferred frequencies for coupling of seismic waves and vibrating tall buildings

**MICHIGAN**

**Central Michigan University (6)**

DEPARTMENT OF MATHEMATICS

*Al-Aqtash, Raid*, On generating new families of distributions using the logit function

*Aljarrah, Mohammad*, System of continuous distributions generated from quantile functions

*Alzaghal, Ahmad*, Families of exponentiated generalized distributions: Properties and applications

*Gautam, Yadu*, A novel approach of imputing summary statistics for genome-wide association study

*Loszewski, Cleland*, The symplectic volume of the ribbon graph complex

*Wijetunge, Tharanga*, The role of advance student response system-perspectives of the preservice secondary mathematics teachers

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*Bao, Lian Zhang*, Some properties of backward forward parabolic equations from population dynamics

*Giambone, Adam*, A combinatorial approach to knot theory: Volume bounds for hyperbolic semi-adequate link complements

*Jones, Jaylan*, Development of a fast and accurate time stepping scheme for the functionalized Cahn-Hilliard equation and application to a graphics processing unit

*Krcatovich, David*, The reduced knot Floer complex

*Maridakis, Manousos*, The concentration principle

*Reznikov, Aleksandr*, Weighted norm inequalities for Calderón-Zygmund operators

*Shadrach, Richard*, Integral models of certain PEL Shimura varieties with  $\Gamma_1(p)$ -type level structure

DEPARTMENT OF STATISTICS AND PROBABILITY

*Cheng, Dan*, The excursion probability of Gaussian and asymptotically Gaussian random fields

*Kang, Lening*, The excursion probability of Gaussian and asymptotically Gaussian random fields

*Wu, Cen*, High dimensional statistical methods for gene-environment interactions

*Zhang, Kai*, Model selection and forecasting for periodic time series

**Michigan Technological University (2)**

DEPARTMENT OF MATHEMATICAL SCIENCES

*Al-Habahbeh, Abdallah*, Simulations of Newtonian and non-Newtonian flows in deformable tubes

*Kumari, Sapna*, Identification of genes controlling biological processes and pathways through statistical analysis and network reconstruction

**Oakland University (2)**

DEPARTMENT OF MATHEMATICS AND STATISTICS

*Connolly, Robert D.*, Matching preclusion and conditional matching preclusion problems for the folder Petersen cube

*Hayman, Thomas J.*, Facet-inducing inequalities of the convex hull of integer solutions of application-driven structures of multiple all-different predicates

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*Abram, William*, Equivariant complex cobordism

*Altschul, Samuel*, Endoscopy for nilpotent orbits of  $G_2$

*Beichman, Jennifer*, Nonstandard dispersive estimates and linearized water waves

*Bosler, Peter*, Particle methods for geophysical flow on the sphere

*Brooks, Ernest*, Generalized Heegner cycles, Shimura curves, and special values of  $p$ -adic  $L$ -functions

*Chung, Sohhyun*, The impact of Volcker rule on bank profits and default probabilities

*Clader, Emily*, The Landau-Ginzburg/Calabi-Yau correspondence for certain complete intersections

*Ford, Nicolas*, Geometric shifts and positroid varieties

*Gignac, William*, Equidistribution of preimages in nonarchimedean dynamics

*Gu, Huaiying*, Value-at-Risk (VaR) and dynamic portfolio selection

*Henry, Shawn*, Classifying topoi and preservation of higher order logic by geometric morphisms

*Huang, Yu-Jui*, Topics in stochastic control with applications to finance

*Kim, Jae Kyoung*, Mathematical modeling and analysis of biological clocks within cells

*Lapan, Sara*, On the existence of attracting domains for maps tangent to the identity

*Lee, Seung Jin*, Centrally symmetric polytopes with many faces

*Meyer, Jeffrey*, On the totally geodesic commensurability spectrum of an arithmetic locally symmetric space

*Mueller, Alexander*, Applications of generalized Fermat varieties to zeta functions of Artin-Schreier curves

*Priddis, Nathan*, A Landau-Ginzburg/Calabi-Yau correspondence for the mirror quintic

*Reyes, Kristopher-Roy*, Large scale kinetic Monte Carlo simulations: Theory, implementation and applications

*Roberts, Joseph*, Steady and self-similar solutions to two-dimensional hyperbolic conservation laws

*Rosen, Julian*, The arithmetic of multiple harmonic sums

*Sadiq, Burhan*, Finite difference methods, Hermit interpolation and Quasi-Uniform Spectral Schemes (QUSS)

*Scherr, Zachary*, Rational polynomial Pell equations

*Scott, Geoffrey*, Torus actions and singularities in symplectic geometry

*Shearer, Paul*, Separable inverse problems, blind deconvolution, and stray light correction for extreme ultraviolet solar images

*Shen, Yefeng*, Gromov-Witten theory of elliptic orbifold projective lines

*Shoemaker, Mark*, A mirror theorem for the mirror quintic

*Watkins, Jordan*, The higher rank rigidity theorem for manifolds with no focal points

*Wu, Jingchen*, Some problems in stochastic control theory related to inventory management and coarsening

*Zhu, Zhixian*, Topics in singularities and jet schemes

DEPARTMENT OF STATISTICS

*Cheng, Jie*, Mixed and covariate dependent graphical models

*Mallik, Atul*, Topics on threshold estimation, multistage methods and random fields

*Mankad, Shawn*, Statistical techniques for the exploratory analysis of structured three-way and dynamic network data

*Mukherjee, Ashin*, Topics on reduced rank methods for multivariate regression

*Park, Yeo Jung*, New methods for discovering hidden dependence and for assessing the possible influence of unobserved variables

*Sales, Adam*, New perspectives on regression adjustment in causal inference, with applications to educational program evaluation

*Zhang, Zhanyang*, Predictive models and calibration analysis in large-scale computational studies

**Wayne State University** (8)

DEPARTMENT OF MATHEMATICS

*Fan, Li*, DG and HDG for curved structures

*Hashemi, Araz*, Adaptive stochastic systems: Estimation, filtering, and noise attenuation

*Talafh, Yousef*, Two-time scale systems in continuous time with regime switching and their applications

*Tilson, Sean*, Power operations in the Künneth and  $C_2$ -equivariant Adams spectral sequences with applications

*Tran, Nghia*, Full stability in optimization

*Xiao, Yayuan*, Discrete Littlewood-Paley-Stein theory and Wolff potentials on homogeneous spaces and multiparameter Hardy spaces

*Zhao, Guangliang*, Properties of nonlinear randomly switching dynamic systems: Mean-field models and feedback controls for stabilization

*Zhu, Jiuyi*, Qualitative properties of solutions of fully nonlinear equations and overdetermined problems

**Western Michigan University** (10)

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*Andrews, Eric*, On Eulerian irregularity and decompositions in graphs

*Arnold, David*, Classifying spaces of symmetric groups and wreath products

*Atanga, Naphthalin*, Elementary school teachers' use of curricular resources for lesson design and enactment

*Bulut, Alper*, Lie loops associated with  $GL(\mathbb{R})$ ,  $\mathbb{R}$  a separable infinite dimensional Hilbert space

*Edson, Alden J.*, A deeply digital instructional unit on binomial distributions and statistical inference: A design experiment

*Goss, Joshua*, A method for assessing and describing the informal inferential reasoning of middle school students

*Houck, Julianne (Julie)*, A pattern in the Lusternik-Schnirelmann category of rational spaces

*Kipka, Robert*, Mathematical methods of analysis for control and dynamic optimization problems on manifolds

DEPARTMENT OF STATISTICS

*Burgos, Jaime*, Multivariate autoregressive time series using Schweppe weighted Wilcoxon estimates

*Jelsema, Casey*, Estimates and inference for spatial and spatio-temporal mixed effects models

**MINNESOTA**

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*Austin, Erin*, Penalized regression and its applications to genetics and genomics

*Quick, Harrison*, Spatiotemporal gradient modeling with applications

*Zhang, Yiwei*, Two topics in association analysis of DNA sequencing data

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*Chang, Ching-Hao*, Isotopy of nodal symplectic spheres in rational manifolds

*Chen, Haoran*, A dynamic model of polyelectrolyte gels

*Feng, Hao*, On three-dimensional Navier-Stokes equations with axis-symmetric vortex rings as initial vorticity

*Huang, Jia*, 0-Hecke algebra actions on flags, polynomials, and Stanley-Reisner rings

*Miller, Alexander*, Reflection arrangements and ribbon representations

*Nie, Xiaolan*, Complex Monge-Ampère equations and Chern-Ricci flow on Hermitian manifolds

*Oestreicher, Samantha*, Forced oscillators with dynamic Hopf bifurcations and applications to Paleoclimate

*Thompson, Robert*, Applications of moving frames to group foliation of differential equations

*Williams, Nathan*, Cataland

SCHOOL OF STATISTICS

*Ding, Shanshan*, Sufficient dimension reduction for complex data structures

*Kang, Yicheng*, Edge detection and image restoration of blurred noisy images using jump regression analysis

*Mai, Qing*, Variable selection in high-dimensional classification

*Price, Bradley*, Ridge fusion in statistical learning

*Sherwood, Benjamin*, Quantile regression model selection

*Zhang, Xin*, Envelopes for efficient multivariate parameter estimation

*Zimmerman, Patrick*, Survey sampling and multiple stratifications

## MISSISSIPPI

### Mississippi State University (3)

DEPARTMENT OF MATHEMATICS AND STATISTICS

*Bhoumik, Soumya*, On the automorphism groups of almost circulant graphs and digraphs

*Kalappattil, Lakshmi*, Classes of singular nonlinear eigenvalue problems with semipositone structure

*Williams, Jahmario*, Positive radial solutions for  $p$ -Laplacian singular boundary value problems

### University of Mississippi (3)

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*Curry, Jamye*, Rank-based two sample tests under a general alternative

*Putnam, Bette*, The characterization of graphs with small bicycle spectrum

*Turnage-Butterbaugh, Caroline*, Moments of products of  $L$ -functions

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*Cenek, Eowyn*, Iterative solvers for large, dense matrices

## MISSOURI

### Missouri University of Science and Technology (1)

DEPARTMENT OF MATHEMATICS AND STATISTICS

*Zeng, Bilin*, Sparse group sufficient dimension reduction and covariance cumulative slicing estimation

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*Lloyd-Hepburn, Tanya*, Ricci flow on anti-self-adjoint naturally reductive homogeneous spaces

*Pedigo, Mark*, The lower central series of the free nilpotent groups of finite rank

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*Alhazaa, Khalifa*, Counter examples on Strichartz's inequalities

*Brigham, Daniel*, Quasi-metric geometry

*Cahill, Jameson*, Frames and projections

*Nicholas, Jacob*, Limit of many molecules dynamics with rigorous macroscopic results

*Soumya, Sanyal*, Irrational behavior of algebraic discrete valuations

*Valerian, Yurov*, Stability estimates for strongly continuous semigroups and partly parabolic reaction diffusion equations

*Vinh, Pham*, Generating sequences of valuations and applications

DEPARTMENT OF STATISTICS

*Dey, Rima*, Random set models for growth with applications to nowcasting

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*Le, Tri Minh*, The formal definition of reference priors under a general class of divergence

*Qi, Yue*, Equivalence test of high dimensional microarray data

*Wang, Haiying*, Design and analysis of a new bounded log-linear regression model

*Wu, Guohui*, Flexible Bayesian hierarchical models for discrete-valued spatio-temporal data

*Yang, Wen-Hsi*, Hierarchical nonlinear, multivariate, and spatially-dependent time-frequency functional models

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*Wu, Wei*, Sequential designs and application in software engineering

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*Li, Lihua*, Basis function approaches for two dimensional Cochlear models

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*Deng, Wei*, Four generated rank 2 arithmetically Cohen-Macaulay bundles on general sextic surfaces

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*Zlotnik, Anatoly*, Optimal control and synchronization of dynamic ensemble systems

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*Akapame, Sydney*, Robust design strategies for nonlinear models using genetic algorithms

*Bowman, Andrew*, L-cuts for genus 2 translation surfaces

*Moreland, Heather*, Traveling waves in pancreatic islets

*Nordey, Kim*, Investigating viable arguments: Preservice secondary teachers' ability to construct arguments and critique the reasoning of others

*Nowack, Shane*, Niche character in a temporally varying environment

*Thorenson, Jennifer*, Discontinuous Galerkin finite element method for stimulation of a transcription process method

*Vsevolozhskaya, Olga*, Combining functions and the closure principle for performing follow-up tests in functional analysis of variance

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*Chih, Tien*, Abstracted primal-dual affine programming

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*Severino, Michael*, Digraphs and homomorphisms: Core, construction, and colorings

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*Auch, Tanner*, Development and application of difference and fractional calculus on discrete time scales

*Awasthi, Pushp Raj*, Boundary value problems for discrete fractional equations

*Carraher, James*, Results on edge-colored graphs and pancyclicity



*Clark, Thomas*, An applied functional and numerical analysis of a 3-D fluid-structure interactive PDE

*Corwin, Nathan*, Embedding and nonembedding results for R. Thompson's group  $V$  and related groups

*DeVries, Melanie*, Unknotting moves of virtual knots

*Denkert, Annika*, Results on containments and resurgences with a focus on ideals of points in the plane

*Gibbons, Courtney*, Decompositions of Betti diagrams

*Haymaker, Kathryn*, Combinatorial and algebraic coding techniques for flash memorage storage

*Johnson, Ashley*, Closure and homological properties of (auto)stackable groups

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*Pei, Pei*, Well-posedness and stability of a semilinear Mindlin-Timoshenko plate model

*Yu, Xuan*, Geometric study of the category of matrix factorizations

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*Black, Michael*, Informative retesting for hierarchical group testing

*Claassen, Elizabeth*, A reduced bias method of estimating variance components in generalized linear mixed models

*Montesinos-Lopez, Osva*, Design and analysis of multistage group testing surveys with application to detecting and estimating prevalence of transgenic corn in Mexico

*Wichman, Christopher*, A test for detecting changes in closed networks based on the number of communications between nodes

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*Zhou, Shilei*, Time-dependent random effect Poisson random field model for polymorphism within and between two related species

NEW HAMPSHIRE

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*Archer, Kassie*, Permutations realized by signed shifts

*Bloom, Jonathan*, Pattern avoiding permutations and rook placements

*Crytser, Danny*, Traces on graph algebras  
*Engberg, Zebediah*, The arithmetic of cyclic subgroups

*Gillaspy, Elizabeth*,  $K$ -theory for twisted groupoid  $C^*$ -algebras

*Hamaker, Zachary*, Bijections combinatorics of reduced decompositions

*Kinnaird, Katherine*, Aligned hierarchies for sequential data

*Komarov, Natalie*, Capture time in variants of cops and robbers games

*LaLonde, Scott*, Nuclearity and exactness for groupoid crossed product  $C^*$ -algebras

*Levi, Asa*, Refocussing and virtual Legendrian knots

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*Chen, Yanni*, Function spaces based on symmetric norms

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*Laflamme, Eric*, Extreme value theory: Applications to estimation of stochastic traffic capacity and statistical downscaling of precipitation extremes

*Lu, Kewei*, On Fan's adaptive Neyman tests for two testing problems in time series analysis

*Morena, Matthew*, Mutual stabilization of chaotic systems through entangled cupolets

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*Akçay, Zeynep*, Dynamics of phase locking in neuronal networks in the presence of synaptic plasticity

*Aunsri, Nattapol*, Particle filtering for frequency estimation from acoustic time-series in dispersive media

*Bandha, Sonia*, Data analysis and simulation for warranties and golf handicaps

*Lin, Tao*, Inverse methods for sound speed estimation in the ocean

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*Zhang, Yang*, A modeling study of the history-dependence of conduction delay in unmyelinated axons

**Princeton University** (18)

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*An, Xinliang*, Formation of trapped surfaces in general relativity

*McBreen, Michael*, Quantum cohomology of hypertoric varieties and geometric representations of Yangians

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*Pollack, Aaron*, Rankin-Selberg integrals in many complex variables and Rankin-Selberg integrals associated to non-unique models

*Reichert, Nicholas*, Some results on a fully nonlinear equation in conformal geometry

*Ruth, Sam*, A bound on the average rank of  $j$ -invariant zero elliptic curves

*Seed, Cotton*, Higher differentials on Khovanov homology

*Shenfeld, Daniel*, Abelianization of stable envelopes in symplectic resolutions

*Sosoe, Philippe*, Fluctuation bounds for two disordered models

*Sun, Hongbin*, On closed hyperbolic 3-manifolds and pseudo-Anosov maps

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*Braga, Bruno*, On the Borel complexity of some classes of Banach spaces

*Franca, Willian*, Commuting maps on some subsets that are not closed under addition

*Kim, Jaegil*, Duality phenomena and volume inequalities in convex geometry

*Montanaro, William*, Character degree graphs of almost simple groups

*Sass, Catherine*, Prime character degree graphs of solvable groups having diameter three

*Starvaggi, Patrick*, Exact distributions of sequential probability ratio tests

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*Acan, Huseyin*, An enumerative-probabilistic study of chord diagrams

*Christopherson, John Cory*, Ideals in the Stone-Cech compactification of a countable semigroup and some applications to ergodic theory and topological dynamics

*George, Jennifer*, TQFTs from quasi-Hopf algebras and group cocycles

*Gibbons, Aliska*, Automorphism groups of buildings constructed via covering spaces

*Greene, Ryan*, The deformation theory of discrete reflection groups and projective structures

*Jia, Yuhan*, Numerical study of the KP solitons and higher order Mises theory of the mach reflection in shallow water

*Joecken, Kyle*, Dimension of virtually cyclic classifying spaces for certain geometric groups

*Kowalick, Ryan*, Discrete systolic inequalities

*Miller, Jason*, Okounkov bodies of Borel orbit closures in wonderful group compactifications

*Olmez, Fatih*, Sleep-wake transition dynamics and power-law fitting with an upper bound

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*Perkins, Rudolph*, On special values of Pellarin's  $L$ -series

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*Poole, Daniel*, A study of random hypergraphs and directed graphs

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*Son, Younghwan*, Some results on joint ergodicity, sets of recurrence and substitution and tiling systems

*Vutha, Amit*, Normal forms and unfoldings of singular strategy functions

*Waller, Bradley*, Properties of  $p$ -adic  $C - k$  distributions

*Wiser, Justin*, Harmonic resonance dynamics of a periodically forced Hopf oscillator

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*Bai, Shasha*, Inference on intraclass correlation coefficients arising in a general clustered repeated measures design

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*Gao, Jinguo*, Rank regression in order restricted randomized designs

*Hinton, Alice*, Contributions to discriminant analysis of cross-sectional and longitudinal data with applications

*Kil, Siyoen*, Finding a targeted subgroup with efficacy for binary response with application for drug development

*Kim, Sungmin*, Community detection in directed networks and its application to analysis of social networks

*Leatherman, Erin*, Optimal predictive designs for experiments that involve computer simulators

*Liang, Zhiyu*, Eigen-analysis of kernel operators for nonlinear dimension reduction and discrimination

*Sampath, Srinath*, Analysis of agreement between two long ranked lists

*Scgambellone, Anthony*, Use of ranking information from unmeasured units in ranked set and judgements post stratified smaples

*Spade, David*, Investigating convergence of Markov chain Monte Carlo methods for Bayesian phylogenetic inference

*Sullivan, Danielle*, A hot deck imputation procedure for multiply imputing nonignorable missing data: The proxy pattern-mixture hot deck

*Thompson, Katherine*, Using ancestral information to search for quantitative trait loci in genome-wide association studies

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*Beal, Joshua*, Matching problems for stochastic processes

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*Mastromatteo, Joseph*, The subprojectivity and pure-subinjectivity domain of a module

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*Kim, Woosuk*, Statistical inference on dual generalized order statistics for Burr type III distribution

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*Zou, Yuanshu*, Robustifying a non-linear model using wavelets

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*Chen, Lizhi*, Systolic freedom of 3-manifolds

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*Mills, Melissa*, Case studies of instructional practices in proof-based mathematics lectures

*Regmi, Dipendra*, A study on the global regularity for two-dimensional magneto-hydro-dynamic and Boussinesq equations

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*Yamazaki, Kazuo*, On the existence and smoothness problem of the magneto-hydrodynamics system

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*Herrera, Yoe*, Intersection numbers in a hyperbolic surface

*Lee, Misun*, Calculus instructors' ROGs in teaching low achieving students

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*Lynam, Matthew*, Extensional maps

*Thuong, Scott*, Classification, cobordism, and curvature of four-dimensional infrasolo manifolds

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*Medina, Patricia*, Mathematical treatment and simulation of methane hydrates and adsorption models

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*Mi, Gu*, Statistical analysis of RNA sequencing count data

*Sun, Luna*, Statistical methods for serially correlated zero-inflated proportions

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*Kloefkorn, Tyler*, On algebras associated to finite ranked posets and combinatorial topology

*Schultz, Patrick*, Algebraic weak factorization systems in double categories

*Stewart, Allen*, Motivic integral of K3 surfaces over a non-Archimedean field

*Sun, Michael*, The tracial Rokhlin property for countable discrete amenable group actions on nuclear tracially approximately divisible  $C^*$ -algebras

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*Boney, Will*, Advances in classification theory for abstract elementary classes

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*McKenney, Paul*, Forcing axioms and the rigidity of corona algebras

*Ouyang, Yuhui*, Numerical approximation of valuation equations incorporating stochastic volatility models

*Rute, Jason*, Topics in algorithmic randomness and computable analysis

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*Etchegaray Garcia, Beatriz*, Classification via auxiliary information: Formalism and application to classification of variable stars

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*Kurtz, Zachary*, Local log-linear models for capture-recapture

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*Mayanskiy, Evgeny*, Asymptotic Mukai model of  $M_6$

*Pathak, Noopur*, Computable aspects of measure theory

*Song, YanLi*, Geometric quantization, reduction and  $k$ -homology

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*Yashinski, Allan*, Periodic cyclic homology and smooth deformations

*Yu, Shilin*, The Dolbeault DGA of a formal neighborhood

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*Kim, Seonjin*, Three essays on nonparametric inference for longitudinal data and time series data

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*Fan, Shimao*, Data-fitted generic macroscopic traffic flow models

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*Shank, Stephen*, Low-rank solution methods for large-scale linear matrix equations



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- Zhang, Yang*, Statistical methods for patient chemosensitivity prediction based on in vitro dose-response data and a modified expectation-maximization (EM) algorithm for regression analysis of data with non-ignorable non-response

- Zhou, Xiaozhi*, Sensitivity analysis and uncertainty analysis in a large-scale agent-based simulation model of infectious diseases

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- Chuang, Ken-Hsien*, Canonical connections
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- Shim, Hyung Bo*, Indefinite string structure
- Stepien, Tracy*, Collective cell migration in single and dual cell layers
- Tran, Hoang*, Partitioned methods for coupled fluid flow problems
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- Miles, Ott*, Analytic methods for network data

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- Tassy, Martin*, Tiling by bars
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- Smith, Diana*, Towards Steinberg's conjecture

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- Livsey, James*, Count time series and discrete renewal processes
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- Wash, Kirsti*, Identifying codes and domination in graph products
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- Zantout, Dania*, On the cuspidality of Maass-Gristenko and mixed level lifts

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- Chiuzan, Codruta*, Adaptive early-phase designs for assessing toxicity and efficacy outcomes - applications in cancer immunotherapy
- Logan, Sarah*, Psychopharmacotherapy use and adherence in autism spectrum disorders
- Nida, Adrian*, Obtaining sense from senselessness: Using machine learning tools to classify systemic lupus erythematosus from free text regions of an electronic health record
- Wheless, Lee*, The association between common variants in nucleotide excision genes and non-melanoma skin cancer

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- Brown, Kenneth*, Shimura images of a family of half integral weight modular forms
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- Johnston, Jeremy*, Turán problems on non-uniform hypergraphs

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- Chang, Wen*, Bayesian analysis of continuous curve functions

*Hill, Blake*, Permutation testing for covariance matrices, with applications in shape analysis

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*Thompson, Jean Marie*, Methods of clustering mixed data

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- Ban, Yuguang*, Understanding evolution of gene expression by comparative analysis
- Bondalapati, Krishna*, Improving genetic analysis with augmented experimental designs
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- Fatheddin, Parisa*, Asymptotic behavior of a class of SPDEs
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*Camp, Wes*, Graph separators and boundaries of right-angled Artin and Coxeter groups

*Marshall, Emily*, Hamiltonicity and structure of classes of minor-free graphs

*Smedberg, Matthew*, Necessary conditions for finite decidability in locally finite varieties admitting strongly Abelian behavior

*Spaeth, Anneliese*, A determination of the existence of various types of positive systems in  $L^p$

*Wires, Alexander*, Some results in universal algebra

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*Eisenbarth, Geoff*, Quadratic Lyapunov theory for dynamic linear switched systems

*Fouts Aceves, Kelly*, On a ring associated to  $F[x]$

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*Liu, Xueyan (Sherry)*, Existence and uniqueness of solutions of boundary value problems by matching solutions

*Stewart, Jessica D.*, Spectral analysis of the exceptional Laguerre and Jacobi equations

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*Beeson, John*, Topics in multivariate covariance estimation and time series analysis

*Carlile, Tom*, Adaptive designs for phase II clinical trials with binary endpoints

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*Cooper, James*, Two mod- $p$  Johnson filtrations

*Munger, Paul*, Spectral regularity in some models of aperiodic order

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*Ray, Arumina*, Casson towers and filtrations of the smooth knot concordance group

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*Jiang, Fei*, Bayesian decision-theoretic method and semi-parametric approach with applications in clinical trial designs and longitudinal studies

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*Oktavia, Rini*, Diagnostic assessment to identify students' developmental levels in learning statistics

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*Flath, Hannah Pearl*, Hessian-based response surface approximations for uncertainty quantification in large-scale statistical inverse problems, with applications to groundwater flow

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**University of Texas at Dallas** (1)

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*Li, Zhichao*, Symmetric systems of implicit functional differential equations: Existence of solutions and bifurcation results

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*Benoit, Julia*, Analysis of longitudinal data using a continuous-time Markov chain with misclassification

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### University of Utah (6)

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*Cobb, Sarah*,  $H^2(\mathrm{SL}_2(\mathbb{Z}[t, t^{-1}]); \mathbb{Q})$  is infinite-dimensional

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*Zwick, Patrick D.*, Variations on a theme of symmetric tropical matrices

## VERMONT

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*Bliss, Catherine*, Description, prediction and evolution of a large dynamic network from incomplete data

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*Ma, Wei*, Statistical inference of covariate-adaptive randomized clinical trials

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## WASHINGTON

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*Chen, Ye*, From graph coloring to receptor clustering

*Glatzer, Timothy*, Continuities on subspaces

*Gu, Xiaofeng*, Connectivity and spanning trees of graphs

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*Kiware, Samson*, Bioinformatics systems and mathematical models for improved understanding of malaria transmission, control, and elimination

### Medical College of Wisconsin (4)

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*Ellis, Kristin*, Methods to classify survival data

*He, Peng*, Bias reduction by using covariate-adjusted censoring weights for survival and competing risks data

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