

# Doctoral Degrees Conferred

2016–2017

## ALABAMA

### Auburn University (13)

DEPARTMENT OF MATHEMATICS AND STATISTICS

*Barnett, Johnathan*, The fractional chromatic number and the Hall ratio

*Costa Lima, Italo Raony*, Robust simultaneous inference for functional data analysis

*Denu, Dawit*, Analysis of stochastic vector host epidemic model with direct transmission

*Ghimire, Prakash*, Derivations of the Lie algebra of strictly upper triangular matrices and dominate upper triangular ladder matrices

*Hollis, Daniel*, Disjoint  $G$ -designs and the intersection for some seven edge graphs

*James, Daniel*, Isomorphic Ext functors of torsion-free finite rank modules over a Dedekind domain

*Kermausuoer, Seth*, Atomic characterization of  $L_1$  and the Lorentz-Bochner space  $L^X(p, 1)$  for  $1 \leq p < \infty$  with some applications

*Krizan, Christopher*, Euclidean Szlam numbers

*Liphan, David*, Compactifications of indecomposable topological spaces

*Perry, Katherine*, Rainbow trees in edge-colored complete graphs and block decompositions of almost complete graphs

*Weerasinghe, Kariyawasam*, Convergence analysis and numerical simulation of particle swarm optimization

*Wu, Hao*, Mathematical and numerical analysis for linear peridynamic boundary value problems

*Yucel, Ahmet*, Machine learning techniques for text classification

### University of Alabama (7)

DEPARTMENT OF MATHEMATICS

*Al-Jahdaly, Noufe*, Linear and nonlinear convection in an infinitely high cavity in the presence of rotation

*Cui, Wei*, Fractional Brownian motion and managing risk with short-term futures contracts

*Hoang, Cong*, Sparse technology in weighted harmonic analysis

*Liu, Veny*, Free inverse semigroupoids and their inverse subsemigroupoids

*Sandor, Bryan*, On finitely generated nilpotent groups and their subgroups

*Vo, Huy*, Krylov approximations and model reduction methods for the chemical master equation

*Watley, Laura Erin*, Structural validity and reliability of two observation protocols in college mathematics

### University of Alabama at Birmingham (7)

DEPARTMENT OF BIostatISTICS

*Venturi, Yogasudha*, Methods for the analysis of genetic differences in ethnicity and sex for complex human traits

*Zhang, Xinyan*, Statistical methods in cancer survival prediction and microbiome data analysis

DEPARTMENT OF MATHEMATICS

*Abdul-Rahman, Houssam*, Entanglement in disordered quantum XY chains

*Antwi-Fordjour, Kwadwo*, Pattern formation and semilinear evolution equations in function spaces

*Kim, Seonguk*, Perturbation formulas for Gross-Pitaevskii equation with periodic potential

*Mann, Ivan*, A metrically defined uniformization map of planar domains

*Moxley, Caleb*, Homotopical complexity of several billiard models

### University of Alabama-Huntsville (1)

DEPARTMENT OF MATHEMATICAL SCIENCES

*Li, Yang*, Discrete-time structured models and their dynamics for interactive wild and sterile mosquitos malaria transmission

### University of Alabama (1)

DEPARTMENT OF INFORMATION SYSTEMS, STATISTICS AND MANAGEMENT SCIENCE

*Zhu, Xuwen*, The development of diagnostic tools for mixture modeling and model-based clustering

## ARKANSAS

### University of Arkansas at Fayetteville (3)

DEPARTMENT OF MATHEMATICAL SCIENCES

*Ding, Chao*, Construction of conformally invariant operators in higher spin spaces

*Dutta, Arnab*, On compactness and closeness of composition operators

*Juda, Daniel*, On rings of invariants for cyclic  $p$ -groups

## ARIZONA

### Arizona State University (16)

MATHEMATICS, COMPUTATIONAL AND MODELING SCIENCES CENTER

*Chowell, Diego*, Mathematical and computational models of cancer and the immune system

*Mamada, Robert*, Potential games and competition in the supply of natural resources

*Udiani, Oyita*, A novel approach to study task organization in animal groups

SCHOOL OF MATHEMATICAL AND STATISTICAL SCIENCES

*Al-Suleiman, Sultan*, Toward enumerating the chains of maximum length of Cambrian and  $m$ -eralized Cambrian lattices

*Byerley, Cameron*, Secondary teachers' and calculus students' meanings for fraction, measure, and rate of change

The above list contains the names and thesis titles of recipients of doctoral degrees in the mathematical sciences (July 1, 2016, to June 30, 2017) reported in the 2018 Annual Survey of the Mathematical Sciences by 275 departments in 202 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.

*Farrell, Alex*, Prey-predator-parasite: An ecosystem model with fragile persistence

*Gutierrez Cortez, Paloma*, Rotating split-cylinder flows

*Korytowski, Daniel*, Persistence for kill the winner nested infection Lotka-Volterra models

*Lanfear, Nathan*, The Pauli-Lubański vector in a group-theoretical approach to relativistic wave equations

*Liu, Ruowen*, Numerical issues arising in the simulations of transient water flow in layered unsaturated soils

*Mitrano, Arthur*, Properties of divergence-free methods for approximation and solution of partial differential equations

*Nelson, Luke*, Toward the enumeration of maximal chains in the Tamari lattices

*Pell, Bruce*, Dynamics and implications of data-based disease models in public health and agriculture

*Rutter, Erica*, A mathematical journey of cancer growth

*Treat, Kevin*, On chains in the Tamari lattice

*Zhu, Junfei*, A power study of GFit Statistics as components of Pearson Chi-Square

**University of Arizona (17)**

DEPARTMENT OF MATHEMATICS

*Berard, Whitney*, Explicit Serre weight conjectures in dimension four

*Brown, Tova*, Asymptotics and dynamics of map enumeration problems

*Davis, Erik*, Consistency of modularity clustering on random geometric graphs

*Lee, Hyereem*, Triples in finite groups and a conjecture of Guralnick and Tiep

*Trefethen, Stephen*, Non-abelian composition factors of  $m$ -rational groups

*Williams, Ronnie*, Level compatibility in the passage from modular symbols to cup products

*Zhelezov, Gleb*, Coalescing particle systems. Applications to nonlinear Fokker-Planck equations

PROGRAM IN APPLIED MATHEMATICS

*Borghese, Michael*, A proof of the soliton resolution conjecture for the focusing nonlinear Schrödinger equation

*Burton, Jackson*, Theoretical models for drug delivery to solid tumors

*Leach, Andrew*, Monte Carlo methods for stochastic differential equations and their applications

*Ragsdale, Aaron*, Multi-allele population genomics for inference of demography and natural selection

*Veprauskas, Amy*, On the dynamic dichotomy between positive equilibria and synchronous 2-cycles in matrix population models

*Young, Alex*, Three essays on complex systems

GRADUATE INTERDISCIPLINARY PROGRAM IN STATISTICS

*Bear, John*, A logistic normal mixture model for compositions with essential zeros

*Fang, Fang*, Modern econometric techniques applied to three essays in spatial economics

*Schissler, Alfred*, Contributions to gene set analysis of correlated, paired-sample transcriptome data to enable precision medicine

*Zeng, Yue*, Variable screening in multi-category classification for ultra-high dimensional data

**CALIFORNIA**

**California Institute of Technology (4)**

DEPARTMENT OF COMPUTING AND MATHEMATICAL SCIENCES

*Bruer, John*, Recovering structured low-rank operators using nuclear norms

*Chen, Yuhua*, Concentration inequalities of random matrices and solving ptychography with a convex relaxation

*Perez Arancibia, Carlos*, Windowed integral equation methods for problems of scattering by defects and obstacles in layered media

*Zhang, Pengchuan*, Compressing positive semidefinite operators with sparse/localized bases

**Claremont Graduate University (15)**

INSTITUTE OF MATHEMATICAL SCIENCES

*Babakhani, Behrouz*, Novel microstrip patch antennas with frequency agility, polarization reconfigurability, dual null steering capability and phased array antenna with beam steering performance

*Berardi, Vincent*, Analytic framework for the design, implementation, and analysis of dynamic, and real-time health interventions

*Campbell, Karen*, SEIRscape, an agent-based mosquito-human virus basis of Dengue risk across Peru and Thailand

*Denaro, Kameryn*, Quantifying disease severity of cystic fibrosis using linear quantile mixed models

*Flenner, Jennifer*, Deep non-negative matrix factorization

*Jin, Sixian*, Martingale representation theorems based on Malliavin calculus

*Leung, Kimberly*, Stochastic models for precipitable water in convection

*Paluri, Seethal*, Cross-layer schemes for enhancing H.264/AVC video quality over wireless channels

*Raman, Saravana*, Simulation of plethysmographic environment in pulmonary function studies

*Rossi, Julia*, Non-conservative variational approximation for nonlinear Schrödinger equations and its applications

*Silva, Genivaldo*, Who is there and what are they doing? An agile and computationally efficient framework for genome discovery and annotation from metagenomic big data

*Woolf, Tina*, Practical compressed sensing

*Xu, Qian*, Generalized varying-coefficient mixed models with missing data and surrogate information

*Zablocki, Rong*, Large-scale inference incorporating covariates and network dependence with application to genome-wide association studies

*Zhou, Deng*, I/O stade optimization for non-volatile memory based storage systems

**Stanford University (20)**

DEPARTMENT OF MATHEMATICS

*Booher, Jeremy*, Geometric deformations of orthogonal and symplectic Galois representations

*Brady, Zarathustra*, Sieves and iteration rules

*Buciumas, Valentin*, Quantum groups and the Yang Baxter equation

*Diao, Peter*, Differential calculus on graphon space and statistical applications of graph limit theory

*Florea, Alexandra*, Moments and zeros of  $L$  functions over function fields

*Gao, Jun*, The front asymptotics for the non local KPP equation

*Greer, Francois*, Modular forms in enumerative geometry

*Jafarov, Jafar*, Loop equations and string dualities in lattice gauge theories

*Lawrence, Brian*, Two results on period maps

*Makisumi, Shotaro*, Modular Koszul duality for Soergel bimodules

*Mantoulidis, Christos*, Geometric variational problems in mathematical physics

*Montague, David*, Covariance estimation and graphical models for infinite collections of random variables

*Ren, Weilvo*, Two models on limit order trading

*Ronchetti, Nicolo*, On the mod  $p$  derived Hecke algebra of a  $p$  adic group

*Shabani, Beniada*, Propagation in multi dimensional Fisher KPP equations

*Siegel, Kyler*, New constructions and computations on rigid and flexible symplectic geometry and applications to several complex variables

*Siu, Ho Chung*, Valve distribution of automorphic forms in a family

*Thorvaldsson, Sverrir*, Boundary fibration structures and quasi homogeneous geometries

*Tripathy, Arnav*, The symmetric power and etale realization functors commute

*White, Graham*, Combinatorial methods in Markov chain mixing

**University of California, Berkeley** (31)

DEPARTMENT OF MATHEMATICS

- Anderson, David*, Reliable and efficient algorithms for spectrum-revealing low-rank data analysis
- Appel, Daniel*, Theory of real bundles on the projective line
- Chavez, Anastasia*, Posets, polytopes, and positroids
- Drouot, Alexis*, Stability of resonances under singular perturbations
- Dudzik, Andrew*, Quantaes and hyperstructures
- Fortunato, Meire*, Curved and anisotropic unstructured mesh generation and adaptivity using the Winslow equations
- Harrison-Trainor, Matthew*, The complexity of countable structures
- Kileel, Joseph*, Algebraic geometry for computer vision
- Kim, Eugenia*, Numerical methods for the Landau-Lifshitz equation in micromagnetics: The mimetic finite difference method and the mass-lumped finite element method
- Liu, Weihua*, Noncommutative distributional symmetries and their related de Finetti type theorems
- Park, Doosung*, Triangulated categories of motives over fs log schemes
- Policastro, Christopher*, Integral estimates for approximations by incompressible deformations
- Rosu, Eugenia*, Integers that can be written as the sum of two rational cubes
- Schrader, Gus*, Quantum groups, character varieties and integrable systems
- Tsukerman, Emmanuel*, Combinatorial analysis of continuous problems
- Vasquez, Markus*, Essays in mathematical economics
- Voellmer, Andreas*, A partial characterization of  $\square_k$  for plus-one premisses
- Wan, Michael*, Towards a model theory of almost complex manifolds
- Wells, Christopher*, Methods for optimal stochastic control and optimal stopping problems featuring time-inconsistency

DEPARTMENT OF STATISTICS

- Hermon, Jonathan*, Maximal inequalities and mixing times
- Ho, Christine*, Statistical modeling and analysis for biomedical applications
- Li, Xiang*, Inference on graphs: From probability methods to deep neural networks
- Regier, Jeffrey*, Topics in large-scale statistical inference
- Tang, Wenpin*, Continuous paths in Brownian motion and related problems
- Terhorst, Jonathan*, Demographic inference from large samples: Theory and methods
- Zhang, Yumeng*, Phase transitions of random constraints satisfaction problem

GROUP IN BIostatISTICS

- Gerlovina, Inna*, Small sample inference
- Moore, Sara*, Yet another local learner (YALL): A localized machine learning algorithm with appliances in precision medicine
- Petito, Lucia*, Topics in survival analysis
- Sarovar, Varada*, Targeted maximum likelihood estimation for evaluation of the health impacts of air pollution
- Toth, Boriska*, Targeted learning of individual effects and individualized treatments using an instrumental variable

**University of California, Davis** (19)

DEPARTMENT OF MATHEMATICS

- Castillo Castillo, Federico*, Local Ehrhart positivity
- Deride Silva, Julio*, Essays on variational approximation techniques for stochastic optimization problems
- Jana, Indrajit*, Spectrum of random band matrices
- Koenig, Dale*, Trisections in three and four dimensions
- Kringe, Henry*, A categorification of the crystal isomorphism
- Lang, Alexander*, On the classification of supercharacter theories
- Ling, Shuyang*, Bilinear inverse problems: Theory, algorithms, and applications
- Rogers, Carson*, Fibered links in the 3-sphere
- Weaver, Chelsea*, Analysis and extensions of sparse representations in signal classification
- Young, Amanda*, Spectral properties of multi-dimensional quantum spin systems
- Zhou, Yuan*, Infinite-dimensional relaxations of mixed-integer optimization problems

DEPARTMENT OF STATISTICS

- Chan, Stephanie*, A maximum entropy approach to joint modeling multiple primate social networks and a new audio classification scheme
- Cheung, Rex Che Yeung*, Statistical machine learning applications in time series, network, and partition-wise models
- Fan, Minjie*, Modeling vectorial and non-Gaussian random fields on a sphere
- Fujii, Kevin*, Ranking, clustering, and data visualization methods for revealing network structure
- Ji, Hao*, Optimal designs for longitudinal/functional data, extensions and applications
- Meng, Haoying*, Spatio-temporal modeling and predictions of house prices in San Jose
- Qi, Gao*, Some contributions to statistical signal processing and machine learning
- Yan, Hao*, Statistical learning of non-Euclidean objects and applications

**University of California, Irvine** (14)

DEPARTMENT OF MATHEMATICS

- Boling, Jess*, Two geometric flows, which are well adapted for non-Kähler geometry
- Franco De Leon, Mariano*, Numerical methods for curve evolution under dispersive geometric dynamics
- Galgon, Geoff*, Trees, refining, and combinatorial characteristics
- Garrett, Ervin*, The cube problem for linear orders
- Han, Rui*, Discrete ergodic Jacobi matrices: Spectral properties and quantum dynamical bounds
- Lopez, Christopher*, Compactness and rigidity for the ambient obstruction flow
- Peng, Tao*, Data-driven models for dynamics of gene expression and single cells
- Ren, Rufe*, Generic Newton polygon for exponential sums in two variables with triangular base
- Ta, Catherine*, Multiscale modeling of the epithelial-mesenchymal transition
- Takahashi, Yuki*, Sums and products of Cantor sets and separable two dimensional quasicrystal models
- Thomas, Andrew*, A general mixture for nonlinear heterogeneous tumor growth
- Yang, Jienian*, Stochastic modeling of stem cells
- Zhang, Cheng*, Scalable Hamiltonian Monte Carlo via surrogate methods
- Zhang, Shuai*, Transformed  $L_1$  function, sparse optimization algorithms and applications

**University of California, Los Angeles** (29)

DEPARTMENT OF BIostatISTICS

- Aralis, Hilary*, Modeling multistate models with back transitions: Statistical challenges and applications
- Malazarte Antonio, Anna Liza*, The good, the bad and the fitting: A Bayesian hierarchical model for patient preferences elicited through discrete choice experiments

DEPARTMENT OF MATHEMATICS

- Bobkov, Anton*, Computations of Vapnik-Chervonenkis density in various model-theoretic structures
- Charlesworth, Ian*, On bi-free probability and free entropy
- Charlie, Marshak*, Applications of network science to criminal networks, university education, and ecology
- Chongchitmate, Wutichai*, New models for multi-party computation
- Cook, Nicholas*, Spectral properties of non-Hermitian random matrices
- Flapan, Laure*, Hodge structures with Hodge numbers  $(n, 0, \dots, 0, n)$  and their geometric realizations

*Gast, Theodore*, Numerical simulation of elastic, viscoelastic, and granular materials

*Ge, Stephen*, The eigenvalue spacing of i.i.d. random matrices and related least singular value results

*Gold, Julian*, Isoperimetric shapes in supercritical bond percolation

*Greenblatt, Jordan*, Dimensional asymptotics for norms of maximal averaging operators on Cartesian powers of finite graphs

*Hood, Kaitlyn*, Theory of particle focusing in inertial microfluidic devices

*Kalyanswamy, Sudesh*, Automorphy lifting theorems

*Lin, Jeffrey*, Understanding probabilistic models through limit theorems

*Lindquist, Jeffrey*, Weak capacity in Ahlfors regular metric spaces

*Mullath Mohammed Sherief, Mohammed-zuhair*, Ramified lifts and dimension of ordinary deformation rings

*Ohrt, Christopher*, Higher twisted torsion invariants

*Pradhana, Andre*, Multiphase simulation using material point method

*Sella, Yehonatan*, The mixed Tate property of reductive algebraic groups

*Stoffregen, Matthew*,  $\text{Pin}(2)$ -equivariant Seiberg-Witten Floer homology

*Tekin, Omer Faruk*, Application of sparsity promoting techniques in numerical solutions of partial differential equations

*Travis, Meyer*, Energy models for signal processing and matrix factorization

*Vivian, Bailey*, Cohomological invariants of finite groups

*Wong, Jeffrey*, Particle-laden viscous flow on an incline

*Wu, Tianyu*, Coordinate update algorithms: Theory and applications

*Xie, Fei*, Toric surfaces over arbitrary fields

*Zemke, Ian*, TQFT structures in Heegaard Floer homology

*Zhu, Wei*, Nonlocal variational methods in image and data processing

## University of California, Riverside (9)

DEPARTMENT OF MATHEMATICS

*Blanton, Donna*, On tensor products of demazure modules for  $\text{sl}_2[t]$

*Castro, Kyle*, Multiplicative character sums and the applications to problems in analytic number theory

*Choi, Hyun*, Semistar operations in integral domains and multiplicative lattices

*O'Dell, Matthew*, Integrable representations of equivariant map algebras associated with Borel-de Siebenthal pairs

*Rajan, Priyanka*, Geometry and topology of some fake projective spaces

*Roby, Scott*, Alpha-scaling zeta functions for self-similar multifractals

*Walker, Andrew*, Non-Noetherian Cohen-Macaulay rings

*Watson, Sean*, Fractal zeta functions: To Ahlfors spaces and beyond

*Williams, Parker*, Information gathering on bounded degree trees and properties of random matrices

## University of California, San Diego (8)

DEPARTMENT OF MATHEMATICS

*Aksoy, Sinan*, Random walks on directed graphs and orientation of graphs

*Grogan, Francesca*, Computational techniques in molecular dynamics and detonation shock dynamics

*Li, Xiaolong*, Moduli of continuity, Gauss curvature flow and Ricci solitons

*Pu, Xiao*, Topics in clustering: Feature selection and semiparametric modeling

*Smith, Daniel*, A Kodaira vanishing theorem for formal schemes

*Spicer, Calum*, Higher dimensional foliated Mori theory

*Strahl, Perry*, The Picard group of the moduli space of genus zero stable quotients to flag varieties

*Tobin, Robin*, Extremal spectral invariants of graphs

## University of California, Santa Barbara (2)

DEPARTMENT OF MATHEMATICS

*Cattan, David*, On the numerics, generation, and scaling of fluvial landscapes

*Lo Kim Lin, Jon*, Micro-macro modeling and computation of ferrofluids

## University of California, Santa Cruz (4)

DEPARTMENT OF APPLIED MATHEMATICS AND STATISTICS

*Cadonna, Annalisa*, Bayesian mixture models for spectral density estimation

*Moll, Ryan*, The dynamics of layered and non-layered oscillatory double-diffusive convection

DEPARTMENT OF MATHEMATICS

*Carman, William Rob*, Unit groups of representations rings and their ghost rings as biset functions

*Zhang, Linyi*, On  $S$ -matrix and fusion rules for irreducible  $V^G$  modules

## University of Southern California (6)

DEPARTMENT OF MATHEMATICS

*Acu, Bahar*, On fillings of contact manifolds by  $J$ -holomorphic curves

*Ejder, Ozlem*, The torsion subgroups of elliptic curves in elementary Abelian 2-extensions and the monodromy of Fermat surfaces

*Lamberto-Egan, Laffite*, A braid group action of categorized quantum groups

*Tsilifis, Panagiotis*, Design, dimensionality reduction, and variational methods in uncertainty quantification

*Weisheng, Xie*, Stochastic differential equation driven by fractional Brownian motion and Poisson jumps

*Xiaojing, Xing*, Optimal dividend and investment problems under Sparre Anderson model

## COLORADO

### Colorado School of Mines (1)

DEPARTMENT OF APPLIED MATHEMATICS AND STATISTICS

*Shutt, Deborah*, Modeling, analysis and simulation of complex disease dynamics for HIV, Ebola, and Zika virus

### Colorado State University (4)

DEPARTMENT OF MATHEMATICS

*Arn, Robert*, On the formulation and uses of SVD-based generalized curvatures

*Dauphin, Stephen*, General model-based decomposition framework for Polarmetric synthetic aperture images

*Hodges, Timothy*, Avoiding singularities during homotopy continuation

*Marrinan, Timothy*, Grassmann, Flag, and Schubert varieties in applications

### University of Colorado, Boulder (10)

DEPARTMENT OF APPLIED MATHEMATICS

*Jennings, Dale*, Advances in MCMC methods with applications to particle filtering, DSMC and Bayesian networks

*Martin, Bradley*, Application of RBF-FD to wave and heat transport problems in domains with interfaces

*Mirzaev, Inomzhon*, Analytical and numerical investigation of long term behavior of microbial flocculation equations

*Sturdevant, Benjamin*, Fully kinetic ion models for magnetized plasma simulations

DEPARTMENT OF MATHEMATICS

*Chhay, Boramey*, Euler-Arnold equations on the group of contactomorphisms and Teichmüller theory

*Krupa, Matthew*, Differential geometry of projective limits of manifolds

*Moorhead, Andrew*, Higher commutator theory for congruence modular varieties

*Parker, Keli*, Semistable modular compactifications of moduli spaces of genus one curves

*Smith, Kathleen*, On minimum variance unbiased estimation of a power of an unknown scalar or matrix

*Washabaugh, Pearce*, The diffeomorphism group approach to vorticity model equations

**University of Colorado Anschutz Medical Campus** (1)

DEPARTMENT OF BIostatISTICS AND INFORMATICS

*DeWitt, Peter*, Parsimonious  $B$ -Spline regression models via control polygon and control net reduction for identifying factors explaining variation in daily hormone profile during the menopausal transition

**University of Denver** (3)

DEPARTMENT OF MATHEMATICS

*Aguilar, Konrad*, Quantum metrics on approximately finite-dimensional algebras  
*Al-Ali, Masoumah*,  $Z_2$ -orbifolds of affine vertex algebras and  $W$ -algebras  
*Girón Garnica, Gabriel*, Banach spaces from barriers in high dimensional Elentuck spaces

**University of Northern Colorado** (1)

SCHOOL OF MATHEMATICAL SCIENCES

*King, Jeffrey*, Students social adaptation to mathematical tasks

CONNECTICUT

**University of Connecticut, Storrs** (20)

DEPARTMENT OF MATHEMATICS

*Andrews, Ulysses*, Existence of diffusions of  $4N$  carpets  
*Arthur, Frank*, Liouville-type theorems for higher order elliptic systems  
*Brzoska, Antoni*, Spectral properties of the Hata tree  
*Chou, Michael*, Torsion of rational elliptic curves over Abelian extensions of  $\mathbb{Q}$   
*Corekli, Cagnur*, Finite element methods of Dirichlet boundary optimal control problems with weakly imposed boundary conditions  
*Joseph, Michael*, Toggling involutions and homomorphisms for maps on finite sets, noncrossing partitions, and independent sets of path graphs  
*Miller, David J*, Fast algorithms for structured matrices and Laurent polynomials  
*Niu, Gao*, Actuarial application of agent based modeling  
*Ou, Tze-Chun*, Irreducible modules over KLR algebras of twisted affine type  
*Ramli, Rozita*, Generalized linear model approach to adjusting expected assumptions of long-term care incidence rates  
*Shum, Fan Ny*, Stabilization by noise of systems of complex-valued ODEs

*Stahl, Rachel*, Computability theoretic results for the game of cops and robbers on infinite graphs

*Xhumari, Sandi*, Generalized  $p$ -adic Gauss sums

*Zito, Stephen*, Modules from tilted to cluster-tilted algebras

DEPARTMENT OF STATISTICS

*Bader, Brian*, Automatic, efficient, and practical extreme value analysis with environmental applications

*Fu, Wei*, Predicting ultimate targets with time-dependent predictors

*Saha, Abhisek*, Bayesian analysis of item response theory and its applications to longitudinal education data

*Wang, Chun*, On statistical methods for big data

*Wang, Yu-Bo*, Adaptive partition weighted MCMC estimation

*Wu, Qianzhu*, Robust scan statistics for detecting a local change in population mean

**Wesleyan University** (3)

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

*Kreinbühl, James*, A Fox–Milnor theorem for knots in a thickened surface

*Marino, Alicia*, Finiteness of strictly  $n$ -regular quadratic forms

*Vigliotta, Sarah*, Fractional chromatic numbers of incidence graphs

**Yale University** (11)

DEPARTMENT OF BIostatISTICS

*Fu, Zhixuan*, Penalized variable selection in competing risks regression

*Liu, Tiangi*, Some statistical methods for brain gene expression data: Dimension reduction, feature screening and causal inference

*Lu, Qiongshi*, Integrative functional annotation of the human genome and its applications in post GWAS analysis

*Shabarova, Veronika*, Multivariate approach to modeling of time to event data with non-susceptible fraction and informative censoring

*Sun, Jiehuan*, Statistical methods for translational medicine in longitudinal genomic studies

DEPARTMENT OF MATHEMATICS

*Dimitrov, Vesselin*, Diophantine approximations by special points and applications to dynamics and geometry

*Ehrman, Max*, Almost primes in thin orbits of pythagorean triangles

*Koplewitz, Shaked*, Random graphs, sand-pile groups, and surjectivity of random matrices

*Luh, Kyle*, Universality of random graphs and random matrices

*Nguyen, Oanh*, Random polynomials

*Zhang, Liyang*, Quantum unique ergodicity of degenerate eisenstein series on  $GL(n)$

DELAWARE

**Delaware State University** (1)

DEPARTMENT OF MATHEMATICAL SCIENCES

*Zheng, Peng*, Automatic image registration by using multi-variate spline functions

**University of Delaware** (7)

DEPARTMENT OF MATHEMATICAL SCIENCE

*Hassell, Matthew*, Some applications of integral equations to the solution of transient partial differential equations

*Jin, Ke*, On the length of the longest common subsequence of two independent mallows permutations

*Kapita, Shelvean*, Plane wave discontinuous Galerkin methods for acoustic scattering

*Plaza, Rafael*, Representation theory methods in extremal combinatorics

*Sánchez-Vizuet, Tonatiuh*, Integral and coupled integral-volume methods for evolutionary wave structure interaction

*Sun, Shuying*, On some families of algebraically defined graphs

*Xu, Peng*, Some topics in random walks on graphs, harmonic analysis and rogozin type inequalities for locally compact groups

DISTRICT OF COLUMBIA

**George Washington University** (3)

DEPARTMENT OF MATHEMATICS

*Aganezov, Sergey*, Phylogenomics meets genome assembly: From evolutionary analysis to scaffolding

*Walker, Hakim*, Computable isomorphisms of directed graphs

*Yang, Seung Yeop*, Khovanov homology, distributive structure homology and applications to knot theory

FLORIDA

**Florida Atlantic University** (4)

DEPARTMENT OF MATHEMATICAL SCIENCES

*Amento, Brittanney*, Quantum circuits for cryptanalysis

*Hurley, Michael*, New geometric large sets

*Kasti, Dinesh*, An algorithmic approach to the lattice structures of attractors and Lyapunov functions

*Khadka, Bal*, Techniques in lattice basis reduction

**Florida Institute of Technology** (5)

DEPARTMENT OF MATHEMATICAL SCIENCES

*Ben-Rabha, Raja*, Initial boundary value problems for higher order nonlinear hyperbolic equations with two independent variables

*Binmahfoudh, Ahmed*, New bounds for  $K$ -out-of- $n$  type probabilities and their applications

*Iqbal, Naveed*, On the classification of the second minimal orbits of the continuous endomorphisms on the real line and universality in chaos

*Iwezulu, Kenneth*, Discrete and continuous operational calculus in stochastic games

*Mandelkern, Jeremy*, Sturm-Liouville equations with singular endpoints of Poincaré rank zero and one

**Florida State University** (27)

DEPARTMENT OF MATHEMATICS

*Aktas, Mehmet*, Topology of  $N$ -gonal curves

*Billet, Robert*, Flow equivalence classes and Psuedo-Anosov

*Chen, Yuanda*, Modeling limit order book dynamics using Hawkes processes

*Chiu, Chun-Yuan*, Modeling credit risk in the default threshold framework

*Dai, Yao*, Game-theoretic models of animal behavior observed in some recent experiments

*Eilertsen, Justin*, Local and global bifurcations in finite-dimensional center manifold equations of double-diffusive convection

*Gu, Fangxi*, Exponential convergence fourier method and its application to option pricing with Levy processes

*Harris, Corey*, Effective methods in intersection theory and combinatorial algebraic geometry

*Mandel, David*, Random Sobol' sensitivity analysis and model robustness

*Mayhook, Dane*, Conformal tilings and type

*McKenna, Joseph*, Insulin secretion rhythms: Calcium regulation of beta-cell metabolism and rescue of islet oscillations

*Tai, Liang-Hsuan*, Trend and variable-phase seasonality estimation from functional data

*Weingard, Daniel*, Scroll waves: And how they interact with non-reactive knots, tori, and spheres

*Wyse, John*, The impact of competition on temporal musth strategies: A game-theoretic approach

*Yao, Kovadio*, Statistical analysis on object spaces with applications to 3D face analysis and exchange rates data

*Yildirim, Vehpi*, Mathematical modeling and analysis of gene knockout compensation in pancreatic beta-cells

DEPARTMENT OF STATISTICS

*Alzahrani, Hissah*, Multivariate binary longitudinal data analysis

*Anaya, Josue*, First steps towards image denoising in low-light conditions

*Cleveland, Jason*, Robust function registration using depth on the phase variability

*Geng, Junxian*, Bayesian models for capturing heterogeneity in discrete data

*Gordon, Glenna*, Intensity estimation in Poisson processes with phase variability

*Gupta, Ajay*, Modeling multivariate data with parameter-sensitive subspaces

*Gupta, Cherry*, Bayesian inference and novel models for survival data with cured fraction

*Huang, Xue*, Sparse feature and element selection in high-dimensional vector autoregressive models

*Lee, JiWon*, Small area estimation with automatic random effects selection

*Lester, David*, High level image analysis on manifolds via projective shapes and 3D reflection shapes

*Orndorff, Mark*, Nonparametric detection of arbitrary changes to distributions in process control

**University of Central Florida** (2)

DEPARTMENT OF MATHEMATICS

*Dutta, Aritra*, Weighted low-rank approximation of matrices: Some analytical and numerical aspects

*Rolek, Martin*, Coloring graphs with forbidden minors

**University of Florida** (18)

DEPARTMENT OF MATHEMATICS

*Adams, Francis*, Anticliques in Borel graphs on polish spaces and computable ultrahomogeneous structures

*Borchering, Rebecca*, Population thresholds and disease ecology

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*Abrahamsen, Tavis*, Convergence analysis of MCMC samplers for Bayesian linear mixed models with  $P > N$

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*Xinrui, Zhang*, Internal pilots with the univariate approach to repeated measures

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*Cardona Cavioria, Jorge*, On statistical solutions of evolution equations

*Langdon, Christopher*, Symmetric 1-twisted differentials and the quadric algebra

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*Assonken Tonfack, Patrick*, Modeling in finance and insurance with Levy-Ito driven dynamic processes under semi Markov-type switching regimes and time domans

*Enriquez-Savery, Sherlene*, Statistical analysis of a risk factor in finance and environmental models for Belize

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*Hilton, Kristina*, Dynamics of multicultural social networks

*Kim, Doo Young*, Statistical modeling of carbon dioxide and cluster analysis of time dependent information

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*Tharu, Bhikari*, Statistical analysis and modeling health data: A longitudinal study  
*Tu, Junyi*, Global attractors and random attractors of reaction diffusion systems  
*Wang, Xing*, Time dependent kernel density estimation: A new parameter estimation algorithm, applications in time series classification and clustering  
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*Chen, Chen-Chun*, Classification methods for circular-linear data using periodic functions  
*Hu, Fengjiao*, Statistical methods to detect differentially methylated regions with next generation sequencing data  
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*Kemmer, Phebe*, Statistical approaches for exploring brain connectivity with multimodal neuroimaging data  
*Wang, Lijia*, Composite conditional likelihood  
*Watson, Dominique*, Robust statistical methods for handling missing data  
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*Chen, Isabel*, Centrality measures and contagion and temporal networks  
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*Cohen, Emma*, Problems in Catalan mixing and matchings in regular hypergraphs

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*Mou, Chenchen*, Uniqueness, existence, and regularity of solutions of integro-PDEs in domains if  $R^n$   
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*Jeyarajah, Jenny*, Constructing empirical likelihood confidence intervals for medical cost data with censored observations  
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*Xia, Jun*, Statistical models and analysis of growth processes in biological tissue  
*Yates, Amy*, Intersection of longest paths in graph theory and predicting performance in facial recognition  
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*Tong, Hao*, Identifying and understanding repetitive patterns  
*Wang, Li-Yu*, Regularized aggregation approaches for complex data

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*Brown, Jonathan*, The maximum number of covers in a lattice and in other related posets  
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*Li, Qi*, Decision making under uncertainties for renewable energy and precision agriculture

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*Zhang, Wei*, Inference based on data from superpositions of identical renewal processes

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*Yu, Lu*, Wavelets on hierarchical trees

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*Somal, Harsimran*, Heterogeneous computing for the Bayesian HNICAR model with incomplete data

*Yi, Congrui*, Penalized methods and algorithms for high-dimensional regression in the presence of heterogeneity

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*Zhou, Ziqian*, Statistical inference of distributed delay differential equations

## IDAHO

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*Klimas, Caitlin*, Picard and Taylor kernels for self-adjoint second order differential equations

### University of Idaho (2)

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*Ikedo, Masaki*, enumeration of permutations indexing local complete intersection Schubert varieties

*Rupert, Malcolm*, An explicit Theta lift from Hilbert to Siegel paramodular forms

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*Ha, Hansen*, Numerical methods for two dimensional nonlocal equations arising from non-Gaussian stochastic dynamics

*Hernandez, Francisco*, A boundary integral method for computing the forces of moving beads in a 3-dimensional linear viscoelastic flow

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*Zhao, Meng*, An efficient adaptive rescaling scheme for computing Hele-Shaw problems

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*Kanbir, Sinan*, An intervention study aimed at enhancing seventh-grade students' development of the concept of a variable

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*Paul, Erina*, Approximate Bayesian computation in nonparametric Bayesian models

*Wang, Andrew*, Constrained and coxeter table algebras

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*Legg, Robert*, An obstruction theory for comodules suited for producing elements of the exotic Picard group

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*Zhou, Peng*, From Lagrangian thimbles to constructible sheaves

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*Kimmel, Gregory*, Transport properties of superconductors using the time-dependent Ginzburg-Landau equation: Analytical solutions, numerical methods and optimization

*Park, Paul*, Mixing with piecewise isometries

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*Alsulaimani, Hamdan*, Strict regularity of positive definite ternary quadratic forms

*Pathak, Nimishaben Shailesh*, Lyapunov-type inequality and eigenvalue estimates for fractional problems

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*Akin, Victoria*, An algebraic characterization of the point-pushing subgroup

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*Wang, Jonathan*, On an invariant bilinear form on the space of automorphic forms via asymptotics

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*Goessling, Marc*, High-dimensional generative models: Shrinkage, composition, and autoregression

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*Adali, Riza Seckin*, Singular loci of restriction varieties

*Austin, Alexander*, Logarithmic potentials and quasiconformal flows on the Heisenberg group

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*Hardwick, John*, Graphical algorithms for finding the nucleolus of binary-valued matching games

*Jiang, Liyan*, A nonparametric estimate of the risk-neutral density and its applications

*Jonathon, Yaggie*, Topics in knowledge representation belief revision and conditional knowledge bases

*Lelkes, Adam Daniel*, Algorithms and complexity results for learning and big data

*Nie, Keyu*, Studies on some inferential aspects of Graybill-deal estimators

*Powers, Brian*, An analysis of multivariate final-offer arbitration

*Ryan, Timothy*, The effective cone of moduli spaces of sheaves on a smooth quadric surface

*Terry, Caroline*, Model theory and extremal combinatorics: Structure, enumeration, and 0-1 laws

*Tian, Tian*, Optimal design theory in early-phase dose-finding problems

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*Cong, Lin*, Stability thresholds for signed Laplacians on locally-connected networks

*Delcourt, Michelle*, Viewing extremal and structural problems through a probabilistic lens

*Duarte Gelvez, Eliana*, Syzygies and implicitization of tensor product surfaces

*Fieldsteel, Nathan*, Some problems in polynomial interpolation and topological complexity

*Gupta, Neha*, Certain free group functions and untangling closed curves on surfaces

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*Huan, Zhen*, Quasi-elliptic cohomology

*Huo, Zhenghui*, A new computation of the Bergman Kernel and related techniques

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*Santana, Michael*, Extremal problems on cycle structure and colorings of graphs

*Sharifzadeh, Maryam*, Embedding problems and Ramsey-Turan variation in extremal graph theory

*Spinoza, Hannah*, On some problems in reconstruction

*Vichitkunakom, Panupong*, Cluster algebras and discrete integrable systems

*Wise, Jennifer*, Games on graphs, visibility representations, and graph colorings

*Witsarut, Pho-On*, Gromov boundaries of complexes associated to surfaces

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*Bi, Xuan*, Dimension reduction and efficient recommender system for large-scale complex data

*Eisiner, Robert David*, Sampling for conditional inference on contingency tables, multigraphs, and high dimensional tables

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*Sengupta, Srijan*, Statistical analysis of networks with community structure and bootstrap methods for big data

*Shand, Lyndsay*, Methods and applications for space-time data

*Wang, Jin*, Scalable algorithms for Bayesian variable selection

*Ye, Sangbeak*, Sequential mastery detection and Bayesian learning promotion under cognitive diagnostic models

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*Carichino, Lucia*, Multiscale mathematical modeling of ocular blood flow and oxygenation and their relevance to glaucoma

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*Li, Lingnan*, Maximum empirical likelihood estimation in  $U$ -statistics-based generalized estimating equations

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*Yoo, Yeon Joo*, Strategies to tackle ill-posed problems in biological systems

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*Hu, Hailiang*,  $Z/3$ -actions on  $S^8 \times S^8 \times S^8$

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*Chen, Xueyi*, Mathematical modeling of the separation process of chromatography and estimation of parameters

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*Alghamdi, Suad A*, Composite optimal control for interconnected singularly perturbed systems

*Hamdan, Mustafa Mahmoud Naji*, Unbiasedness of homogeneity test of normal mean vectors under multivariate order restrictions

*Mitchell, Colm Patric*, A capillary surface with no radial limits

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*Lindgren, Joseph*, Orbital stability results for soliton solutions to non-linear Schrödinger equations with external potentials

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*Bucher, Eric*, Cluster algebras and maximal Green sequences for closed surfaces

*Frnka, Richard*, Asymptotic formulae for restricted unimodal sequences

*Ghulam, Ashar*, Method of the Riemann-Hilbert problem for the solution of the Helmholtz equation in a semi-infinite strip

*Holmes, Andrew*, On the Skein theory of 0-framed surgery along the Trefoil knot

*Istvan, Kyle*, Manifestations of symmetry in polynomial link invariants

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*Schoenbaum, Lucius*, Towards theory and applications of generalized categories to areas of type theory an categorical logic

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*Viator, Robert*, Spectral properties of photonic crystals: Bloch waves and band gaps

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*Zhai, Yi*, Optimal designs for some dose-response models

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*Adkinson, Joshua*, Generalized partial directed coherence and centrality measures in brain networks for epileptogenic focus localization

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*Beyarslan, Selvi*, Regularity of powers of edge ideals

*Guan, Xiao*, Methods in symbolic computation and  $p$ -adic valuations of polynomials

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*Guilbeau, Jared Thomas*, A vector parallel branch and bound algorithm

*Robin, Tracy James*, Density of a normal subgroup of the invertibles in certain multiplier algebras

*Wang, Xiao*, Inferences on gamma distributions: Uncensored and censored cases

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**Johns Hopkins University** (8)

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*Bai, Jiawei*, Statistical methods for wearable devices with applications to epidemiological studies

*Cai, Qing*, Joint modeling and estimation for recurrent events, longitudinal measurements and survival data

*Charu, Vivek*, Statistical methods and applications in medicine and public health

*He, Bing*, FCAT: A flexible classification toolbox for signal detection in high-throughput sequencing data

*Kim, Jeongyong*, Statistical methods for multivariate failure-time data under competing risks

*Qian, Tianchen*, Semiparametric estimation in observational studies and randomized trials

*Usher, Therri*, Likelihood-based methods of mediation analysis in the context of health disparities

*Xu, Yuting*, Dynamic functional connectivity in functional magnetic resonance imaging data

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*Chen, Min*, Capturing volatility smiles with a perpetual leverage model and its implications to fund overlay designs

*Paat, Joseph*, On the development of cut-generating functions

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*Albertine, April*, Statistical meta-analysis methods for publication bias, effect size estimation, and synthetic data

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*Bastero, Rowena*, A swapping method and exploratory analysis for average treatment effect estimation based on partial balancing and simultaneous inference of regression models

*Carey, Bryce*, Developing a computational model of neural networks into a learning machine

*Graf, Jonathan*, Parallel performance of numerical simulations for applied partial differential equation models on the Intel Xeon Phi Knights landing processor

*Hajghassem, Mona*, Efficient multigrid methods for optimal control of partial differential equations

*Jeong, Juyoung*, Spectral sets and functions of Euclidean Jordan algebras

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*Orlitzky, Michael*, Positive operators,  $Z$ -operators, Lyapunov rank, and linear games on closed convex cones

*Park, Hyekyung*, Robust value-at-risk (VaR) portfolio selection problem under the joint ellipsoidal uncertainty set in the presence of transaction costs

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*Cohen, Jonathan*, Transfer of representations and orbital integrals for inner forms of  $GL(n)$

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**Boston College** (2)

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*Mullane, Scott*, Adventures in the canonical bundles on curves

*Soylu, Cihan*, Special cycles on  $GSpin$  Shimura varieties

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*Chaudhary, Osman*, Rigorous justification of Taylor dispersion via center manifold theory

*Cummings, Patrick*, Nonlinear Schrödinger approximations for partial differential equations with quadratic and quasilinear terms

*Goeva, Aleksandrina*, Complexity penalized methods for structured and unstructured data

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- Enserro, Danielle*, Measures of discrimination, reclassification, and calibration for risk prediction models: An exploration in their interrelationships and practical utility and improvement in their estimation
- Kane, Elizabeth*, Evaluating multiple imputation methods for longitudinal healthy aging index: A score variable with data missing due to death, dropout, and several missing data mechanisms
- Manimaran, Solaiappan*, Statistical methods for analyzing data with applications in modern biomedical analysis and personalized medicine
- McIntosh, Avery*, Extensions to Bayesian generalized linear mixed effects models for household Tuberculosis transmission
- Perez, Jeremiah*, Assessing non-inferiority versus risk difference in one-to-many propensity-score matched studies
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- Raoux, Katherine*, Tau-invariants for knots in rational homology spheres
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- Mattie, Heather*, On the estimation and prediction of tie strength in social networks
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- Schlauch, Daniel*, Methods for estimating hidden structure and network transitions in genomics
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- Zheng, Yu Evelyn*, Efficient assessment of individualized disease risk and treatment response via augmentation

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- Bavli, Hillel*, Improving the accuracy of civil damage awards with claim aggregation
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- Dudte, Levi*, Inverse design of shape using folds and cuts in flat sheets
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**Northeastern University (8)**

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- Cecchini, Simone*, Callias-type operators in  $C^*$ -algebras

*He, Chou*, Localization of certain torus actions on odd-dimensional manifolds and its applications

*Hodges, Reuveu*, Schubert singularities and Levi subgroup actions on Schubert varieties

*Rangachev, Antoni*, Local volumes, integral closures, and equisingularity

*Rodriguez, José Simental*, On Harish-Chandra bimodules for rational Cherednik algebras

*Seal, Gouri*, Two contributions in topology and geometry: Polynomial assignments for Bott-Samelson manifolds and the triple reduced product and Hamiltonian flows

*Zhang, Liwei*, Application of statistics in side channel information leakage analysis modeling, metric, detection testing

*Zhang, Tong*, SCOT modeling and its statistical applications of time series

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*Chlebak, Lise*, The time-changed Q-Wiener process and associated stochastic differential equations

*Clay, Erica*, Quaternion algebra and Witts theorem

*Rothschild, Seth*, Unipotent algebraic groups

*Sanchez, Andrew*, A theory of sub-Finsler surface area in the Heisenberg group

*Takeuchi, Ryusei Melody*, An analysis of neuronal networks with recurrent excitation

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*Zhang, Jiani*, Design and application of tensor decompositions to problems in model and image compression and analysis

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*Gourgoulias, Konstantinos*, Information metrics for predictive modeling and machine learning

*Lowell, Mark*, A Siefert-van Kampen theorem for Legendrian submanifolds and exact Lagrangian cobordisms

*Nichols, Daniel*, Dynamical systems and zeta functions of function fields

*Shelly, Thomas*, Skein theory and algebraic geometry for the two-variable Kauffman invariant of links

*Vogiannou, Anastasios*, Spherical tropicalization

*Xu, Haitao*, Studies on lattice systems motivated by PT-symmetry and granular crystals

*Zhang, Zijing*, Statistical methods on risk management of extreme events

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*Xu, Hui*, Statistical methods for high dimensional data arising from large epidemiological studies

### Worcester Polytechnic Institute (5)

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*Li, Yiqing*, Quasi-static fracture evolution with cohesive energy

*Manandhar, Binod*, Bayesian models for the analysis of noisy responses from small areas: An application to poverty estimation

*Sanguinet, William*, Various extensions in the theory of dynamic materials with a specific focus on the checkerboard geometry

*Wang, Liang*, In Vivo IVUS-based 3D fluid-structure interaction models for human coronary atherosclerotic plaque vulnerability assessment and progression prediction.

*Zuo, Heng*, 3D multi-physics MRI-based human right ventricle models for human patients with repaired tetralogy of fallot: Cardiac mechanical analysis and surgical outcome prediction

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### Central Michigan University (2)

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*Anderson, Linda*, the role of dynamically linked representations in student conceptualization of vectors and matrices

*Witherspoon, Grace*, Generalization of the odd Weibull family for competing risk analysis

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*Al-Yasiri, Khaldoun Saad Ghalib*, Gradient estimates for solutions to divergence form elliptic equations with piecewise constant coefficients in dimension  $N$

*Burton, Stephan*, Volumes, determinants, and meridian lengths of hyperbolic links

*Cho, Hana*, Method of lines transpose: High-order schemes for parabolic problems

*Feng, Xiao*, High order finite difference WENO schemes for ideal magnetohydrodynamics

*Gao, Qinfeng*, Numerical methods for gravity inversion, synthetic aperture radar, and travel-time tomography

*Liu, Qinbo*, Estimates on singular values of functions of perturbed operators

*Machen, Casey*, Abelian varieties associated to Clifford algebras

*Nagy, Akos*, The berry connection and other aspects of the Ginzburg-Landau theory in dimension 2

*Olson, Emily*, Progress on the 1/3-2/3 conjecture

*Wang, Bao*, Mathematical modeling and computation of molecular solvation and binding

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*Cai, Liqian*, High-dimensional inference for spatial error models

*Chakraborty, Sayan*, Bayesian variable selection and network estimation

*Kim, Jiwoong*, Regression models with dependent errors and goodness of fit test of errors

*Maurya, Ashwini*, Estimating covariance structure in high dimensions

*Nandy, Siddhartha*, High-dimensional variable selection for spatial regression and covariance estimation

*Tesnjak, Irena*, Limiting properties of infinite superpositions of Ornstein-Uhlenbeck type processes and their applications to finance

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*Alokaily, Samer*, Modeling and simulation of the peristaltic flow of Newtonian and non-Newtonian fluids with application to the human body

*Pastine, Adrian*, Two problems of Gerhard Ringel

*Shonibare, Olabanji*, Numerical simulation of viscoelastic multiphase flows using an improved adaptive approach

### Oakland University (7)

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*Almusharrf, Amara*, Delay differential equations and the logistic model with two delays

*Bahuguna, Manoj*, Analytics of asymmetry and transformation to multivariate normality through Copula functions with applications

*Elkadry, Alaa*, Statistical analyses of "randomly sourced data"

*Hoxhaj, Valmira*, Some contributions to statistical data analytics with applications in finance

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*Wiggins, Alexander*, On the properties and behavior of the condition number for linear programming

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- Liu, Zhuqing*, Bayesian local smoothing modeling and inference for pre-surgical fMRI data
- Rothwell, Rebecca*, Statistical methods in population genetics for next generation sequencing data
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- Shu, Hai*, High dimensional dependent data analysis for neuroimaging
- Smith, Abigail Randolph*, Sequential stratification for estimating effects of time-dependent treatments on multivariate survival outcomes
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- Razavi, Hamed*, Symmetric hybrid systems: Periodic Gait design for legged robots

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- Renardy, David*, Bumping in deformation spaces of hyperbolic 3-manifolds with compressible boundary
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- Errickson, Joshua*, Two-stage regression for treatment effect estimation
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- Park, Seyoung*, Selected problems for high-dimensional data - Quantile and errors-in-variables regressions
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- Cao, Tan*, Optimal control of a perturbed sweeping process with applications to the crowd motion model
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- Sarabi, Ebrahim*, Variational analysis and stability in optimization
- Tran, Ky*, Nonlinear stochastic systems and controls: Lotka-Volterra type models, permanence and extinction, optimal harvesting strategies, and numerical methods for systems under partial observations

- Zhang, Lu*, Multi-parameter and multilinear pseudo-differential operators and sharp Trudinger-Moser inequalities

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- Kratky, James*, Pedagogical moves as characteristics of one instructor's instrumental orchestrations with Tinkerplots and the TI-73 Explorer: A case study

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- Andrews, Nichole*, Subgroup analysis and growth curve models for longitudinal data
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*Poling, Bryan*, Towards a framework for simultaneous feature tracking and segmentation

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*Mallik, Abhirup*, Application of functional data on medical images/climate

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*Vats, Dootika*, Output analysis for Markov chain Monte Carlo

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*Smith, Gerrit*, Realizing injective splittings of stable 4-manifolds

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*Bemrose, Travis*, Properties of frames and relationships between them with emphasis on subframes and unconditional convergence

*Guo, Victor*, Exponential sums, character sums, sieve methods and distribution of prime numbers

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*Okamoto, Nicholas*, Radiation conditions and integral representations for Clifford algebra-valued null-solutions of the iterated perturbed Dirac operator

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*Konboon, Malinee*, A hybrid modeling approach to assess the efficacy of paratuberculosis control measures on US dairy farms

*Song, Xing*, First and second order efficiency of sequential designs in a nonlinear situation with applications

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*Alkhidhr, Hanan*, Correspondence between multiwavelet shrinkage/multiple wavelet frame shrinkage and nonlinear diffusion

*Kalubowila, Sumudu*, Mathematical approaches to digital image inpainting

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*Benge, Philip*, Paraproducts and well localized operators

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*Krishnasamy Saraswathy, Vidhya*, The numerical solutions of fractional differential equations with fractional Taylor vector

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*Henegan, James*, Asymptotic properties of polynomials orthogonal over multiply connected domains

*Nakarmi, Janet*, On variable bandwidth kernel density and regression estimation

*Naugle, Lynsey*, Orthogonal polynomials on an arc of the unit circle with respect to a generalized Jacobi weight: A Riemann-Hilbert approach

*Sang, Yongli*, Memory properties of transformations of linear processes and symmetric Gini correlations

*Wang, Shaohui*, On topological indices and denomination numbers of graphs

**University of Southern Mississippi** (3)

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*Khatri Ghimire, Balaram*, Hybrid Chebyshev polynomial scheme for the numerical solutions of partial differential equations

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*Banner, Katharine*, Is model averaging the solution for addressing model uncertainty? Methodological insights, tools assessment, and considerations for practical use

*Kanewske, Daniel*, Stress Taylor symmetry preserving model applied to the 2-d viscoelastic plan of a biofilm

*Lerch, Michael*, Statistics in the presence of cost: Cost-considerate variable selection and MCMC convergence diagnostics

*McClanahan, Nathan*, Separating the EPS in a biofilm: Models and simulations of movement of the EPS within

*Petry, Danielle*, The development of specialized content knowledge among secondary mathematics pre-service teachers

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*Myers, John*, Homological criteria for minimal multiplicity

*Owad, Nick*, Bridge spectra of cables of 2-bridge knots

*Parmelee, Caitlyn*, Applications of discrete mathematics for understanding dynamics of synapses and networks in neuroscience

*Russell, Travis*, Abstract characterizations of ordered operator spaces

*St. Goar, Julia*, A Caputo boundary value problem in Nabia fractional calculus

*Tomlinson, Charles*, Extremal problems for graph homomorphisms and automata

*Tomlinson, Maranda*, Languages, geodesics, and HNN extensions

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*Kismiantini*, Methods for detecting time lags in animal temperature regulation

*Nzouada-Tsotezo, Cyrille*, Risk evaluation and portfolio allocation in the context of high frequency trading

*Zhang, Yixiang*, Novel protein functional analysis based on weighted and directed protein overlap network and adjusted entropy measurements

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*Breckling, Sean*, Numerical and sensitivity analyses of Navier-Stokes alpha models

*Ikeda, Emi*, Investigation of determinacy for games of variable length

*Shields, Sidney*, Novel methods for Maxwell's equations and their applications

*Xu, Jianbo*, Statistical inference of genetic forces using a Poisson random field model with non-constant population size

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*Clos, Timothy*, Compactness of Hankel operators with continuous symbols on domains in  $\mathbb{C}^2$

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*Lamichhane, Manoj*, Levi subalgebras of  $\mathfrak{gl}(5, \mathbb{R})$

*Ren, Kaili*, Empirical likelihood methods in missing response problems and causal inference

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### Oklahoma State University (4)

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*Bilogliadov, Mykhailo*, Equilibrium problems in potential theory

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*Kaukis, Nicholas*, Utilizing observation and ranks in kernel estimation

*Mostafa, Sayed*, Nonparametric kernel density estimation using auxiliary information from complex survey data

*Watts, David*, Classifying discoveries: Implementing a generalized multiple testing protocol for exploratory data analysis

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*Broda, James*, Convergence rates for stationary distributions of semistochastic processes

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*Tharp, Benjiman*, Representation of the marked Brauer algebra

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*Hill, Claude*, Modeling nonstationary anisotropic geospatial data processes

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*Norris, Ann*, An evaluation of medical and behavioral risk factors for aviation accidents

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*Puhl, Maria*, Analysis of sparse modeling techniques applied to RS-fMRI data

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*Al-Hammali, Hussain*, Nonuniform sampling of band-limited functions

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*Kennedy, Kenneth*, Model adaptivity and numerical solutions using sensitivity analysis

*McDermott, Kirk*, Topological and dynamical properties of cyclically presented groups

*Morrill, Thomas*, Overpartition ranks, cranks, and Frobenius representations

*Parker, Forrest*, Shift dynamics of cyclically presented groups with positive length four relators

*Robson, Charles*, Computable randomness and coding the orbits of the Collatz map

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*James, Addison*, Information criterion for nonparametric model-assisted survey estimators

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*Rector, Robert Blake*, Generalized differential calculus and applications to optimization

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*Yannotta, Mark*, Conventionalizing and axiomatizing in a community college bridge course

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*Howell, Nicholas*, Motives of log schemes

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*Myer, Ziva*, A product structure on generating family cohomology for Legendrian submanifolds

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*Antikacioglu, Arda*, Quantifying and improving sales diversity in recommender systems

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*Wong, Chung*, Spectral density functions and their applications

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*Borselli, Alex*, Galois groups of CM fields in degrees 24, 28, and 30

*Gerek, Aydin*, Hendry's conjecture of chordal graph subclasses

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*Chen, William*, Moduli interpretations for noncongruence modular curves

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*Ma, Yicong*, Fast solvers for incompressible MHD systems

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DIVISION OF APPLIED MATHEMATICS

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*Zhang, Hong*, Regularity theory of elliptic and parabolic equations and systems

## University of Rhode Island (2)

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*Khyat, Toufik*, Bifurcation of some planar discrete dynamical systems with applications

*McArdle, David*, Global dynamics boundedness of discrete population models

## SOUTH CAROLINA

### Clemson University (10)

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*Adelgren, Nathan*, Solution techniques for classes of biobjective and parametric programs

*Giberson, Luke*, Average Frobenius distributions for elliptic extremal primes and Kobilitz's conjecture

*Goodell, Brandon*, Assessing non-atomicity in groups of divisibility

*He, Qijun*, Algebraic geometry arising from discrete models of gene regulatory networks

*Joyner, Jason*, A new look at matrix analytic methods

*Koshy Chenthittayil, Sherli*, Chaos to permanence: Through control theory

*Lipman, Drew*, Normal domains arising from graph theory

*Wilson, Anastasia*, Modeling, analysis, and simulation of adsorption in functionalized membranes

*Wilson, Christopher*, Tolerance intervals for hierarchical data

*Xu, Shuhan*, Numerical study for non-Newtonian fluid-structure interaction problems

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DEPARTMENT OF PUBLIC HEALTH SCIENCES

*Cassarly, Christy*, Multistate Markov models for ordinal function outcomes of acute onset disease application in acute stroke therapy trials

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*Ward, Ralph*, Improving methods for modeling high dimensional binary features data with applications for assessing disease burden from diagnostic history and for dealing with missing covariates in administrative health records

*Wei, Wei*, Novel design and analytical approaches for phase II cancer clinical trials

### University of South Carolina (10)

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*Boehnlein, Edward*, On crown-free set families, diffusion state difference, and non-uniform hypergraphs

*Lewis, Tyler*, A family of simple codimension two singularities with infinite Cohen-Macaulay representation type

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*Hou, Peijie*, Topics in group testing with multiple infections

*Kindo, Bereket*, Bayesian ensemble of regression trees for multinomial probit and quantile regression

*Lee, Han*, Some issues in Markov chain Monte Carlo estimation for item response theory

*Liu, Jianxuan*, Semiparametric estimation and inference in causal inference and measurement error models

*Liu, Piao Mu*, Semiparametric joint dynamic modeling of a longitudinal marker, recurrent competing risks, and a terminal event

*Sarker, MD*, Modern estimation problems in group testing

*Wang, Sheng-Yang*, Adaptive regression model for flexible survival data analysis

*Wu, Zizhen*, Simultaneous registration and clustering of functional data

## SOUTH DAKOTA

### South Dakota State University (2)

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*Karki, Laxman*, Spatial and spatiotemporal modeling of epidemiological data

*O'Brien, Austin*, A kernel based approach to determine atypicality

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*Baum, Brittany Smith*, Examining the influence of argumentation on the statistical problem-solving process

*Bhatt, Harish*, Efficient and accurate exponential time differencing schemes for systems of nonlinear time dependent partial differential equations

*Colgin, Zane*, Computational improvements for stochastic simulation with multilevel Monte Carlo

*Ewool, Richard*, Mathematical modeling and simulation of a multiscale tumor induced angiogenesis model

*Jones, Zachary*, Modeling of cell cycle checkpoints with applications to the analysis of intermitotic time data

*Kassae, Ameneh*, Exploring the role of motivation and mindset in achievement of STEM majors in precalculus

*Liang, Jingsai*, Regularized statistical techniques for high dimensional medical imaging data processing

*Liang, Xiao*, Efficient numerical methods for nonlinear Schrödinger equations

*Reshniak, Viktor*, Reducing computational cost of the multilevel Monte Carlo method by construction of suitable pathwise integrators

*Yang, Xin*, Machine learning techniques for high-dimensional neuroimaging data analysis

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*Abayie Boateng, Nana Akwasi*, On some exact nonparametric conditional test for clustered binary data

*Binski, Scott*, Games on grids and graphs

*Sahasrabudhe, Julian*, Extremal and Ramsey problems on graphs and the integers

*Tag, Hyyung-Joon*, Some geometrical properties of Orlicz-Lorentz spaces and their Köthe duals

*Taylor, Aaron*, Classes of operators on block spaces

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*Kang, Kai*, Advanced sequential Monte Carlo methods and their applications to sparse sensor network for detection and estimation

*Krumwiede, Tim*, Surface energy in bond-counting models on Bravais and non-Bravais lattices

*Loga, Christopher*, Extension theorems on matrix weighted Sobolev spaces

*Massaro, Tyler*, Variable selection via penalized regression and the genetic algorithm using information complexity, with applications for high-dimensional-omics data

*Pantha, Buddhi*, Anthrax models involving immunology, epidemiology and controls

*Pollesch, Nathan*, Mathematical approaches to sustainability assessment and protocol development for the bioenergy sustainability target assessment resources (Bio-STAR)

*Wang, Ligu*, Numerical solutions of stochastic differential equations

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*Tang, Sui*, Dynamical Sampling

*Wen, Chenxu*, Amenable extensions in  $\text{II}_1$  factors

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*Liu, Qi*, Covariate-adjusted Spearman's Rank correlation with probability-scale residuals

*Samuels, Lauren*, Aspects of casual inference within the evenly matchable population: The average treatment effect on the evenly matchable units, visually guided cohort selection, and bagged one-to-one matching

*Smith, Derek*, Empirical Bayes methods for modern statistical problems

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*Averbeck, Nathan*, Chaos in dendritic and Julia sets

*Hunter, Reeve*, The specification property and chaos in multidimensional shift spaces and general compact metric spaces

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*Blair, Somer*, Contributions to the theory and practice of prior elicitation in a biopharmaceutical research

*Faya, Paul*, Bayesian methods in non-clinical pharmaceutical statistics

*Sims, Justin*, Modeling nonlinear, nonstationary vector time series: Methods and applications

*Vallejo, Jonathon*, Some new applications of Bayesian longitudinal models

*Van Zyl, Johanna*, Evaluating treatment efficacy using AUC modeling

*Waken, Robert*, Flexible spatial interpolation and uncertainty quantification: With applications in radar rainfall estimation

*Wu, Wenqi*, Network meta-analysis with rare events and misclassified response

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*Becker, Timothy*, Bilevel clique interdiction and related problems

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*Zhou, Muhong*, Energy-conserving composite staggered-grid finite difference time domain scheme for order wave equation system

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*Allums, Derek*, Notes on real rationally connected varieties and Fano threefolds of genus 12

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*Do, Tam*, Global regularity and finite-time blow-up in model fluid equations

*Downs, Carol*, A mass minimizing flow for real-valued flat chains with applications to transport networks

*Park, JungHwan*, Derivatives of genus one and three knots

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*Babkin, Sergii*, High-dimensional and dependent data with additional structure

*Han, Yu*, Impact of news on crude oil futures

*Li, Qiwei*, Bayesian models for high-dimensional count data with feature selection

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*Wang, Zeya*, Statistical modeling for cellular heterogeneity problems in cancer research deconvolution, Gaussian graphical models and logistic regression

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*Castro-Castro, Claudia*, Nonlinearity, PT symmetry twist and disorder in the discrete nonlinear Schroedinger equation

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*Allen, Chelsea*, Modeling of heaped cigarette count data

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*Li, Lie (Nathan)*, Development of meta-analysis methods in biomedical studies

*Liu, Bingchen*, Ranked set sampling estimators of discrete distributions parameters and estimation of total from a population of unknown size

*Lu, Wentao*, Meta-analysis approaches to combine multiple gene set environment studies

*Wang, Mumu*, Using ranked set sampling with binary outcomes in cluster randomized designs

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*Barquero-Sanchez, Adrian*, The Chowla-Selberg formula for CM fields and the Colmez conjecture

*Carroll, David*, Periodic points in shifts of finite type overgroups with connections to growth

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*Ergur, Alperen*, Sparsity, randomness and convexity in applied algebraic geometry

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*Gesmundo, Fulvio*, Geometry and representation theory in the study of matrix rigidity

*Guan, Yonghui*, Equations for chow varieties, their secant varieties and other varieties arising in complexity theory

*Kocak, Dilber*, Growth of algebras and codes

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*Dorn, Mary Francis*, Semiparametric classification under a forest density assumption

*He, Kejun*, Sparsity and low rank structures in functional data analysis

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*Miller, Geoffrey*, Exploring mathematical flow: A case study of pre-service secondary teachers collaborating on model-eliciting activities

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*Celik, Emine*, Generalized Forchheimer flows of compressible fluids in heterogeneous porous media

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*Atienza, Philamer*, Adaptation of the genetic risk prediction model BRCAPro for primary care settings

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*Al-Dujaly, Hassan Abd Salman*, Weighted upwinding compact scheme for shock capturing

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*Mitchell, Christopher*, Calculating reproductive numbers for periodic epidemic systems

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*Wiangnak, Piyachart*, Likelihood based inference for COM-Poisson cure rate model with interval censored data  
*Xi, Hongguang*, A harmonic function method for EEG source reconstruction

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*Sakamoto, Yusuke*, One cell as a mixture: Simulation of the mechanical responses of valve interstitial cells  
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DEPARTMENT OF MATHEMATICS

*Akopian, Sona*, Global  $L^p$  solutions of the Boltzmann equation with an angle-potential concentrated collision kernel and convergence to a Landau solution  
*Cohn, Lee*, Rectifying stable infinity-categories and relative Koszul duality for operads  
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**University of Texas at Dallas** (9)

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*Acosta-Mejia, Cesar*, Pseudolikelihood methods in multichannel change-point detection  
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*Jiang, Ana*, American spread option pricing with stochastic interest rates  
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*Pelejo, Diane Christine*, Matrix results and techniques in quantum information science and related topics

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*Badgaish, Manal*, Modeling, analysis, and computation of non-linear soft tissue interaction with flow dynamics with application to aneurysms

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*Moradi Rekabdarkolaee, Hossein*, Dimension reduction and variable selection

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**WASHINGTON**

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APPLIED MATHEMATICS DEPARTMENT

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*Young, William Chad*, Bayesian methods for inferring gene regulatory networks

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*Lundholm, Ian*, Studying and supporting the teaching practice of calculus teaching assistants

*Payton, Spencer*, Student logical implications and connections between symbolic representations of a linear system within the context of an introductory linear algebra course

*Streifel, Amy*, Skew characteristic polynomials of cacti

## WEST VIRGINIA

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*Stamm, Karl*, Gene set enrichment and projection displays: A computational tool for knowledge discovery in transcriptomes

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*Asante-Asamani, Emmanuel*, A real distinct poles exponential time differencing scheme for advection-diffusion reaction equations

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*Bauer, Tyler*, Estimating the selection gradient of a function-valued trait

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*Zhao, Qian*, Robust and computationally efficient methods for fitting loss models and pricing insurance risks

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*Haulmark, Matthew*, Splittings of relatively hyperbolic groups and classifications of 1-dimensional boundaries

## WYOMING

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*Jennings, Rachel*, Modeling the transmission and maintenance of low pathogenic Avian influenza among wild birds with environmental heterogeneity and host conditions

*Kuang, Dongyang*, A particle method for Euler Poincaré equation and its applications in analysis of landmark based image templates

*Seo, Mookwon*, Alternative models for water in filtration and oil reservoirs in ground

*Torsu, Prosper*, Uncertainty quantification and models of multiphase flow in porous media