

# Doctoral Degrees Conferred

1999–2000

## ALABAMA

### Auburn University (7)

#### DISCRETE AND STATISTICAL SCIENCES

*Küçükçifçi, Selda*, The number of 8-cycles in 2-factorizations of  $K_n$ .

*McGee, James R. III*, Embedding and covering of 2-paths.

*Roblee, Kenneth*, Problems in external coding theory.

#### MATHEMATICS

*Casabianca, Frank Jr.*, Orthogonal bases of symmetrized tensor spaces and units in Hecke algebras.

*Gonzalez, Thomas*, On  $K$ -to-1 maps.

*Kosmatov, Nikolai*, Multiple positive solutions of a nonlinear boundary value problem.

*Naughton, Dominic*, Simple modules for the Hamiltonian algebra.

### University of Alabama, Birmingham (3)

#### MATHEMATICS

*Le, Tuan*, An inverse problem in ground water modeling.

*Maner, Andrew*, Boundaries of conformal rotation domains.

*van den Bedem, Henry*, Chaotic models in nonequilibrium statistical mechanics.

### University of Alabama, Huntsville (1)

#### MATHEMATICAL SCIENCES

*Trees, Eric*, LP-Matrix partition theorem and its application to fractional domination and domatic parameters.

### University of Alabama, Tuscaloosa (4)

#### MANAGEMENT SCIENCE AND STATISTICS

*Linna, Kenneth Jr.*, Control chart performance under linear covariate measurement processes.

*Wang, Xiaohong "Daniel"*, Performance of lack of fit tests in linear regression models.

#### MATHEMATICS

*Nettles, Elizabeth*, T-Systems of the Mathieu group  $M$ .

*Ratkovich, Thomas*, The algebra and topology of extensions of finitely generated profinite groups.

## ARIZONA

### Arizona State University (3)

#### MATHEMATICS

*Buskirk, Trent*, Using nonparametric methods for density estimation with complex survey data.

*Drinen, Douglas*, Flow equivalence and graph groupoid isomorphism.

*Zhang, Xuerong*, Degree-light-free graphs and Hamiltonian cycles.

### University of Arizona (17)

#### APPLIED MATHEMATICS

*Amir, Orna*, Gaussian analysis of unsaturated flow in randomly heterogeneous porous media.

*Bauer, Karl*, Projection based image restoration, super resolution and error correction codes.

*Liu, Li*, Hierarchical structures in fully developed turbulence.

*Mercado Sanchez, Gema*, Modeling hot-spot dynamics in microwave heating.

*Murray, Regan*, Traveling waves and oscillating fronts in a model for biodegradation.

*Ropp, David*, A numerical study of shallow water models with variable topography.

*Woo, Jung Min*, Two mathematical problems in discarded system.

#### MATHEMATICS

*Alzoubi, Maref*, A dispersal model for structured populations.

*Avila de Brau, Guadalupe*, Controlled Markov chains with exponential risk-sensitive criteria; Modularity, structured policies and applications.

*Brau Rojas, Agustin*, Controlled Markov chains with risk-sensitive average cost criterion.

*Cunningham, Geoffrey*, Sums of squares in function fields of elliptic curves.

*Dai, JiaLing*, Conjugacy classes, characters, coadjoint orbits of  $\text{Diff} + \text{S1}$ .

*Ekstrom, Aaron*, On the infinitude of elliptic Carmichael numbers.

*Jackson, Jack*, Splitting in finite metacyclic groups.

*Marshall, David*, Galois groups and Greenberg's conjecture.

*Sakamoto, Scott*, The Cranmer abacus: Its use in teaching mathematics to students with visual impairments.

*Wang, Chunnan*, Analysis of a bivariate distribution in reliability theory.

## ARKANSAS

### University of Arkansas (2)

#### MATHEMATICAL SCIENCES

*Lakew, Dejenie*, Elliptic boundary value problems,  $\text{Cl}_{0,n}$  complete function systems and the Clifford II operator.

*Liu, Hong*, The Clifford analysis techniques for spherical PDE.

## CALIFORNIA

### California Institute of Technology (8)

#### APPLIED MATHEMATICS

*Park, Peter*, Multiscale numerical methods for the singularity perturbed convection-diffusion equation.

*Si, Helen (Hui)*, Numerical study of interfacial flow with surface tension in two and three dimensions.

#### CONTROL AND DYNAMICAL SYSTEMS

*Parrilo, Pablo*, Structured semidefinite programs and semialgebraic geometry methods in robustness and optimization.

*Pekarsky, Sergey*, Discrete reduction of mechanical systems and multisymplectic geometry of continuum mechanics.

The above list contains the names and thesis titles of recipients of doctoral degrees in the mathematical sciences (July 1, 1999, to June 30, 2000) reported in the 2000 Annual Survey of the Mathematical Sciences by 237 departments in 158 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. A supplementary list, containing names received since compilation of this list, will appear in a summer 2001 issue of the *Notices*.

*Wang, Yong*, Effects of actuator limits in bifurcation control with applications to active control of fluid instabilities in turbomachinery.

MATHEMATICS

*Asparouhov, Tihomir*, Sequential fixed width confidence intervals.

*Kovrijkine, Oleg*, Some estimates of Fourier transforms.

*Li, Tao*, Immersed surfaces, Dehn surgery and essential laminations.

**Claremont Graduate University (4)**

MATHEMATICS

*Lai, Yongzeng*, Quasi-Monte Carlo methods and their applications.

*Lavretsky, Eugene*, Neural networks for function approximation and control design.

*Nguyen, Dong*, Reliability modeling and evaluation in computer networks and distributed systems.

*Switkes, Jennifer*, The geographic mosaic theory in relation to coevolutionary interactions.

**Naval Postgraduate School (1)**

MATHEMATICS

*Huber, Michael*, A boundary-layer mode of thermal capillary flow in a cold corner.

**University of California, Berkeley (32)**

BIOSTATISTICS

*Chen, John Jiangtian*, Analysis of human disease data: Several statistical approaches.

*Kamanou-Goune, Marie-Gisele*, An index of household material wealth based on principal components of disease indicators.

*Ngo, Long*, Model selection in linear mixed-effects models.

MATHEMATICS

*Abrams, Aaron*, Configuration spaces and braid groups of graphs.

*Agashe, Amod*, The Birch-Dyer formula for modular abelian varieties of analytic rank zero.

*Anshelevich, Michael*, Free stochastic measures.

*Bigelow, Stephen*, Homological representations of braid groups.

*Borger, James*, On conductors over discrete valuation rings with general residue fields.

*Calegari, Danny*, Functions and the geometry of three-manifolds.

*Collins, Pieter*, Dynamics of surface maps with homoclinic and heteroclinic tangles.

*Goldman, Deborah*, Algorithmic aspects of protein folding and protein structure similarity.

*Goldstein, Darin*, Algorithms on networks of finite-state automata.

*Gomes, Diogo*, Hamilton-Jacobi equations, viscosity solutions and asymptotics of Hamiltonian systems.

*Gomez, Emiliano*, Deformations of pseudorepresentations.

*Heitsch, Christine*, Computational complexity of generalized pattern matching.

*Ko, Sungjoon*, More about tight contact structures on lens space.

*Maclagan, Diane*, Structures on sets of monomial ideals.

*Marks, Gregory*, 2-primal rings.

*Miller, Ezra*, Resolutions and duality for monomial ideals.

*Neaderhouser, Johanna*, Classifying one-dimensional attractors in rows on surfaces.

*Oliveira, Marcelo*, The canonical kernel function and representation theory of Lie groups.

*Romano, David*, Galois groups of strongly Eisenstein polynomials.

*Smithline, Lawren*, Slopes of  $p$ -adic modular forms.

*Stein, William*, Explicit approaches to modular Abelian varieties.

*Thurston, Dylan*, Wheeling: A diagrammatic analogue of the Duflo isomorphism.

*Tsai, Harrison*, Algorithms for algebraic analysis.

*Wright, Jeffrey*, A numerical study of two-dimensional Faraday oscillations in inviscid fluids.

*Xu, Chong-Ye*, Asymptotic stability for equilibria of nonlinear semi-flows with applications to rotating rods.

STATISTICS

*Ling, Shiyong*, Constructing genetic maps for outbred experimental crosses.

*Ostland, Michael*, A Monte Carlo EM algorithm applied to travel time estimation and vehicle matching.

*Virag, Balint*, Random walks and geometry on graphs of exponential growth.

*Yeh, Ru-Fang*, Statistical issues in genomic mapping and sequencing.

**University of California, Davis (8)**

MATHEMATICS

*Konetchnyi, Anatoly*, Noncommutative geometry and Yang-Mills theory.

*Meyer, Maike*, Legendrian and Lagrangian knots.

*Nelsenador, Matthew*, Numerical simulation of blood flow in coronary arteries.

*Chan, Samuel*, Reaction-diffusion equation in oscillatory media.

*Wong, Meng-kai*, Glimm method and Riemann problem extended to conservation laws with source terms.

STATISTICS

*Hardin, Johanna*, Multivariate outlier detection and robust clustering with minimum covariance determinant estimation and  $S$ -estimation.

*He, Guozhong*, Statistical methods for curve data.

*Ji, Ming*, Statistical issues related to medical screening tests.

**University of California, Irvine (2)**

MATHEMATICS

*Clabane, Dana*, Composition operators on holomorphic function spaces in several complex variables.

*Luo, Wallace*, Theory of holomorphic Besov spaces in domains of complex Euclidean spaces.

**University of California, Los Angeles (18)**

MATHEMATICS

*Brown, Alexander*, Hecke correspondences on Picard modular surfaces.

*Caiden, Rachel*, A numerical method for two phase flow consisting of separate compressible and incompressible regions.

*Cheng, Li-Tien*, The level set method applied to geometrically based motion, materials science, and image processing.

*Ching, Avery*, Positive dimensional components of higher graded pieces of Chow groups.

*Cleveland, Christopher John*, Rotation for attractors in the Lozi family.

*DeLeon, Doreen*, Wavelet operators applied to multigrid methods.

*Della Rocca, Giulio*, Classification of UHF algebras: The role of groupoid in the new approach to classification theory.

*Hu, Xinqwei*, Authority distributions and interactions in irreducible organizations.

*Kitisin, Nataphau*, The partial regularity of minimizing biharmonic maps to spheres.

*Knightly, Andrew*, Representations of unitary groups and associated Galois representations.

*Ng, Ping Wong*, Completely contractive projections on  $\mathbf{R}^*$ .

*Perez-Fernández, Pablo A.*, The electromagnetic inverse medium problem.

*Pomeranteen, Michael*, Moduli spaces of 2- and 3-instantons.

*Salzano, Maria*, The contact process on graphs.

*Shim, Hyeseon*, Level set based simulations of two-phase oil-water flows in pipes.

*Yoshinobu, Stan Taira*, Large sets of zero analytic capacity.

*Yu, Yin Bon*, Regularity of intrinsic biharmonic maps to spheres.

*Zhou, Haomin*, Wavelet transforms for discontinuous functions and its applications in image processing.

## University of California, Riverside (5)

MATHEMATICS

*Li, Zhiwen*, Burau representation for string links.

STATISTICS

*Burns, Colleen*, Search designs for factor screening experiments with factors at three levels.

*Roque, Gina*, Masking microdata with mixtures of normal distributions.

*Teschmacher, Lance*, The pairwise comparison of search designs using three new criteria based on search probabilities.

*Wang, Min-Jay*, Effective implications of nonparametric nonlinear time series analysis.

## University of California, San Diego (13)

MATHEMATICS

*Barclay, Alexander*, SQP methods for large-scale optimization.

*Bartels, Arthur C.*, Link homotopy in codimension two.

*Conant, James Roger*, A knot bounding a grope of  $n$  is  $n/2$  trivial.

*Han, Ilseop*, Tractability of algebraic function fields in one variable over global fields.

*Knight, Robert Dean*, Using Laguerre geometry to discover Euclidean theorems.

*Kojcinovic, Slobodan*, Extensions of CR mappings between generic algebraic submanifolds.

*Kronewitter, F. Dell*, Noncommutative computer algebra in linear algebra and control theory.

*Lamel, Bernhard R.*, Mappings of real submanifolds in complex spaces in different dimensions.

*Leibon, Gregory D.*, Random Delaunay triangulations, the Thurston-Andreev theorem, and metric uniformization.

*Shepler, Anne V.*, Semi-invariant forms.

*Skogman, Howard*, Jacobi forms over number fields.

*Wagner, Jennifer D.*, The combinatorics of the permutation enumeration of wreath products between cyclic and symmetric groups.

*Willenbring, Jeb Faulkner*, Stability properties of  $q$ -multiplicities and branching formulas for representations of the classical groups.

## University of California, Santa Barbara (5)

MATHEMATICS

*Jiang, Bin*, Non-overlapping domain decomposition and heterogeneous modeling used in solving free boundary problems.

*White, Matthew*, Some bounds for closed hyperbolic 3-manifolds.

STATISTICS AND APPLIED PROBABILITY

*Kim, David*, Quantile decomposition of a density.

*Mackey, Howard*, Diagnostics for binary response mixed models.

*Wu, Dongfeng*, Some contributions to the study of wavelet regression.

## University of California, Santa Cruz (2)

MATHEMATICS

*Georgiou, Ion*, Fluid problems with diffusion.

*Zeitlhofer, Thomas*, A Poincaré theorem and a slice theorem for Teichmueller theory of punctured surfaces.

## University of Southern California (1)

MATHEMATICS

*Khan, Taufiqar*, Inverse problems, identification and control of distributed parameter systems: Applications to space structures with active materials.

## COLORADO

### Colorado State University (5)

MATHEMATICS

*Lahme, Brigitte*, Karhunen-Loeve decomposition in the presence of symmetry.

*Livingston, Co*, Periodic existence theorems in optimal control.

*Seibert, James*, The dimension of planar linear systems.

STATISTICS

*Leecaster (nee: Van Caster), Molly*, The autologistic model with covariates for sample data and robust sampling designs using predicted probability of presence.

*Paige, Robert*, Saddlepoint methods in neural networks.

### University of Colorado, Boulder (5)

APPLIED MATHEMATICS

*Ghrist, Michelle*, High-order finite difference methods for wave equations.

MATHEMATICS

*Chiaromonte, Robert*, Almost-equivariant finite asymptotic dimension and the Baum-Connes conjecture.

*Courter, Jennifer*, Construction of dilation- $d$  orthonormal wavelets.

*Schaffer, Sharon*, Generalized multiresolution analyses and applications of their multiplicity functions to wavelets.

*Schipporns, Rene*, Countable partition ordinals.

## University of Colorado, Denver (5)

BIostatISTICS

*LaFleur, Bonnie*, Application of permutation methods to the generalized linear model.

*Pan, Zhaoxing*, Surrogate markers for survival time in clinical trials: A proposed class of intermediate events as marker variables.

MATHEMATICS

*Heberton, Caroline*, Eulerian-Lagrangian localized adjoint method and smoothed aggregations algebraic multigrid.

*Nesliturk, Ali*, Approximating the incompressible Navier Stokes equations using a two level finite element method.

*Stewart, Daluss*, Biclique covers and partitions of bipartite graphs and digraphs and related matrix ranks of  $\{0,1\}$ -matrices.

## University of Denver (1)

MATHEMATICS AND COMPUTER SCIENCE

*Breznay, Peter*, Tightly connected hierarchical interconnection networks.

## University of Northern Colorado (4)

MATHEMATICAL SCIENCES

*Belloso, Rafael*, A measurement model using path analysis with latent variables to assess the student affective domain before the learning of intro. statistics.

*Lee, Wan-I*, The relationship between students' proof writing ability and van Hiele levels of geometric thought in college geometry.

*Strickland, Jeffrey*, How students make meaning in a reform calculus course.

*Yuan, Yuan*, The impact of student learning style and classroom environment interactions on the development of the function concept in college algebra students.

## CONNECTICUT

### University of Connecticut (10)

MATHEMATICS

*Chueh, Chin-Mei*, Stochastic economic modeling for the deferred annuity (accumulation) line of business.

*Derado, Josip*, Multivariate refinable interpolating functions.

*Fei, Guihua*, Periodic solutions of Hamiltonian system and minimal period problem.

*Gao, Fuchang*, Majorizing measures and their applications in harmonic analysis.

*Gonzales, Reo*, Integral equation method for the continuous spectrum Schrödinger equation.

*Kang, Yow-Ming*, Analysis of the provision for adverse deviation (PAD) for pay-out annuities.

*Kim, Eun Heui*, On the existence of positive solutions of quasilinear elliptic boundary value problems.

STATISTICS

*Holler, Keith*, Time series of random convex bodies.

*Kleszczewski, Kenneth*, Extending the asymptotic properties of the maximum likelihood estimator to applications with random sample sizes.

*Wang, Fei*, Sample size determination under Bayesian modeling.

**Yale University** (12)

BIOSTATISTICS

*Kamina, Ayumi*, Modeling the emergence of drug-resistant mutants: Implications for treatment strategies of HIV-1 infection.

MATHEMATICS

*Chen, Fang*, Mixing and lifting of random walk on graph.

*Hill, Jennifer Ann*, Torsion theories and local cohomology.

*Karlsson, Bengt Anders*, Semicontractions, nonpositive curvature, and multiplicative ergodic theory.

*Kiem, Young-Hoon*, Cohomology of quotients and moduli spaces of vector bundles.

*Kolm, Petter Nils*, Quadruple and octuple layer potentials in two dimensions.

*Lerman, Gilad Meir*, Geometric transcriptions of sets and their applications to data analysis.

*Nahon, Michel Rene*, Phase evaluation and segmentation.

*Protsak, Victor*, A notion of rank for enveloping algebras and local theta correspondence.

*Roitman, Michael*, On conformal and vertex algebras.

STATISTICS

*Carter, Andrew*, Asymptotic equivalence of nonparametric experiments.

*Thiry, Alexandra*, Bayesian regression with coefficients probably zero.

DELAWARE

**University of Delaware** (3)

MATHEMATICAL SCIENCES

*Favinger, Thomas*, Variational methods for boundary integral equations of the second kind.

*Nigam, Nilima*, Variational methods for a class of boundary value problems exterior to a thin domain.

*Panchenko, Alexander*, Some problems of continuum mechanics and materials science.

DISTRICT OF COLUMBIA

**American University** (5)

MATHEMATICS AND STATISTICS

*Beyers, John*, How do we get there from here? An investigation of NCTM standards-based reform and implementation issues in an urban systemic initiative.

*Higginbotham, Joyce*, The impact of the use of the curriculum and evaluation standards for school mathematics: Addenda Series: Grades 5-8.

*Lan, Feng*, Sequential adaptive sampling designs to estimate abundance in rare populations.

*Popowitz Geyer, Susan*, Predicting spatial hotspot regions.

*Stylianou, Mario*, Sequential analysis of Durham and Flournoy's Biased Coin Design (BCD) for phase I clinical trials.

**George Washington University** (10)

MATHEMATICS

*Collier, William*, Applications of variational principles to modeling partially inflated scientific research balloons.

*Hansen, Clifford*, Dynamics of multidimensional substitutions.

*Pirnazar, Amir*, Girth, genus, and fractional coloring of graphs.

*Qin, Hongxun*, Tutte polynomials and matroid constructions.

*Sokolov, Maxim*, Quantum invariants, skein modules, and periodicity of 3-manifolds.

*Tsukamoto, Tatsuya*, The fourth skein module of 3-dimensional manifolds.

STATISTICS

*Diaz, Tirso*, Simultaneous testing and estimation of trend in proportion using historical control.

*Le, Chenxiong*, Application of autoregressive heteroscedastic (ARCH) models to the analysis of longitudinal data.

*Li, Jun*, A stochastic model for option pricing.

*Zheng, Gang*, Fisher information in order statistics and ordered randomly censored data.

FLORIDA

**Florida Institute of Technology** (1)

MATHEMATICAL SCIENCES

*Kermani, Sassan*, Extended trigonometric hyperbolic functions and control theory.

**Florida State University** (4)

MATHEMATICS

*Szecsei, Denise*, A convolution property of some measures with self-similar fractal support.

STATISTICS

*Jagger, Thomas*, Space-time models for count processes with application to hurricane activity.

*Laird, Glen*, Nonparametric inference for the proportionality function in the randomly censored model.

*Wang, Dagang*, Nonparametric dynamic regression models with applications to financial data analysis.

**University of Central Florida** (2)

MATHEMATICS

*Brown, Kevin*, Linear and nonlinear Kelvin-Helmholtz instabilities of high velocity magnetized shear layers with generalized polytropic laws.

*El Hor, Aicha*, Statistical estimation of the locations of lightning events.

**University of Florida** (13)

MATHEMATICS

*Brask, David*, Arbitrage pricing of several new exotic options: The partial tunnel and get-out options.

*Chastain, Stacey*, Geometric evolution equations.

*DelaCruz, Omar*, Three topics in set theory: Finiteness and choice, cardinality of compact spaces, and singular Jonsson cardinals.

*Swearingon, Michael*, The risk-spread option in a potential theoretic framework.

*Van, Tri Pham Minh*, Approximation methods in fiber optics.

*Vanderbilt, Amy*, Common derivations in locally determined nonmonotonic rule systems and their complexity.

*Zapata, Jaime*, The generalized matrix product and fast Fourier transform for permutohedral aggregates.

STATISTICS

*Gueorguieva, Ralitza*, Models for repeated measures of a multivariate response.

*Hartzel, Jonathan*, Random effects models for nominal and ordinal data.

*Kowalski, Scott*, The design and analysis of split-plot experiments in industry.

*Lee, Juneyoung*, Design comparisons and modeling aspects for unbalanced random models.

*McGoff, Philip*, A unified approach to process optimization.

*Wang, Chen-Pin*, Bayesian analysis of competing risks models.

**University of Miami** (1)

MATHEMATICS AND COMPUTER SCIENCE

*Ruth, Kevin*, Favorable red and black on the integers with a minimum wager.

**University of South Florida** (2)

MATHEMATICS

*Ivanov, Ivan*, Linear discrete operators and recovery in uniform algebras.

*Roberts, Henry*, Predicting the performance of software systems via the power law process.

## GEORGIA

### Emory University (6)

#### BIostatISTICS

*Baughman, Andrew*, Latent structure models for evaluating diagnostic agreement using replicate binary measurements.

*Hudgens, Michael*, HIV, interval censoring and competing risks.

*Vijapurkar, Ujjwala*, Temporal and spatial prediction using quasi-likelihood regression models.

#### MATHEMATICS AND COMPUTER SCIENCE

*Kochengin, Sergey*, Reflector construction problems.

*Nagle, Brendan*, Regularity properties for triple systems.

*Wagner, Michelle*, A constructive version of the blow-up.

### Georgia Institute of Technology (7)

#### MATHEMATICS

*Bloomer, Lisa*, Random probability measures with given mean and variance.

*Heckman, Christopher*, Independent sets in graphs of bounded degree.

*Hlineny, Peter*, Planar covers of graphs: Negami's conjecture.

*Kerce, James*, Geometric problems relating evolution equations and variational principles.

*Klahjan, Diego*, Topics in airline crew scheduling and long scale optimization.

*Walls, Barrett*, Coloring girth restricted graphs on surfaces.

*Weedermann, Marion*, On perturbation of delay-differential equations with periodic orbits.

### University of Georgia (7)

#### MATHEMATICS

*Fuller, Edgar*, The geometric and topological structure of holonomic knots.

*Pootheri, Sridar*, Characterizing and counting classes of unlabeled 2-connected graphs.

*Watkins, Mark*, Class numbers of imaginary quadratic fields.

*Yu, Gang*, Average size of the 2-Selmer groups of certain families of elliptic curves over  $\mathbb{Q}$ .

#### STATISTICS

*Chen, Yinpu*, Laws of large numbers for random sets and fuzzy random sets.

*Wang, Ye*, Parameter estimation of space time bilinear processes.

*Zhou, Wenjong*, Generalized linear models for spatially correlated data.

## HAWAII

### University of Hawaii (3)

#### MATHEMATICS

*Heeney, Xiang Xia*, Small lattices.

*Sun, Shuhao*, Sheaf representations of general rings.

*Zheng, Lixin*, The essential norm and spectrum of composition operators on space of bounded analytic function.

## IDAHO

### University of Idaho (3)

#### MATHEMATICS

*Bailey, Allen*, Rings whose Krull dimensions are larger than their cardinalities.

*Huang, Lixin*, On generators of the symmetric and alternating groups and an application to Galois theory.

*Mills, Harry*, Positive solutions to a second-order boundary value problem.

## ILLINOIS

### Northern Illinois University (4)

#### MATHEMATICAL SCIENCES

*Cassidy, Jean*, Solving the TLS problem via rank revealing LU factorization.

*Devarajan, Karthik*, Inference for a non-proportional hazards regression model and applications.

*Mugdadi, Abdel-Razzaq*, Nonparametric curve fitting of the probability density functions of random variables with applications.

*Thrun, Jason*, College student's rational-number-as-operator strategies: A focus on students' coordination of units and distributivity of operators in problem-solving situations.

### Northwestern University (3)

#### MATHEMATICS

*Borghesi, Simone*, Higher degree formula.

*Gutman, Gary*, Elliptic calculations in algebraic topology.

*Scorichenko, Alexander*, Stable  $K$ -theory and functor homology.

### Southern Illinois University, Carbondale (3)

#### MATHEMATICS

*Sears, Bradley*, Two-element generation of unitary groups over finite fields.

*Su, Meng*, Some nonlinear boundary value problems of evolution equations.

*Yan, Feng*, Topics on stochastic differential equations.

### University of Chicago (21)

#### MATHEMATICS

*Andrianov, Fedor*, Clifford algebras and Shimura's lift for theta-series.

*Baranovsky, Vladimir*, Moduli of sheaves on surfaces and action of the oscillator algebra.

*Buch, Anders*, Combinatorics of degeneracy loci.

*Chen, Linda*, Quantum cohomology of flag manifolds.

*Hagelstein, Paul*, Local integrability of strong and iterated maximal functions.

*Hallstrom, Christopher*, Heat transfer in rotating infinite Prandtl number convection.

*Hunsicker, Eugenie*,  $L^2$ -cohomology and  $L^2$ -harmonic forms for complete Kähler and warped product metrics.

*Isaksen, Daniel*, A model structure on the category of pro-simplicial sets.

*Miller, Russell*, Computable model theory and automorphisms of the computably enumerable set.

*Nevins, Thomas*, Topology of moduli spaces of framed sheaves on ruled surfaces.

*Pergler, Martin*, Point stabilizers of connection preserving actions.

*Przeworski, Andrew*, Tubes in hyperbolic 3-manifolds.

*Przedziecki, Adam*, Homotopical localization at a space.

*Robertson, Ian*, The Euler class group of a line bundle on an affine algebraic variety over a real closed field.

*Rowland, Todd*, Smooth holomorphic curves in  $S^6$ .

*Sun, Jian, K* Matrix on manifolds.

*Thomas, Hugh*, An action of equivariant Cartier divisors on invariant cycles for toric varieties.

*Wald, Kevin*, Automorphisms and non-invariant properties of the computable enumerable sets.

*Wittwer, Janine*, A sharp estimate on the norm of the Martingale transform.

*Zhao, Wenhua*, Generalization of genus zero two dimensional conformal field theory; some results on Jacobian and intersection number of affine curves in  $\mathbb{C}^2$ .

#### STATISTICS

*Hayashi, Takaki*, Hedging of contingent claims under model uncertainty.

### University of Illinois, Chicago (12)

#### MATHEMATICS, STATISTICS AND COMPUTER SCIENCE

*Cogolludo-Agustin, Jose*, Topological invariants of the complement to arrangements of rational plane curves.

*Fields, Joseph*, On extremal self dual codes.

*Freitas, Pedro*, On the action of the symplectic group on the Siegel upper half plane.

*Gyuris, Viktor*, Variations of algebraizability.

*Hedman, Shawn*, Finitary axiomatizations of categorical theories.

*Hu, Junda*, Deformation to the normal bundle in arithmetic geometry.

*Kern, Daniel*, An optimal control policy for groundwater remediation using systematic perturbations.

*Porta, Gaspar*, On the convergence of the product of the exponential of two compact operators.

*Robieson, Weining*, On weighted kappa and concordance correlations coefficients.

*Shell, Amy*, In service to mathematics: The life and work of Mina Rees.

*Syed, Zamir*, Algorithms for stochastic games and related topics.

*Wottreng, Kristen*, Computer methods in descriptive and differential geometry: Monge's legacy.

### University of Illinois, Urbana-Champaign (21)

#### MATHEMATICS

*Axenovich, Maria Alex*, Extremal problems in combinatorics—covering and coloring problems.

*Bedenikovic, Anthony*, The complements of 2-complexes in the 4-ball.

*Branson, William Balko*, Global analysis of meromorphic vector fields in the plane.

*Chen, Ya-Chen*, Extremal problems in graph theory: Hamiltonicity, minimum vertex-diameter-2-critical graphs and decomposition.

*Eichhorn, Dennis*, Some results on the congruential and gap-theoretic study of partition functions.

*Ho, Jeffrey*, On the quantum cohomology of Fano toric manifolds and the intersection cohomology of singular symplectic quotients.

*Kalikakis, Dimitrios Emmanuel*, Saddle surfaces.

*Kim, Seon-Hong*, Sums of polynomials, minmax problems and number theory.

*Kuhlman, Douglas Andrew*, On the orders of Jacobians of hyperelliptic curves.

*Kundgen, Andre*, Problems in extremal graph theory.

*Liaw, Wen-Chin*, Contributions to Ramanujan's theories of modular equations, Ramanujan-type series for  $1/\pi$ , and partitions.

*Maneesawarnng, Chaiwat*, External problems for curves in metric spaces of curvature bounded above.

*McLallen, Nicola Whitley*, The mod-3 cohomology ring of the O'Nan sporadic simple groups.

*Perry, David Michael*, Maximal 2-extensions of number fields.

*Richert, Benjamin*, Monomial ideals,  $N$ -lists, and smallest graded Betti numbers.

*Saveliev, Peter*, Fixed points and coincidences.

*Schwartz, Gary Keith*, A reduction for Dade's conjecture.

*Song, Joung-Min*, Sums of multiplicative functions over 4-smooth numbers and related differential difference equations.

*Troitsky, Vladimir*, Invariant subspace problem and spectral properties of bounded linear operators on Banach spaces, Banach lattices, and topological vector spaces.

#### STATISTICS

*Fu, Limin*, Unified ordinal regression: Model assessment and semiparametric analysis.

*Gao, Yonghong*, Rank-based procedures for some multivariate problems.

## INDIANA

### Indiana University, Bloomington (11)

#### MATHEMATICS

*Biswas, Animikh*, On the lifting of intertwining operators and their parameterization.

*Cheng, Wenfang*, An under-resolved scheme for certain partial differential equations with boundary layer.

*Danner, Norman*, Ordinal notations in typed lambda-calculi.

*Guo, Daniel Xiangdong*, Fully discretized fractional-step methods and applications to ocean primitive equations.

*Ju, Ning*, Numerical analysis for the parabolic  $p$ -Laplacian problem.

*Kulkarni, Rajesh*, On the Clifford algebra of a binary form.

*McCooney, Michael*, Symmetry groups of four-manifolds.

*Olson, Eric John*, The orthogonal projection of fractal sets.

*Swanson, David*, Continuity properties of Sobolev functions.

*Tamulis, Andrius*, Concordance of classical knots.

*Verma, Kaushal*, The reflection principle and boundary regularity of correspondences.

### Indiana University-Purdue University, Indianapolis (1)

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MICHIGAN

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MISSOURI

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*Brandon, Dennis L.*, Data analysis methods for ecological risk assessment bioassays.

### MATHEMATICS

*Andrianov, Alexander*, Nonlinear Haar approximation of some multivariate classes of functions.

*Petrova, Guergana*, Transport, equations and velocity averages.

*Popov, Bojan*, Linear transport equations.

*Presser, Kimberly*, An analysis of the maximal growth of Hilbert functions.

### STATISTICS

*Solorzano, Eleanne*, Simultaneous comparisons with more than one control.

*Surles, James Gunn*, The scaled Burr type X distribution: Inferences and the stress-strength problem.

## TENNESSEE

### University of Memphis (7)

#### MATHEMATICAL SCIENCES

*Bogner, Myles*, Realizing 'consciousness' in software agents.

*Cascaval, Radu*, Global well-posedness for a class of dispersive equations.

*Hernandez, German*, Asymptotic behavior of evolutionary algorithms.

*Nino, Luis*, Random iterated neural networks: Properties, evolutionary design and applications.

*Seshadri, Roopa*, Bayesian analysis of clustered binary data: Applications to ophthalmology and otolaryngology clinical trials.

*Vu, David Dung*, Performance modeling of IPV6 protocol.

*Weinreich, David*, Simple questions about properties of graphs and knots.

### University of Tennessee (7)

#### MATHEMATICS

*Chatham, R. Douglas*, Going down pairs of commutative rings.

*Deng, Qingping*, Modeling a fish population with diffusion and advection movement in a spatial environment.

*Gaff, Holly*, Spatial heterogeneity in ecological models: Two case studies.

*Halverson, Denise*, Detecting codimension one manifold factors with the disjoint homotopies property.

*Kihne, Patricia*, Factorization and ring-theoretic properties in subrings of  $K[X]$  and  $K[[X]]$ .

*Knotts-Zides, Charlotte*, Extremal properties of eigenvalues.

*Prajitura, Gabriel*, Permanence of invariant subspaces under functional calculus and related topics.

## Vanderbilt University (5)

#### MATHEMATICS

*Blount, Kevin*, On the structure of residuated lattices.

*Dinsbacher, Thomas*, Multivariate non-homogeneous refinement: Existence, uniqueness, regularity and application to image compression.

*Howard, Keith*, Size and maturity structured models of cell population dynamics exhibiting chaotic behavior.

*Mortin, Tanya*, Error bounds for solving pseudodifferential equations on spheres by collocation with zonal kernels.

*Timar, Cary*, Spanning walls in infinite planar graphs.

## TEXAS

### Rice University (7)

#### COMPUTATIONAL AND APPLIED MATHEMATICS

*Hicks, Illya*, Branch decompositions and their applications.

*Ji, Lin*, The inverse problem of neuron identification.

*Qian, Jianliang*, Geometrical optics for quasi- $P$  waves: Theories and numerical methods.

*Velazquez, Leticia*, A global optimization technique for zero-residual nonlinear least-square problems.

*Villalobos, Cristina*, The behavior of Newton's method on two equivalent systems from linear and nonlinear programming.

#### MATHEMATICS

*Ganzel, Sanford*, Complexity of exotic  $R$ 's.

*Wang, Yuan*, Mathematical modeling of seismic data: Multiscale noise removal and recognition algorithm.

### Southern Methodist University (3)

#### STATISTICAL SCIENCE

*Etzel, Carol J.*, Meta-analysis for genetic linkage studies.

*Kuo, Jo-Kang*, Mapping quantitative trait loci: Sampling considerations using bivariate data.

*Pitblado, Jeffrey*, Estimating partially variable bandwidths in local linear regression using an information criterion.

### Texas A&M University (15)

#### MATHEMATICS

*Diener, Andrew*, Distributive elements in centralizer near-rings.

*Faraq, Mark*, On the structure of polynomial near-rings.

*Gopalakrishnan, Jayadeep*, On the mortar finite element method.

*Harris, Roy Joseph*, Quadratic convexity.

*Huang, Hong*, Mixed finite element approximations for obstacle problems with applications to American options.

*Sopasakis, Alexandros*, Theory of the Prigogine-Herman kinetic equation of vehicular traffic.

*Turner, Christian*, The mechanics of ecosystems.

*Wilmarth, Steven*, A probabilistic method for rigid body motion planning using sampling from the medial axis of the free space.

#### STATISTICS

*Al-Khouli, Abeer*, Robust estimation and bootstrap testing for the delta distribution with applications in marine sciences.

*Hrafnkelsson, Birgir*, Principal component time series and autoregressive estimates.

*Klippel, Karon*, Error variance estimation and testing for homoscedasticity in partially linear models.

*Lee, Cherng-Luen (Alan)*, Robustness properties of time series cross-validation.

*Olmsted, Ann Valls*, Algorithms using chi-squared and other goodness of fit tests to identify a high-expectation subset of independent Poisson random variables, or a subset of multinomial cells having relatively high probabilities, with application in chromosomal fragile site identification.

*Park, Inho*, The use of sample survey data for estimation of the tails of distribution functions.

*Reese, Shane*, Statistical methodology for environmental applications.

### University of Houston (2)

#### MATHEMATICS

*Qawasnu, Ahmad*, Regularity of the Hodge-Weyl decomposition.

*Tecarro, Edwin*, Qualitative analysis of a model of the mammalian cell cycle's G1 phase.

### University of North Texas (3)

#### MATHEMATICS

*Huff, Cheryl*, Countable additivity, exhaustivity, and the structure of certain Banach lattices.

*Sawyer, Cameron*, On the cohomology of the complement of a toral arrangement.

*Smith, John Carl (Trey)*, Computing ultrapowers by supercompactness measures.

### University of Texas, Arlington (5)

#### MATHEMATICS

*Chen, Shianc-Jiun*, The finite element method of least squares type.

*Durmus, Soner*, The effects of the use of the technology of college algebra students' achievement and attitude toward mathematics: A constructive approach.

*Erol, Yilmaz*, Computations in algebraic geometry.

*Flint, Donna*, Nonlinear ordinary differential equations with discontinuities.

*Hand, Jeffrey*, Minimization of residual vectors in photogrammetry using the Chebyshev norm.

## University of Texas, Austin (10)

COMPUTATIONAL AND APPLIED MATHEMATICS

*Riviere, Beatrice*, Discontinuous Galerkin methods for solving the miscible displacement problem in porous media.

*Vardapetyan, Leon*,  $hp$ -Adaptive finite element method for electromagnetics with applications to waveguiding structures.

*Xu, Wei*, Multiresolution representation of arbitrary triangular meshes.

MATHEMATICS

*Blue, Meredith*, Generic Galois extensions for groups of order  $p^3$ .

*Chern, Shey-Jey*, Estimates for the number of polynomials with bounded degree and bounded measure.

*Gibney, Angela*, Fibrations of  $\overline{M}_{g,n}$ .

*Haskins, Mark*, Constructing special Langrangian cones.

*Kang, Cong*, On Lang's Diophantine conjecture for surfaces of general type.

*Pak, Hee Chue*, Two distributed capacitance models.

*Zhang, Zuoshun*, Proper posterior distributions for some hierarchical models and roundoff effects in the Gibbs sampler.

## University of Texas, Dallas (2)

MATHEMATICAL SCIENCES

*Chen, Zhenwu*, Trimmed and Winsorized  $M$ - and  $Z$ -estimators, with applications to robust estimation in neural network models.

*Ramirez-Perez, Filemon*, Contributions to shot noise on cluster processes with cluster marks.

## University of Texas, Houston (4)

BIOMETRY

*Barnholtz, Jill*, Traditional linkage analysis in admixed families.

*Chang, Chung-chi*, Analysis of recurrent failure times: A time-dependent Yule process approach.

*Chen, Dung-Tsa*, Mixed effects model in negative exponential curve.

*McGhee, Charles Reed*, Forecasting cost based on a stochastic utilization plan and a fixed cost function.

## UTAH

### Brigham Young University (2)

MATHEMATICS

*Chen, Fengxin*, On the nonlocal phase field models.

*Wang, Junping*, Bifurcation from simple eigenvalues of some elliptic equations and topics in nonlocal phase field systems.

### University of Utah (3)

MATHEMATICS

*Brinkmann, Peter*, Mapping tori of automorphisms of hyperbolic groups.

*Grabovsky, Irina*, Asymptotic analysis in change point problems.

*Sather-Wagstaff, Sean*, A dimension inequality for excellent Cohen-Macaulay rings related to the positivity of Serre's intersection multiplicity.

### Utah State University (1)

MATHEMATICS AND STATISTICS

*Hillyard, Cinnamon*, Construction and analysis of a family of numerical methods for hyperbolic conservation laws with stiff source terms.

## VERMONT

### University of Vermont (2)

MATHEMATICS AND STATISTICS

*LaVarnway, Gerard*, Almost-periodic functions in a half-plane.

*Stevens, Scott*, Supraclavicular, lumped-parameter models for dynamic intracranial pressures.

## VIRGINIA

### George Mason University (2)

INFORMATION TECHNOLOGY AND ENGINEERING

*Flanagan, Brian*, Self-calibration of antenna arrays with application to direction of arrival estimation.

*Zarnich, Robert*, A unified method for the measurement and tracking of narrowband contacts from an array of sensors.

### Old Dominion University (2)

MATHEMATICS AND STATISTICS

*Arnold, Julia*, Diffusion problems in wound healing and a scattering approach to immune system interactions.

*Hannon, Patrick*, Estimation of parameters for the truncated exponential distribution.

## University of Virginia (8)

MATHEMATICS

*Boner, Christopher*, Characterization of absolute summands of categories of divisible codes.

*Hodge, Terrell*, Some structures utilizing involutions on algebraic groups in characteristic  $p$ .

*Richman, Alexander*, Subnormality and composition operators on weighted Bergman spaces.

*Siemers, Troy*, Some Krein space realizations of generalized Schur functions.

*Theoret, Julie*, Geometry of a cubic Jordan algebra.

STATISTICS

*Dunbar, Stephanie Allison*, Order restricted inference with an application to phase I studies in oncology.

*Gregory, Krag R.*, General linear processes induced by orthogonal polynomial expansions.

*Prescott, Katherine E.*, Some tests for ordered alternatives in generalized linear models.

## Virginia Polytechnic Institute and State University (15)

MATHEMATICS

*Atwell, Jeanne*, Proper orthogonal decomposition for reduced order control of partial differential equations.

*Chudoung, Lerawan*, Robust control for hybrid nonlinear system.

*Galinaitis, William*, Two methods for modeling scalar hysteresis and their use in controlling actuators with hysteresis.

*Hulsing, Kevin*, Methods for computing functional gains for LQR control of partial differential equations.

*Jilcott, Steven*, Time-dependent perturbation and the Born-Oppenheimer approximation.

*Moss, George*, Mathematical models of the alpha-beta phase transition of quartz.

*Schenck, David*, Some formation problems for linear elastic materials.

*Song, Degong*, On spectrum of neutron transport equations with reflecting boundary conditions.

*Stanley, Lisa*, Computational methods for sensitivity analysis with applications to elliptic boundary value problems.

STATISTICS

*Burt, David*, Bandwidth selection concerns for jump point discontinuity preservation in the regression setting using  $M$ -smoothers and the extension to hypothesis testing.

*Darken, Patrick*, Testing for changes in trend in water quality data.

*Kathman, Steven*, Discrete small sample asymptotics.

*Lin, Hefang*, One-stage and Bayesian two-stage optimal designs for mixture models.

*Starnes, Alden*, Asymptotic results for model robust regression.

*Steen, Gregory*, Robust and nonparametric methods for topology error identification and voltage calibration in power systems engineering.

## WASHINGTON

### University of Washington (17)

#### APPLIED MATHEMATICS

*Kim, Arnold*, Optical pulse propagation, diffusion and depolarization in discrete random media.

*Martin, Mark*, The influence of seasonal and climatic environmental changes on plankton in the marine mixed layer.

*Yong, Darryl*, Solving boundary-value problems for systems of hyperbolic conservation.

#### BIOSTATISTICS

*Alonzo, Todd*, Assessing accuracy of a continuous medical diagnostic or screening test in the presence of verification bias.

*Braun, Thomas*, Optimal analysis of group randomized trials with permutation tests.

*Hamblett, Nicole*, A regression modeling approach for describing patterns of HIV genetic variation.

*McClelland, Robyn*, Regression-based variable clustering for data reduction.

*Nelson, Jennifer*, A graphical methodology for describing interrater variability in ordinal assessments among many raters.

#### MATHEMATICS

*Johnson, Mark W.*, Enriched sheaf theory as a framework for stable homotopy theory.

*Keynes, Michael*, A closed form for the Kazhdan-Lusztig polynomials for real reductive Lie groups with the Cayley singleton property.

*Pennanen, Teemu*, Dualization of monotone generalized equations.

*Tanner, Stephen*, Non-tangential and conditioned Brownian convergence of pluriharmonic functions.

#### STATISTICS

*Bellone, Enrica*, Nonhomogeneous hidden Markov models for downscaling synoptic atmospheric patterns to precipitation amounts.

*Browning, Sharon*, Monte Carlo likelihood calculation for identity by descent data.

*Poole, David*, Bayesian inference for noninvertible deterministic simulation models, with application to bowhead whale assessment.

*Ridgeway, Gregory*, Generalization of boosting algorithms and applications of Bayesian inference for massive datasets.

*Stanford, Derek*, Fast automatic unsupervised image segmentation and curve detection in spatial point processes.

## Washington State University (4)

#### PURE AND APPLIED MATHEMATICS

*Blitz, Brian*, Topics concerning regular maps.

*Gomez-Wulschner, Claudia*, Completeness of inductive limits.

*Raghavan, Jayathi*, Iterative techniques for convection dominated flow problems.

*Wig, Jennifer*,  $p$ -Regular and  $p$ -topological Cauchy completions.

## WEST VIRGINIA

### West Virginia University (2)

#### MATHEMATICS

*Qian, Sixin*, A hydrodynamic model of semiconductors.

*Szyszkowski, Marcin*, Symmetrically continuous functions.

## WISCONSIN

### Marquette University (1)

#### MATHEMATICS, STATISTICS AND COMPUTER SCIENCE

*Pustejovsky, Susan F.*, Beginning calculus students' understanding of the derivative: Three case studies.

### University of Wisconsin, Madison (17)

#### MATHEMATICS

*Behn, Antonio F.*, Group rings whose principal ideals are projective and groups with bounded representation degree.

*Edge, Eric S.*, A generalization of the Terwilliger algebra.

*Franklin, Bradbury*, The limit of the normalized error in SDEs and SPDEs.

*Jeon, Woo*, Generalized Cartan type algebras and their derivations.

*McKinzie, Mark B.*, The Halley-Euler method.

*Park, Jeng Yune*, The weight hierarchies of product codes and outer product codes.

*Ponomarenko, Vadim*, Some results on jump systems and Rota's conjecture.

*Teixeira, Joao*, Elliptic differential equations and their discretions.

*Wang, DeJia*, Saturation properties in the computably enumerable degrees.

*Ziebarth, Jennifer J.*, On the mod  $p$  cohomology of the symplectic group  $Sp_4(\mathbb{F}_p)$  and the general linear group  $GL_3(\mathbb{F}_p)$ .

#### STATISTICS

*Cheang, Wai Kwong*, Issues on estimation of time series regression model with autocorrelated noise.

*Chiang, Alan (Yuch-Hung)*, Partial spline models and their applications to climate change detection and attribution.

*Gao, Fangyu*, Penalized multivariate logistic regression with a large data set.

*Hoff, Peter*, Constrained nonparametric estimation via mixtures.

*Jalaluddin, Muhammad*, Robust inference for the Cox's proportional hazards model with frailties.

*Li, Shun-Hwa*, Stationary distributions of Markov processes as statistical models: Baddeley's time-invariance method of estimation.

*Zeng, Yong*, A class of partially-observed models with discrete, clustering and non-clustering noises: Application to micro-movement of stock prices.

### University of Wisconsin, Milwaukee (3)

#### MATHEMATICAL SCIENCES

*Dubas, Saeed*, High order schemes for the Navier-Stokes equations.

*Siriwardana, Nihal*, High order numerical methods for the Navier-Stokes equations.

*Wilson, Julia*, Non-uniqueness of boundaries of CAT(0) groups.

## WYOMING

### University of Wyoming (2)

#### MATHEMATICS

*Parashkevov, Rossen*, Iterative methods in the divergence-free subspace for mixed finite elements.

#### STATISTICS

*Stoevska-Kojouharov, Daniela*, Simulation models-optimal resource allocation via uncertainty analysis.

## Doctoral Degrees Conferred 1998-1999

### Supplementary List

The following list supplements the list of thesis titles published in the 2000 *Notices*, pages 253-271.

## ALABAMA

### University of Alabama, Tuscaloosa (1)

#### MATHEMATICS

*Libis, Carl*, Sums of powers and generalizations of Bernoulli and related polynomials.

## COLORADO

### **University of Northern Colorado** (1)

MATHEMATICAL SCIENCES

*Su, Robert*, The effects of enhanced web-based instruction on preservice teachers' mathematics achievement and attitude changes toward mathematics and toward computers in Taiwan.

## FLORIDA

### **Florida Institute of Technology** (2)

MATHEMATICAL SCIENCES

*Rizzo, Rebecca*, Variational comparison method and stability theory of hybrid systems.

*Stephens, Desmond*, ELMRES: An oblique projection method to solve sparse non-symmetric linear systems.

## MICHIGAN

### **Wayne State University** (2)

MATHEMATICS

*Jankunas, Andrius*, Estimation of parameters and difference equations.

*Lababidi, Samir*, Nonparametric estimation with small noise diffusion processes.

## NEW JERSEY

### **New Jersey Institute of Technology** (1)

MATHEMATICAL SCIENCES

*Samulyak, Roman*, Dynamical systems associated with particle flow models: Theory and numerical methods.

## NORTH CAROLINA

### **Duke University** (1)

STATISTICS AND DECISION SCIENCES

*Stroud, Jonathan*, Bayesian analysis of nonlinear time series models.