
Program of the Sessions

Lubbock, Texas, April 8–10, 2005

Friday, April 8

Meeting Registration

NOON – 4:30 PM **First Floor Lobby, Mathematics
and Statistics Building**

AMS Exhibit and Book Sale

NOON – 4:30 PM **Room 106, Mathematics
and Statistics Building**

Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models, I

2:00 PM – 4:20 PM **Room 110, Mass
Communications Building**

Organizers: **Linda J. S. Allen**, Texas Tech University
Sophia Ruey-Jen Jang, University of
Louisiana at Lafayette
Lih-Ing W. Roeger, Texas Tech
University

- 2:00PM *Chaos and Habitat Size*. Preliminary report.
▶ (1) **J. M. Cushing***, Department of Mathematics &
Interdisciplinary Program in Applied Mathematics,
University of Arizona, **R. F. Costantino**, Ecology &
Evolutionary Biology, University of Arizona, **Robert
A. Desharnais**, Department of Biological Sciences,
California State University Los Angeles, and
Shandelle M. Henson, Department of Mathematics,
Andrews University (1006-92-145)
- 2:30PM *Coexistence in a Ricker Competition Model*.
(2) Preliminary report.
Shandelle M. Henson*, Andrews University, **J. M.
Cushing**, University of Arizona, and **Chantel C.
Blackburn**, Andrews University (1006-92-174)
- 3:00PM *Periodicity and Global Asymptotic Behavior of Some
Nonautonomous Discrete Population Models*.
(3) **V. L. Kocic**, Xavier University of Louisiana
(1006-39-134)

3:30PM *The Role of Coinfection in Multi-Disease Dynamics*.
(4) Preliminary report.
Maia Martcheva* and **Sergei Pilyugin**, University
of Florida (1006-92-132)

4:00PM *Allee effects in a host-parasitoid model*. Preliminary
(5) report.
Sophia R.-J. Jang, University of Louisiana at
Lafayette (1006-92-178)

Special Session on Future Directions in Mathematical Systems and Control Theory, I

2:00 PM – 4:50 PM **Room 108, Mass
Communications Building**

Organizers: **David Gilliam**, Texas Tech University
W. P. Dayawansa, Texas Tech
University

- 2:00PM *Observability of Complex Systems*. Preliminary
▶ (6) report.
Clyde F. Martin, Texas Tech University
(1006-93-34)
- 2:30PM *On Global Controllability of Planar Affine Nonlinear
▶ (7) Systems*.
Yimin Sun, Academy of Mathematics and Systems
Science, Chinese Academy of Sciences, and **Lei
Guo***, Laboratory of Systems and Control, Academy
of Mathematics and Systems Science (1006-93-69)
- 3:00PM *On Agrachev's curvature of optimal control*.
(8) Preliminary report.
Matthias Kowski, Arizona State University
(1006-93-66)
- 3:30PM *Global Output Feedback Stabilization of Nonlinear
(9) Systems: A Homogeneous Domination Approach*.
Chunjiang Qian, University of Texas at San Antonio
(1006-93-28)
- 4:00PM *Asymptotic Input-Output Linearization via
(10) Observer*.
Feng Liu and **Daizhan Cheng***, Institute of Systems
Science, Chinese Academy of Sciences (1006-93-62)

The time limit for each contributed paper in the sessions is ten minutes. In the Special Sessions the time limit varies from session to session and within sessions. To maintain the schedule, time limits will be strictly enforced.

For papers with more than one author, an asterisk follows the name of the author who plans to present the paper at the meeting.

Papers flagged with a solid triangle (▶) have been designated by the author as being of possible interest to undergraduate students.

Abstracts of papers presented in the sessions at this meeting will be

found in Volume 26, Issue 3 of *Abstracts of papers presented to the American Mathematical Society*, ordered according to the numbers in parentheses following the listings. The middle two digits, e.g., 897-20-1136, refer to the Mathematical Reviews subject classification assigned by the individual author. Groups of papers for each subject are listed chronologically in the *Abstracts*. The last one to four digits, e.g., 897-20-1136, refer to the receipt number of the abstract; abstracts are further sorted by the receipt number within each classification.

- 4:30PM *A Projective Metric of Linear Systems.*
 (11) **X Alex Wang**, Department of Mathematics and
 Statistics, Texas Tech University (1006-93-49)

Special Session on Statistical Image Processing and Analysis and Applications, I

2:00 PM – 4:50 PM **Room 012, Mathematics
 and Statistics Building**

Organizer: **Victor Patrangenaru**, Texas Tech
 University

- 2:00PM *Non-convex optimization in Image Analysis.*
 (12) **Sunanda D. Mitra**, Texas Tech University
 (1006-60-159)
- 2:30PM *Encoding an arbitrary collection of image edges.*
 ► (13) **Gopal Lakhani**, Texas Tech University, Department
 of Computer Science (1006-94-223)
- 3:00PM *Analysis and Statistical Characterisation of
 Windstorm Damage using Aerial Images.*
 (14) **Lakshminarasimhan V Sampath, James Arn
 Womble***, **Brian S Nutter** and **Kishor C Mehta**,
 Texas Tech University (1006-65-253)
- 3:30PM *Using Markov Random Fields for Texture Based
 Radial Segmentation.*
 ► (15) **Eric Sinzinger**, Texas Tech University
 (1006-62-236)
- 4:00PM *On improving input estimators with potential
 applications to Positron Emission Tomography.*
 (16) **Ali Khoujmane***, **Frits Ruymgaart** and **Victor
 Patrangenaru**, Texas Tech University
 (1006-62-249)
- 4:30PM *A Simplified Enhanced LBG Algorithm.* Preliminary
 (17) report.
Jiangling Guo* and **Sunanda Mitra**, Computer
 Vision and Image Analysis Lab, Texas Tech
 University (1006-94-180)

Special Session on Undergraduate and Graduate Student Research (and Related Poster Session organized by Ali Khoujmane and Mara D. Neusel, Texas Tech), I

2:00 PM – 4:25 PM **Room 015, Mathematics
 and Statistics Building**

Organizers: **Ali Khoujmane**, Texas Tech University
Edward W. Swim, Texas Tech
 University
Edward J. Allen, Texas Tech University
Padmanabhan Seshaiyer, Texas Tech
 University

- 2:00PM *Consistency and stability of a nonconforming finite
 element method for fluid-structure interaction.*
 (18) **Edward W Swim*** and **Padmanabhan Seshaiyer**,
 Texas Tech University (1006-65-235)
- 2:30PM *Improving Regression Function Estimators.*
 (19) **Ali Khoujmane**, Texas Tech University
 (1006-62-12)
- 3:00PM *Polynomials that Arise in a Polya Urn Gambling
 Game.*
 ► (20) **Bret M Hanlon*** and **Clyde F Martin**, Texas Tech
 University (1006-00-76)
- 3:30PM *Stochastic LPA Models Compared.*
 ► (21) **Kiyomi Kaskela**, Texas Tech University
 (1006-60-102)
- 4:00PM *Mathematical Model of Visual Motion-Detection in
 Flies.*
 (22) **Baili Chen*** and **Clyde F. Martin**, Texas Tech
 University, Lubbock, TX 79401 (1006-34-144)

Special Session on Topology of Continua, I

2:00 PM – 4:50 PM **Room 110, Mathematics
 and Statistics Building**

Organizer: **Wayne Lewis**, Texas Tech University

- 2:00PM *A continuum X whose hyperspace of subcontinua is
 ► (23) not its continuous image.*
Alejandro Illanes, Universidad Nacional Autonoma
 de Mexico (1006-54-101)
- 2:30PM *Injectivity and Intrinsic Rotations.*
 (24) **James T. Rogers, Jr.**, Tulane University
 (1006-54-64)
- 3:00PM *Dendroids with only one bottleneck center.*
 (25) Preliminary report.
Van C Nall*, University of Richmond, and **Jo Heath**,
 Auburn University (1006-54-68)
- 3:30PM *On the n -fold hyperspace suspensions of continua.*
 (26) **Sergio Macias**, Institute of Mathematics, National
 University of Mexico (1006-54-71)
- 4:00PM *Properties of Buffers.* Preliminary report.
 (27) **Robbie Allen Beane**, University of Missouri, Rolla
 (1006-54-142)
- 4:30PM *Quotients of Bing Spaces.* Preliminary report.
 (28) **Nicholas S Ormes***, **Richard N Ball** and **James N
 Hagler**, University of Denver (1006-54-239)

Special Session on Differential Geometry and Its Applications, I

2:00 PM – 4:55 PM **Room 108, Mathematics
 and Statistics Building**

Organizers: **Josef F. Dorfmeister**, Munich
 University of Technology
Magdalena D. Toda, Texas Tech
 University
Hongyou Wu, Northern Illinois
 University

- 2:00PM *Surface Geometry and Algebraically Completely
 (29) Integrable Systems.* Preliminary report.
Franz Pedit*, University of Massachusetts at
 Amherst, **C Bohle**, TU-Berlin, **K Leschke**, University
 of Massachusetts, Amherst, and **U Pinkall**,
 TU-Berlin (1006-53-109)
- 3:00PM *K -Surfaces (smooth and discrete) of non-finite type.*
 (30) Preliminary report.
Ivan Charles Sterling, St Mary's College of
 Maryland (1006-53-82)
- 3:30PM *Transformations of affine spheres.*
 (31) **Erxiao Wang**, University of Texas at Austin
 (1006-53-152)
- 4:00PM *Willmore tori with non-trivial normal bundle.*
 (32) **Katrin Leschke**, University of Massachusetts,
 Amherst (1006-53-212)
- 4:30PM *p -harmonic functions and the minimal surface
 (33) equation in a Riemannian manifold.*
Ye-Lin Ou, The University of Oklahoma (1006-53-15)

Special Session on Classical and Differential Galois Theory, I

2:00 PM – 4:45 PM **Room 114, Mathematics
 and Statistics Building**

Organizers: **Lourdes Juan**, Texas Tech University
Arne Ledet, Texas Tech University
Andy R. Magid, University of
 Oklahoma

Program of the Sessions – Lubbock, TX, Friday, April 8 (cont'd.)

- 2:00PM *Iterated Picard–Vessiot extensions*. Preliminary report. (34)
Andy R Magid, University of Oklahoma (1006-12-181)
- 2:30PM *Strongly normal extensions*. (35)
Jerald J. Kovacic, CCNY - The City College of the City University of New York (1006-12-103)
- 3:00PM *Non-integrability of some problems in Celestial Mechanics: a differential Galois approach*. (36)
Juan J. Morales-Ruiz, Universitat Politècnica de Catalunya, Barcelona, SPAIN (1006-70-169)
- 4:00PM *Classification of linear q -difference equations and Galois theory*. (37)
Jean-Pierre Ramis, Université Paul Sabatier, Toulouse, France and Institut Universitaire de France (1006-39-108)

Special Session on Homological Algebra and Its Applications, I

2:00 PM – 4:50 PM **Room 112, Mathematics and Statistics Building**

Organizers: **Alex Martsinkovsky**, Northeastern University
Mara D. Neusel, Texas Tech University

- 2:00PM *Auslander's and Bass invariants related to some homological conjectures*. (38)
Anne-Marie Simon, Université libre de Bruxelles (1006-13-219)
- 2:30PM *Stable cohomology for local rings*. Preliminary report. (39)
Oana Veliche*, University of Utah, Salt Lake City, UT, and **Lucezar L. Avramov**, University of Nebraska, Lincoln (1006-13-243)
- 3:00PM *Gaps in Hochschild (co)homology imply smoothness for commutative algebras*. (40)
Lucezar Avramov and **Srikanth Iyengar***, University of Nebraska (1006-13-162)
- 3:30PM *The Regularity Condition R_ℓ of Serre for Affine Semigroup Rings*. Preliminary report. (41)
Marie A. Vitulli, University of Oregon (1006-13-78)
- 4:00PM *Cluster Categories*. (42)
Gordana Todorov, Northeastern University (1006-16-241)
- 4:30PM *On the Auslander-Buchsbaum - type formulas*. (43)
Alex Martsinkovsky, Northeastern University (1006-13-206)

Special Session on Recent Advances in Complex Function Theory, I

2:00 PM – 4:50 PM **Room 011, Mathematics and Statistics Building**

Organizers: **Brock Williams**, Texas Tech University
Roger W. Barnard, Texas Tech University
Kent Pearce, Texas Tech University

- 2:00PM *Conformal field theory and the universal Teichmueller space*. (44)
David Radnell, Max Planck Institute for Mathematics, and **Eric Schippers***, Dept. of Mathematics, University of Manitoba (1006-30-220)
- 2:30PM *Experiments in discrete conformal welding*. Preliminary report. (45)
Ken Stephenson, University of Tennessee (1006-30-182)

- 3:00PM *Discrete Complex Earthquakes*. (46)
Eric M. Murphy, Texas Tech University (1006-30-65)
- 3:30PM *Holomorphic extensions and theta functions on complex tori*. Preliminary report. (47)
Roman J. Dwilewicz, University of Missouri (1006-30-199)
- 4:00PM *Smale's Mean Value Conjecture for Complex Polynomials*. (48)
Jeremy T. Tyson, University of Illinois (1006-30-237)
- 4:30PM *Growth properties of Painlevé transcendents*. (49)
Aimo Hinkkanen, University of Illinois at Urbana-Champaign (1006-30-135)

Special Session on Topology of Dynamical Systems, I

2:00 PM – 4:50 PM **Room 109, Mathematics and Statistics Building**

Organizer: **Brian Raines**, Baylor University

- 2:00PM *Coding Expansive Automorphisms of Compact Groups*. (50)
Alex Clark*, University of North Texas, and **R J Fokkink**, TU Delft (1006-37-208)
- 2:30PM *On equations of compound and simple limit cycles*. (51)
Anatoly B. Korchagin, Texas Tech University (1006-37-183)
- 3:00PM *Topologizing sets so that a given self map is continuous*. Preliminary report. (52)
C Good, University of Birmingham, UK (1006-54-215)
- 3:30PM *Controlled Hahn-Mazurkiewicz Theorem and some new dimension functions of Peano continua*. (53)
Taras Banakh, Nipissing University and **Ivan Franko National U. of L'viv**, Ukraine, and **Murat Tuncali***, Nipissing University (1006-54-126)
- 4:00PM *Inverse Limits of Upper Semi-continuous Set Valued Functions*. (54)
W. T. Ingram, Spring Branch, Texas, and **William S. Mahavier***, Emory University (1006-54-110)
- 4:30PM *Two-pass Maps and Indecomposability of Inverse Limits of Graphs*. (55)
W. T. Ingram, University of Missouri - Rolla (1006-54-67)

Special Session on Theory and Application of Stochastic Differential Equations, I

2:00 PM – 4:50 PM **Room 121, Mass Communications Building**

Organizers: **Edward J. Allen**, Texas Tech University
Armando Arciniega, University of Texas at San Antonio

- 2:00PM *Stability and convergence of large-scale stochastic hereditary systems under markovian structural perturbations*. Preliminary report. (56)
Gangaram S. Ladde, The University of Texas at Arlington (1006-93-48)
- 2:30PM *Stochastic Partial Differential Equations and Finite-Time stability*. Preliminary report. (57)
S Sathananthan*, Tennessee State University, and **M Anabtawi**, American University of Sharjah (1006-60-35)
- 3:00PM *Stochastic perturbation of dispersion-managed optical solitons*. (58)
Anjan Biswas, Tennessee State University (1006-78-39)

- 3:30PM *Measures Generated by Stochastic Differential Equations in Banach Space.*
(59) **Fariborz Asadian**, Fort Valley State University (1006-60-85)
- 4:00PM *Some Results about 2D Euler equation perturbed by noise.*
(60) **Hakima Bessaih**, University of Wyoming (1006-60-98)
- 4:30PM *A new analysis of the effects of the Asian Crisis of 1997 on Emergent markets.*
▶ (61) **Y. Liu*** and **M. C. Mariani**, New Mexico State University (1006-91-59)

Special Session on Real Algebraic Geometry, I

2:20 PM – 4:50 PM **Room 010, Mathematics and Statistics Building**

Organizers: **Anatoly Korchagin**, Texas Tech University
David Weinberg, Texas Tech University

- 2:20PM *Arf invariants of links and real algebraic curves.* Preliminary report.
(62) **Patrick M Gilmer**, Louisiana State University (1006-57-52)
- 3:00PM *Real solutions to real sparse polynomial systems.* Preliminary report.
(63) **Evgenia Soprunova***, University of Massachusetts, and **Frank Sottile**, Texas A&M (1006-14-210)
- 3:40PM *Singular Points of Real Quintic Curves.* Preliminary report.
(64) **David A. Weinberg*** and **Nicholas J. Willis**, Texas Tech University (1006-14-136)
- 4:20PM *Singular Points of Real Sextic Curves.* Preliminary report.
(65) **David A. Weinberg** and **Nicholas J. Willis***, Texas Tech University (1006-14-138)

Special Session on Discrete Groups, Homogeneous Spaces, Rigidity, I

3:00 PM – 4:50 PM **Room 014, Mathematics and Statistics Building**

Organizers: **Alex Gorodnik**, University of Michigan, Ann Arbor
Hee Oh, California Institute of Technology
Nicolas Monod, University of Chicago

- 3:00PM *Metric classification of 3D Riemannian homogeneous spaces of positive Ricci curvature.*
(66) **Victor Patrangenaru**, Texas Tech University, Department of Mathematics and Statistics (1006-53-33)
- 3:30PM *Cocycle Superrigidity through geometry.* Preliminary report.
(67) **David Fisher**, CUNY Lehman College, and **Theron J Hitchman***, Rice University (1006-37-96)
- 4:00PM *Travelling Salesman Groups.*
(68) **Azer Akhmedov**, University of California Santa Barbara (1006-51-122)
- 4:30PM *Actions of Chevalley groups on hyperbolic spaces.*
(69) **Jason F Manning**, Caltech (1006-20-95)

Special Session on Partial Differential Equation and Its Application in Biomedical Study, I

3:00 PM – 4:20 PM **Room 109, Mass Communications Building**

Organizers: **Jay R. Walton**, Texas A&M University
Padmanabhan Seshaiyer, Texas Tech University
Akif Ibragimov, Texas Tech University

- 3:00PM *On the characterization of hyperelastic membranes in soft-tissue mechanics.*
▶ (70) **Padmanabhan Seshaiyer**, TEXAS TECH UNIVERSITY (1006-35-240)
- 4:00PM *Biological Growth and Remodeling in Soft Tissue: Constrained Mixture Model with Constitutive Response in Smooth Muscle Dependent on the Population Number/Size.* Preliminary report.
(71) **Dinara Khalmanova***, Pennsylvania State University, **Tsvetanka Sendova** and **Jay R. Walton**, Texas A&M University (1006-92-229)

Invited Address

5:10 PM – 6:00 PM **Biology Lecture Hall 100, Biology Building**

- (72) *Geometric splitting and superrigidity.*
Nicolas Monod, University of Chicago (1006-51-265)

Reception Hosted by the Department of Mathematics

6:15 PM – 7:30 PM **Club Level, Jones SBC Stadium**

Saturday, April 9

Meeting Registration

7:30 AM – 4:00 PM **First Floor Lobby, Mathematics and Statistics Building**

AMS Exhibit and Book Sale

7:30 AM – 4:00 PM **Room 106, Mathematics and Statistics Building**

Special Session on Recent Advances in Complex Function Theory, II

8:00 AM – 11:20 AM **Room 011, Mathematics and Statistics Building**

- Organizers: **Brock Williams**, Texas Tech University
Roger W. Barnard, Texas Tech University
Kent Pearce, Texas Tech University
- 8:00AM *On a Problem of Fournier, Ma and Ruscheweyh concerning Extremal Bounded Convex Domains.* Preliminary report.
(73) **Roger W. Barnard**, **Casey R Hume*** and **G. Brock Williams**, Texas Tech University (1006-30-230)
- 8:30AM *Cases of equality for refinements of Bernstein's inequality.*
▶ (74) **Richard Fournier**, CRM(Montreal,Canada) (1006-30-46)

- 9:00AM (75) *Holder continuity of a class of quasiregular mappings.*
Albert Baernstein II* and **Leonid V. Kovalev**, Washington University (1006-30-158)
- 9:30AM (76) *Asymptotically Symmetric Embeddings and Conformal Mappings.* Preliminary report.
Shanshuang Yang, Emory University (1006-30-127)
- 10:00AM Discussion (Generalized Quasispheres)
- 10:30AM (77) *Sharp Power Mean Bounds for the Hypergeometric Function ${}_2F_1$.*
Kendall C Richards, Southwestern University (1006-33-81)
- 11:00AM (78) *Overdetermined boundary value problems and applications.*
Alexander Yu. Solynin, Department of Mathematics and Statistics, Texas Tech University (1006-30-222)

Special Session on Future Directions in Mathematical Systems and Control Theory, II

8:30 AM – 11:20 AM **Room 108, Mass Communications Building**

Organizers: **David Gilliam**, Texas Tech University
W. P. Dayawansa, Texas Tech University

- 8:30AM (79) *A Zero Dynamics Design Methodology for Regulation of a Class of Abstract Boundary Control Systems.*
David S Gilliam*, **Marinos Bagdati**, **Matthew Walker** and **Victor Shubov**, Dept Math and Stat, Texas Tech University (1006-93-32)
- 9:00AM (80) *Stability Preserving Approximation Schemes for Control Systems Governed by NFDEs.*
Janos Turi, University of Texas at Dallas (1006-65-44)
- 9:30AM (81) *Explicit Formulae for Several Two Qubit Evolutions.*
Viswanath Ramakrishna*, Mathematical Sciences, University of Texas at Dallas, and **Hong Zhou**, Mathematical Sciences, Univ of TX at Dallas (1006-93-45)
- 10:00AM (82) *Inverse Optimal Boundary Feedback Control of a 3D Channel Flow.* Preliminary report.
Andras Balogh* and **Jose A Dominguez**, The University of Texas - Pan American (1006-35-43)
- 10:30AM (83) *Approximate Inversion of the Preisach Hysteresis Operator with Application to Control of Smart Actuators.*
Ram V. Iyer*, Dept. of Mathematics and Statistics, Texas Tech University, TX 79409., **Xiaobo Tan**, Michigan State University, and **P. S. Krishnaprasad**, University of Maryland (1006-46-61)
- 11:00AM (84) *On The Hamilton Jacobi Bellman Equation for a Deterministic Optimal Control Problem.*
Betsi J. Tirado* and **Jesus A. Pascal**, Universidad del Zulia, Maracaibo, Venezuela (1006-49-258)

Special Session on Graph Theory, I

8:30 AM – 11:20 AM **Room 013, Mathematics and Statistics Building**

Organizers: **John C. George**, Eastern New Mexico University
Walter D. Wallis, Southern Illinois University at Carbondale

- 8:30AM (85) *Cyclic Hamiltonian (Near-)Decompositions of the Complete Graph.*
Heather J Gavlas, Illinois State University, and **Joy M Morris***, University of Lethbridge, Canada (1006-05-36)
- 9:00AM (86) *Wiener index and subtrees of binary trees.*
L. A. Szekely and **H. Wang***, Department of Mathematics, University of South Carolina (1006-05-05)
- 9:30AM (87) *Domination in a graph with a 2-factor.*
Ken-ichi Kawarabayashi, Tohoku University, **Michael D. Plummer***, Vanderbilt University, and **Akira Saito**, Nihon University (1006-05-143)
- 10:00AM (88) *Hamiltonian cycles in Cayley graphs of small order.*
Klavdija Kuntnar, **Dragan Marušič**, University of Ljubljana, **Dave Witte Morris***, **Joy Morris**, University of Lethbridge, and **Primož Šparl**, University of Ljubljana (1006-05-42)
- 10:30AM (89) *Excessive factorizations of regular graphs.* Preliminary report.
W. D. Wallis, Southern Illinois University, Carbondale (1006-05-74)
- 11:00AM (90) *On minimum size edge-weightings inducing a proper vertex coloring.* Preliminary report.
Saad I El-Zanati, Illinois State University, **Heather Gavlas**, **Mike Plantholt**, **Papa A Sissokho***, Illinois State university, and **Jozef Skokan**, University of Sao Paulo (1006-05-80)

Special Session on Statistical Image Processing and Analysis and Applications, II

8:30 AM – 11:20 AM **Room 012, Mathematics and Statistics Building**

Organizer: **Victor Patrangenaru**, Texas Tech University

- 8:30AM (91) *A Least Squares framework for robust Image Registration.* Preliminary report.
Roopesh Kumar* and **Brian Nutter**, Texas Tech University (1006-62-254)
- 9:00AM (92) *Two-channel Adaptive Orthonormal Filter Banks for Hyperspectral Imagery.* Preliminary report.
Mihaela D. Quirk*, Los Alamos National Laboratory - Decision Applications Division, and **Christopher M. Brislawn**, Los Alamos National Laboratory (1006-94-168)
- 9:30AM (93) *Inter-Channel Correlation Measurements for Estimation of Lost Wavelet Coefficients.* Preliminary report.
Y Sriraja*, **Sandip Krishnamurthy** and **Tanja Karp**, Department of Electrical and Computer Engineering, Texas Tech University (1006-94-179)
- 10:00AM (94) *A Review of Recent Advances in the Mathematical Treatment of Image Analysis Problems, with Examples from Biomedical Image Analysis.* Preliminary report.
Hilary W Thompson, Louisiana State University Eye Center, Neuroscience, Medicine, and Biostatistics (1006-62-251)
- 10:30AM (95) *Translation Multiresolution Analyses and its application in Image processing.* Preliminary report.
Josip Derado, Kennesaw State University (1006-42-261)
- 11:00AM (96) *Nonparametric Density Estimation on Homogeneous Spaces in High Level Image Analysis.*
Robert L Paige*, **Frits Ruymgaart**, **Vic Patrangenaru** and **Jeff Lee**, Texas Tech University (1006-62-228)

Special Session on Undergraduate and Graduate Student Research (and Related Poster Session organized by Ali Khoujmane and Mara D. Neusel, Texas Tech), II

8:30 AM – 10:55 AM Room 015, Mathematics and Statistics Building

Organizers: **Ali Khoujmane**, Texas Tech University
Edward W. Swim, Texas Tech University
Edward J. Allen, Texas Tech University
Padmanabhan Seshaiyer, Texas Tech University

- 8:30AM **An Investigation of Climatic and Geographic Factors on the Growth and Spread of Chytrid Fungus on Amphibian Populations in Australia.**
 ▶ (97) **Amy J. Drew***, **Edward J. Allen** and **Linda J. S. Allen**, Texas Tech University (1006-92-148)
- 9:00AM **Deterministic Modeling of the Effect of Reservoir Hosts on the Spread of Chytrid Fungus within the Barred Tiger Salamander Population.** Preliminary report.
 ▶ (98) **Jody Zuehlke***, Tarelton State University, and **Keith E. Emmert**, Tarleton State University (1006-92-99)
- 9:30AM **Discrete-Time, Stage Structured Model for Equine Protozoal Myeloencephalitis.** Preliminary report.
 ▶ (99) **Amy Riordan*** and **Keith E Emmert**, Tarleton State University (1006-92-97)
- 10:00AM **An Analysis of Clattering Impacts of a Falling Rod.**
 ▶ (100) **Florin Vasile Badiu***, **Jianzong Su** and **Hua Shan**, Department of Mathematics, University of Texas at Arlington (1006-70-11)
- 10:30AM **Nonstandard Numerical Methods with Applications to Predator-Prey Models.**
 ▶ (101) **Dobromir T Dimitrov**, University of Texas - Arlington, Department of Mathematics (1006-65-27)

Special Session on Partial Differential Equation and Its Application in Biomedical Study, II

8:30 AM – 11:20 AM Room 109, Mass Communications Building

Organizers: **Jay R. Walton**, Texas A&M University
Padmanabhan Seshaiyer, Texas Tech University
Akif Ibragimov, Texas Tech University

- 8:30AM **Constitutive Restrictions for Isotropic Hyperelastic Material Modeled Using Invariants of Logarithmic Strain.**
 (102) **T. Sendova*** and **J. R. Walton**, Department of Mathematics, Texas A&M University (1006-74-191)
- 9:00AM **Effects of Diffusion and Stimuli on Bifurcating Rotating Waves In Excitable Media.**
 (103) **John Alford Alford**, Tulane University (1006-92-205)
- 9:30AM **A Nonlinear Incompressible Elastic Mathematical Model of the Human Tongue.** Preliminary report.
 (104) **Caroline Essex-Torcaso**, Inst. for Systems Research, Univ. of Maryland, College Park, and **William S Levine***, Dept. of ECE, Univ. of Maryland, College Park (1006-92-38)
- 10:00AM **A model of blood flow in compliant arteries: modeling, analysis, simulation and experimental verification.**
 ▶ (105) **Suncica Canic**, University of Houston (1006-35-184)

- 11:00AM **Stability Analyzes for Chemotactic Models, and Application.**
 (106) **Akif Ibragimov***, Texas Tech University, **Laura Ritter** and **Jay Walton**, Texas A&M College Station (1006-35-120)

Special Session on Topology of Continua, II

8:30 AM – 11:20 AM Room 110, Mathematics and Statistics Building

Organizer: **Wayne Lewis**, Texas Tech University

- 8:30AM **Continuous Extensions of Partial Metrics.**
 (107) Preliminary report.
E. D. Tymchatyn*, University of Saskatchewan, **K. Kawamura**, University of Tsukuba, and **A. Zagorodnyuk**, University of Saskatchewan (1006-54-114)
- 9:00AM **Progress on the fixed point property for simple triod-like continua.** Preliminary report.
 (108) **Christopher G. Mouron**, Rhodes College (1006-54-165)
- 9:30AM **When P-likeness implies Q-likeness for indecomposable continua.**
 (109) **Udayan B Darji**, University of Louisville (1006-54-157)
- 10:00AM **Comparing the Symmetric Spans of a Disc and Its Boundary.**
 (110) **Thelma R West**, University of Louisiana at Lafayette (1006-54-156)
- 10:30AM **Metrically Connected Spaces.**
 (111) **B. Dale Daniel**, Lamar University (1006-54-79)
- 11:00AM Discussion

Special Session on Differential Geometry and Its Applications, II

8:30 AM – 11:25 AM Room 108, Mathematics and Statistics Building

Organizers: **Josef F. Dorfmeister**, Munich University of Technology
Magdalena D. Toda, Texas Tech University
Hongyou Wu, Northern Illinois University

- 8:30AM **Complex ODE's and Surfaces of Constant Mean Curvature.** Preliminary report.
 (112) **Josef F. Dorfmeister***, Zentrum Mathematik, TU-Muenchen and Department of Mathematics, University of Augsburg, and **Shimpei Kobayashi**, Kobe University, Japan (1006-58-111)
- 9:30AM **The Geometry of Harmonic maps into Special Linear Groups.** Preliminary report.
 (113) **Magdalena Daniela Toda**, Texas Tech University (1006-53-90)
- 10:00AM **CMC surfaces in Finsler spaces.** Preliminary report.
 (114) **Vladimir Balan**, University POLITEHNICA of Bucharest, ROMANIA (1006-53-107)
- 10:30AM **The $1/\kappa$ flow and related geometric evolution equations for curves.**
 (115) **Thomas A. Ivey**, College of Charleston (1006-53-113)
- 11:00AM **Rendering Costa's Minimal Surface with Mathematica and 3D Printer Technology.**
 ▶ (116) Preliminary report.
M. Melko, Northern State University (1006-53-88)

Special Session on Classical and Differential Galois Theory, II

8:30 AM – 11:15 AM **Room 114, Mathematics and Statistics Building**

Organizers: **Lourdes Juan**, Texas Tech University
Arne Ledet, Texas Tech University
Andy R. Magid, University of Oklahoma

- 8:30AM *Essential dimension.*
 (117) **Arne Ledet**, Texas Tech University (1006-12-171)
- 9:00AM *Differential Galois Theory of Second Order Polynomial System.* Preliminary report.
 (118) **Jinzhi Lei**, Zhou Pei-Yuan Center for Applied Mathematics, Tsinghua University (1006-34-123)
- 9:30AM *Comparing cusps on modular curves to their Modular Tower generalization.*
 (119) **Michael D Fried**, MSU-Billings, UC Irvine (1006-11-25)
- 10:00AM *Groups as Differential Galois Groups.* Preliminary report.
 (120) **Julia Hartmann**, IWR, Univeristy of Heidelberg (1006-12-231)
- 10:30AM *Integral and Iterative Differential Modules.* Preliminary report.
 (121) **B. Heinrich Matzat**, University of Heidelberg (1006-12-264)

Special Session on Topology of Dynamical Systems, II

8:30 AM – 11:20 AM **Room 109, Mathematics and Statistics Building**

Organizer: **Brian Raines**, Baylor University

- 8:30AM Discussion
- 9:00AM Discussion
- 9:30AM *Pitchfork Bifurcations of Invariant Manifolds.*
 (122) **Jyoti Champanerkar***, William Paterson University, and **Denis Blackmore**, New Jersey Institute of Technology (1006-37-24)
- 10:00AM *Hedgehogs are in the limit set of a recurrent critical point.* Preliminary report.
 ▶ (123) **Doug Childers**, University of Alabama at Birmingham (1006-37-115)
- 10:30AM *Siegel and Cremer building blocks for polynomial Julia sets.* Preliminary report.
 (124) **John C Mayer**, University of Alabama at Birmingham (1006-30-196)
- 11:00AM *Wandering d-gons in laminations.* Preliminary report.
 ▶ (125) **Lex G. Oversteegen*** and **Alexander Blokh**, UAB (1006-37-173)

Special Session on Invariants of Links and 3-Manifolds, I

8:30 AM – 11:20 AM **Room 111, Mathematics and Statistics Building**

Organizers: **Mieczyslaw Krzysztof Dabkowski**, University of Texas at Dallas
Razvan Gelca, Texas Tech University
Jozef Henryk Przytycki, George Washington University

- 8:30AM *On The Frohman Kania-Bartoszynska ideal.*
 (126) **Patrick M Gilmer**, Louisiana State University (1006-57-51)

- 9:00AM *Integral bases for the SU(2)-TQFT-modules in genus one.* Preliminary report.
 (127) **Khaled Moham Qazaqzeh**, Baton Rouge/Louisiana (1006-57-63)
- 9:30AM *Applications of Vassiliev invariants to the classification of pseudo-Legendrian knots.*
 (128) **Vladimir V. Chernov**, Dartmouth College (1006-57-193)
- 10:00AM *On n-punctured ball tangles.*
 (129) **Jae-Wook Chung*** and **Xiao-Song Lin**, University of California, Riverside (1006-57-175)
- 10:30AM *Higher Hochschild homology of a Heegaard splitting.* Preliminary report.
 (130) **Michael McLendon**, Washington College (1006-57-201)
- 11:00AM *Turaev-Viro invariant and the Reidemeister torsion.*
 (131) **Charles Frohman**, University of Iowa, and **Joanna Kania-Bartoszynska***, Boise State University/National Science Foundation (1006-57-232)

Special Session on Theory and Application of Stochastic Differential Equations, II

8:30 AM – 10:50 AM **Room 121, Mass Communications Building**

Organizers: **Edward J. Allen**, Texas Tech University
Armando Arciniega, University of Texas at San Antonio

- 8:30AM *L^p -convergence of Waveform Relaxation Methods for Numerical Integration of Stochastic Differential Equations.*
 (132) **Henri Schurz**, Southern Illinois University at Carbondale (1006-60-252)
- 9:00AM *A three-field finite element method for elliptic partial differential equations driven by stochastic loads.*
 (133) **Scott R. Franklin***, Wayland Baptist University, **Philip W. Smith** and **Padmanabhan Seshaiyer**, Texas Tech University (1006-60-87)
- 9:30AM *Reflected Stochastic Integro-Differential Equations in Convex Regions.* Preliminary report.
 (134) **Janusz S Golec**, Fordham University (1006-60-234)
- 10:00AM *Stochastic Point Kinetics Equations in Nuclear Reactor Dynamics.*
 (135) **James G Hayes*** and **Edward J Allen**, Texas Tech University (1006-60-09)
- 10:30AM *Extrapolation for Stochastic Theta Numerical Methods.* Preliminary report.
 (136) **Rachel C. Koskodan**, Texas Tech University (1006-60-55)

Special Session on Real Algebraic Geometry, II

8:50 AM – 11:20 AM **Room 010, Mathematics and Statistics Building**

Organizers: **Anatoly Korchagin**, Texas Tech University
David Weinberg, Texas Tech University

- 8:50AM *Experimentation and conjectures in the real Schubert calculus for flag manifolds.* Preliminary report.
 ▶ (137) **James V Ruffo***, Texas A&M University, **Yuval Sivan**, **Evgenia Soprunova**, University of Massachusetts at Amherst, and **Frank Sottile**, Texas A&M University (1006-14-197)

9:30AM (138) *Efficient algorithms for computing the Betti numbers of semi-algebraic sets.*
Saugata Basu, School of Mathematics, Georgia Tech (1006-55-153)

10:10AM (139) *Real pencils of cubics applied to solve an interpolation problem.*
Severine C.M. Fiedler, Toulouse, France (1006-14-209)

10:50AM (140) *On arrangements of a plane quintic M -curve with respect to a pair of lines.* Preliminary report.
Anatoly B. Korchagin, Texas Tech University (1006-14-195)

Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models, II

9:00 AM – 10:50 AM **Room 110, Mass Communications Building**

Organizers: **Linda J. S. Allen**, Texas Tech University
Sophia Ruey-Jen Jang, University of Louisiana at Lafayette
Lih-Ing W. Roeger, Texas Tech University

9:00AM (141) *A paradox of horizontal and vertical disease transmission.* Preliminary report.
S. H. Faeth, School of Life Sciences, Arizona State University, **K. P. Hadeler** and **Horst R. Thieme***, Department of Mathematics and Statistics, Arizona State University (1006-92-112)

9:30AM (142) *Discrete-time Epidemic Models.*
Abdul-Aziz Yakubu, Howard University (1006-92-155)

10:00AM (143) *A Stoichiometric Discrete Predator-Prey Model: Chaos and Its Implications.*
Yang Kuang, Arizona State University (1006-92-189)

10:30AM (144) *Enrichment Thresholds for Growth and Predation.*
Mary M Ballyk*, New Mexico State University, and **Gail S.K. Wolkowicz**, McMaster University (1006-92-164)

Special Session on Discrete Groups, Homogeneous Spaces, Rigidity, II

9:00 AM – 11:20 AM **Room 014, Mathematics and Statistics Building**

Organizers: **Alex Gorodnik**, University of Michigan, Ann Arbor
Hee Oh, California Institute of Technology
Nicolas Monod, University of Chicago

9:00AM (145) *Measurable rigidity for group actions on infinite volume homogeneous spaces.*
Alex Furman, University of Illinois at Chicago (UIC) (1006-37-89)

10:00AM (146) *Free subgroups of linear groups.*
T Gelander*, Yale, and **E Breuillard**, CNRS (1006-22-91)

11:00AM (147) *Minimal volume entropy on trees.* Preliminary report.
Seonhee Lim, Yale university/ENS-Paris (1006-37-147)

Special Session on Homological Algebra and Its Applications, II

9:00 AM – 11:20 AM **Room 112, Mathematics and Statistics Building**

Organizers: **Alex Martsinkovsky**, Northeastern University
Mara D. Neusel, Texas Tech University

9:00AM (148) *Flat dimensions under base changes.* Preliminary report.
Hans-Bjørn Foxby, University of Copenhagen (1006-16-124)

9:30AM (149) *Gorenstein dimension of modules finite over homomorphisms.* Preliminary report.
Lars Winther Christensen* and **Srikanth Iyengar**, University of Nebraska-Lincoln (1006-13-133)

10:00AM (150) *Remarks on balance in generalized Tate cohomology.*
Alina C Iacob, Department of Mathematics, University of Kentucky (1006-18-18)

10:30AM (151) *The finiteness and structure of the set of semidualizing modules.* Preliminary report.
Sean M. Sather-Wagstaff, University of Nebraska-Lincoln (1006-13-72)

11:00AM (152) *A generalization of the Euler characteristic to modules of finite G -dimension.* Preliminary report.
Sean Sather-Wagstaff and **Diana White***, University of Nebraska (1006-13-77)

Invited Address

11:40 AM – 12:30 PM **Biology Lecture Hall 100, Biology Building**

(153) *Diophantine problems and group actions.*
Hee Oh, California Institute of Technology

Invited Address

2:00 PM – 2:50 PM **Biology Lecture Hall 100, Biology Building**

(154) *Mapping class groups of surfaces and complexes of curves.*
Nikolai V. Ivanov, Michigan State University (1006-57-150)

Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models, III

3:00 PM – 4:50 PM **Room 110, Mass Communications Building**

Organizers: **Linda J. S. Allen**, Texas Tech University
Sophia Ruey-Jen Jang, University of Louisiana at Lafayette
Lih-Ing W. Roeger, Texas Tech University

3:00PM (155) *A Mathematical Model of Gene Transfer in a Biofilm.*
Hal L. Smith*, **Don Jones**, arizona state university, and **Mudassar Imran**, arizona state university (1006-92-53)

3:30PM (156) *Rate distribution and survival of the fittest: A formulation on the space of measures.*
Azmy S. Ackleh*, University of Louisiana at Lafayette, **Ben G. Fitzpatrick**, Loyola Marymount University, and **Horst Thieme**, Arizona State University (1006-92-198)

- 4:00PM *Dynamics of Two-Strain Influenza with Isolation and Partial Cross-Immunity.*
(157)
Zhilan Feng*, Purdue University, **Miriam Nuno**, Cornell University, **Maia Martcheva**, University of Florida, and **Carlos Castillo-Chavez**, Arizona State University (1006-92-105)
- 4:30PM *Disease Emergence in Multihost Epidemic Models.*
▶ (158) Preliminary report.
Robert K McCormack* and **Linda J. S. Allen**, Texas Tech University (1006-92-47)

Special Session on Future Directions in Mathematical Systems and Control Theory, III

- 3:00 PM – 4:50 PM **Room 108, Mass Communications Building**
- Organizers: **David Gilliam**, Texas Tech University
W. P. Dayawansa, Texas Tech University
- 3:00PM *A neuro-muscular-elstod-dynamic model of the human arm.*
(159)
Lawrence Schovanec*, Department of Mathematics and Statistics, Texas Tech University, and **Alan Barhorst**, Department of Mechanical Engineering, Texas Tech University (1006-93-92)
- 3:30PM *Systems Modeling in Computational Biology.*
(160)
Xiuxia Du, Washington University in St. Louis, and **Bijoy Ghosh***, Washington University (1006-93-37)
- 4:00PM *State-Shared Model for Multiple-Input Multiple-Output Systems.*
(161)
Zhenhua Tian* and **Karlene A Hoo**, Texas Tech University (1006-93-50)
- 4:30PM *Vanka-type solvers for steady Stokes and Navier-Stokes optimality systems.*
(162)
Sandro Manservigi, Texas Tech University (1006-49-60)

Special Session on Graph Theory, II

- 3:00 PM – 4:50 PM **Room 013, Mathematics and Statistics Building**
- Organizers: **John C. George**, Eastern New Mexico University
Walter D. Wallis, Southern Illinois University at Carbondale
- 3:00PM *Neighborhood anti-Sperner Graphs.* Preliminary report.
▶ (163)
John P McSorley, Southern Illinois University at Carbondale. (1006-05-94)
- 3:30PM *Symmetries that Latin Squares Inherit from 1-Factorisations.*
(164)
Ian M. Wanless, Department of Computer Science, Australian National University, and **Edwin C. Ihrig***, Department of Mathematics and Statistics, Arizona State University (1006-05-106)
- 4:00PM *Properties of closed neighborhood anti-Sperner graphs.* Preliminary report.
▶ (165)
Alison M. Marr*, **John P. McSorley**, **Thomas D. Porter** and **W. D. Wallis**, Southern Illinois University (1006-05-246)
- 4:30PM *Progress on the orientable genus of joins of complete and edgeless graphs.* Preliminary report.
(166)
Mark Ellingham*, Department of Mathematics, Vanderbilt University, and **Chris Stephens**, Department of Mathematical Sciences, Middle Tennessee State University (1006-05-30)

Special Session on Statistical Image Processing and Analysis and Applications, III

- 3:00 PM – 4:50 PM **Room 012, Mathematics and Statistics Building**
- Organizer: **Victor Patrangenaru**, Texas Tech University
- 3:00PM *Statistical Analysis of Shapes of Planar Closed Curves.*
(167)
Anuj Srivastava*, **David Kaziska** and **Shantanu Joshi**, Florida State University (1006-62-263)
- 3:30PM *On the Analysis of Shapes and Images.*
(168)
Ajoy Roy*, Indian Institute of Technology, and **Rabindra N Bhattacharya**, University of Arizona (1006-62-260)
- 4:00PM *On the computation of self-motion for an unmanned air vehicle from image sequences without depth information.*
▶ (169)
Ram V Iyer*, **Raymond W Holsapple**, Dept. of Mathematics and Statistics, Texas Tech University, and **Phillip Chandler**, AFRL/VACA Air Vehicles Directorate (1006-78-190)
- 4:30PM *A statistical method for Glaucoma detection using tomographic images.*
(170)
Ananda Bandulasiri*, **Victor Patrangenaru**, Texas Tech University, and **Hilary Thompson**, Louisiana state university , eye center (1006-62-250)

Special Session on Undergraduate and Graduate Student Research (and Related Poster Session organized by Ali Khoujmane and Mara D. Neusel, Texas Tech), III

- 3:00 PM – 4:45 PM **Room 015, Mathematics and Statistics Building**
- Organizers: **Ali Khoujmane**, Texas Tech University
Edward W. Swim, Texas Tech University
Edward J. Allen, Texas Tech University
Padmanabhan Seshaiyer, Texas Tech University
- 3:00PM Faculty Panel
- 4:00PM Poster Session for Undergraduates and Graduates (Room 017)

Special Session on Discrete Groups, Homogeneous Spaces, Rigidity, III

- 3:00 PM – 4:45 PM **Room 014, Mathematics and Statistics Building**
- Organizers: **Alex Gorodnik**, University of Michigan, Ann Arbor
Hee Oh, California Institute of Technology
Nicolas Monod, University of Chicago
- 3:00PM *Some arithmetic groups that cannot act on the line.*
(171)
Lucy Lifschitz, University of Oklahoma, and **Dave Witte Morris***, University of Lethbridge (1006-20-41)
- 4:00PM *Constructing diffeomorphisms to negatively curved manifolds.* Preliminary report.
(172)
Chris Connell, Indiana University (1006-53-116)

Special Session on Partial Differential Equation and Its Application in Biomedical Study, III3:00 PM – 4:45 PM **Room 109, Mass Communications Building**Organizers: **Jay R. Walton**, Texas A&M University
Padmanabhan Seshaiyer, Texas Tech University
Akif Ibragimov, Texas Tech University

- 3:00PM *Computations of Multi-Scale Models of Cancer Tumor Invasion*. Preliminary report.
(173) **Bruce P Ayati***, Southern Methodist University, and **Glenn F. Webb**, Vanderbilt University (1006-92-139)
- 4:00PM *A Mathematical Model of Atherogenesis as an Inflammatory Response*.
(174) **A I Ibragimov**, Dept. of Mathematics Texas Tech University, **C J McNeal**, Dept. of Internal Medicine, Div. of Cardiology, Dept. of Pediatrics, Div. of Endocrinology, Scott & White, **L R Ritter*** and **J R Walton**, Dept. of Mathematics Texas A & M University (1006-35-06)

Special Session on Topology of Continua, III3:00 PM – 4:50 PM **Room 110, Mathematics and Statistics Building**Organizer: **Wayne Lewis**, Texas Tech University

- 3:00PM *A Discussion of the Small-point Hyperspaces of Simple n -ods*.
(175) **Eric L McDowell**, Berry College (1006-54-167)
- 3:30PM *A new construction of simply connected noncontractible cell-like continua*.
(176) **Dušan Repovš**, Institute for Mathematics, Physics and Mechanics, University of Ljubljana (1006-54-07)
- 4:00PM *Uniqueness of n -fold hyperspaces of a compactification of a ray*.
(177) **Veronica Martinez-de-la-Vega**, Universidad Nacional Autonoma de Mexico (1006-54-214)
- 4:30PM *On 2-equivalent continua*.
▶ (178) **Carlos Islas**, Fac. de Ciencias UNAM (1006-54-216)

Special Session on Differential Geometry and Its Applications, III3:00 PM – 4:55 PM **Room 108, Mathematics and Statistics Building**Organizers: **Josef F. Dorfmeister**, Munich University of Technology
Magdalena D. Toda, Texas Tech University
Hongyou Wu, Northern Illinois University

- 3:00PM *The Bianchi-Baecklund Transformation for Constant Mean Curvature Surfaces*.
(179) **Henry C. Wente***, University of Toledo, and **Andraia Mahler**, Toledo-Ohio (1006-53-20)
- 4:00PM *New and Old Applications of Bianchi-Bäcklund Transformations*.
▶ (180) **Andreia F. Mahler-Beilis**, Internet Payment Exchange, Inc. Toledo, Ohio (1006-53-21)
- 4:30PM *Backlund transformations for Weigarten surfaces*.
(181) Preliminary report.
Hongyou Wu, Northern Illinois University (1006-53-149)

Special Session on Classical and Differential Galois Theory, III3:00 PM – 4:45 PM **Room 114, Mathematics and Statistics Building**Organizers: **Lourdes Juan**, Texas Tech University
Arne Ledet, Texas Tech University
Andy R. Magid, University of Oklahoma

- 3:00PM *On vectorial polynomial and coverings in characteristic 3*.
(182) **Teresa Crespo***, Universitat de Barcelona, and **Zbigniew Hajto**, University of Cracow (1006-12-245)
- 3:30PM *Galois embedding problems and symmetric powers*.
(183) **Zbigniew Hajto***, Cracow (Poland), and **Teresa Crespo**, University of Barcelona (1006-12-204)
- 4:00PM *Hurwitz spaces, patching and profinite inverse Galois theory*.
(184) **Pierre Debes***, Universite Lille 1, and **Michel Emsalem**, Université Lille 1 (1006-12-75)

Special Session on Homological Algebra and Its Applications, III3:00 PM – 4:50 PM **Room 112, Mathematics and Statistics Building**Organizers: **Alex Martsinkovsky**, Northeastern University
Mara D. Neusel, Texas Tech University

- 3:00PM *Additive and multiplicative Q -ring operations on H_*BO_** . Preliminary report.
(185) **Terrence P. Bisson***, Canisius College, and **André Joyal**, UQAM (Universite du Quebec a Montreal) (1006-55-160)
- 3:30PM Discussion
- 4:00PM Discussion
- 4:30PM *Primary Decomposition for Algebras with a Hopf algebra action*. Preliminary report.
(186) **Mara D Neusel**, Texas Tech University (1006-13-188)

Special Session on Recent Advances in Complex Function Theory, III3:00 PM – 4:50 PM **Room 011, Mathematics and Statistics Building**Organizers: **Brock Williams**, Texas Tech University
Roger W. Barnard, Texas Tech University
Kent Pearce, Texas Tech University

- 3:00PM *A Sharp Bound on the Schwarzian Derivatives of Hyperbolically Convex Functions*.
▶ (187) **Leah J Cole***, Wayland Baptist University, **Roger W Barnard**, **Kent Pearce** and **G Brock Williams**, Texas Tech University (1006-30-226)
- 3:30PM *A Schwarzian derivative criterion for univalence of harmonic mappings*.
(188) **Peter Duren***, University of Michigan, **Martin Chuaqui**, P. Universidad Católica de Chile, and **Brad Osgood**, Stanford University (1006-30-93)
- 4:00PM *Geometric Properties of a class of non-convex harmonic maps*. Preliminary report.
(189) **Jane M McDougall***, Colorado College, and **Lisbeth Schaubroeck**, United States Air Force Academy (1006-30-248)

4:30PM *New and old results on the coefficients of classes of harmonic univalent functions.* Preliminary report. (190)
Jay M Jahangiri*, Kent State University, **Herb Silverman**, College of Charleston, and **Evelyn M Silvia**, University of California at Davis (1006-30-10)

4:30PM *Applications of quandle cocycle invariants to knots and graphs.* (200)
Masahico Saito, University of South Florida (1006-57-163)

Special Session on Real Algebraic Geometry, III

3:00 PM – 4:50 PM **Room 010, Mathematics and Statistics Building**

Organizers: **Anatoly Korchagin**, Texas Tech University
David Weinberg, Texas Tech University

3:00PM *On the $RO(\mathbb{Z}/2)$ -graded equivariant cohomology of geometrically cellular real varieties.* (191)
Paulo Lima-Filho*, Texas A&M University, and **Pedro F. dos Santos**, Instituto Superior Tecnico (1006-14-244)

3:40PM *Bounds and Algorithms for Real Polynomials Supported on Circuits.* (192)
J. Maurice Rojas, Texas A&M University, Department of Mathematics (1006-14-221)

4:20PM *Extension of Pólya's theorem to signomials with rational exponents.* Preliminary report. (193)
Charles N. Delzell, Louisiana State University (1006-14-225)

Special Session on Topology of Dynamical Systems, III

3:00 PM – 4:20 PM **Room 109, Mathematics and Statistics Building**

Organizer: **Brian Raines**, Baylor University

3:00PM *Adding Machines in the Tent Family of Maps.* (194)
Louis Block, **James Keesling***, University of Florida, and **Michał Misiurewicz**, Indiana Univ-Purdue Univ Indianapolis (1006-13-194)

3:30PM *Topological classification of inverse limit spaces of tent maps with finite critical orbit.* (195)
Sonja Štimac, Graduate School of Economics and Business, University of Zagreb (1006-37-131)

4:00PM *Asymptotic arc-composants in unimodal inverse limit spaces.* (196)
Henk Bruin, University of Surrey (1006-37-137)

Special Session on Invariants of Links and 3-Manifolds, II

3:00 PM – 4:50 PM **Room 111, Mathematics and Statistics Building**

Organizers: **Mieczysław Krzysztof Dabkowski**, University of Texas at Dallas
Razvan Gelca, Texas Tech University
Jozef Henryk Przytycki, George Washington University

3:00PM *Tangles and Virtual Tangles.* Preliminary report. (197)
Louis H. Kauffman*, University of Illinois at Chicago, and **Sofia Lambropoulou**, National Technical University of Athens (1006-57-104)

3:30PM *Non-additive versions of the Hennings (KRH) invariant.* Preliminary report. (198)
Fernando J. O. Souza, University of Iowa (1006-57-262)

4:00PM *Skein Theory and String Topology.* Preliminary report. (199)
Nikolaos E. Apostolakis and **Uwe Kaiser***, Boise State University (1006-57-176)

Special Session on Theory and Application of Stochastic Differential Equations, III

3:00 PM – 4:50 PM **Room 121, Mass Communications Building**

Organizers: **Edward J. Allen**, Texas Tech University
Armando Arciniega, University of Texas at San Antonio

3:00PM *Approximation for a stochastic logistic equation.* (201)
Brian Dennis, Department of Statistics/University of Idaho (1006-92-86)

3:30PM *Numerical Study of Interacting Particle Approximations for Integro-Differential Equations.* (202)
Dan Stancescu, University of Wyoming (1006-65-177)

4:00PM *Noise sustained wave propagation and its application to mathematical neurosciences.* (203)
Mahbubur Rahman, UC Davis (1006-92-84)

4:30PM *Rounding Error In Numerical Solution of Stochastic Differential Equations.* (204)
Armando Arciniega*, The University of Texas at San Antonio, and **Edward J. Allen**, Texas Tech University (1006-65-26)

Session for Contributed Papers

3:00 PM – 4:55 PM **Room 016, Mathematics and Statistics Building**

3:00PM *Maximizing Functionals Over a Class of Hyperbolically Convex Functions.* Preliminary report. (205)
Roger Barnard, **David R. Martin*** and **G. Brock Williams**, Texas Tech University (1006-30-255)

3:15PM *Mapping of Radial Slit Domains and the Fundamental Frequency of a Drum.* (206)
Philip R Brown, Texas A&M University at Galveston (1006-30-73)

3:30PM *On Fractional Fourier transform on Hovell's space.* (207)
Bharat N. Bhosale, University of Mumbai (1006-44-08)

3:45PM *Application of the Hájek -LeCam Convolution Theorem.* Preliminary report. (208)
Eun-Joo Lee*, Illinois College, and **Frits Ruymgaart**, Texas Tech University (1006-62-22)

4:00PM *Checking the Censored Two-Sample Accelerated Life Model using Integrated Cumulative Hazard Difference.* (209)
Seung-Hwan Lee*, Illinois Wesleyan University, and **Song Yang**, NIH (1006-62-23)

4:15PM *High Order Polynomial-based Quadratures on Two Dimensional Structures.* (210)
Hong Xiao, University of California at Davis (1006-65-242)

4:30PM *The use of measures of disarray for comparing sorting algorithms with erroneous comparisons.* Preliminary report. (211)
Petros Hadjicostas, Texas Tech University (1006-05-203)

4:45PM *Energy and Flows on 3-manifolds.* Preliminary report. (212)
A Fawaz, The University of Texas of the Permian Basin (1006-53-29)

Poster Session for Undergraduate and Graduate Students

4:00 PM – 5:00 PM

Room 017, Mathematics
and Statistics Building*This is associated with the Session on Undergraduate and Graduate Student Research*Organizers: **Ali Khoujmane**, Texas Tech University
Mara D. Neusel, Texas Tech University**Invited Address**

5:10 PM – 6:00 PM

Biology Lecture Hall
100, Biology Building

- (213)
- Singularities and complex dynamics.*
-
- Mattias Jonsson**
- , University of Michigan
-
- (1006-00-04)

Sunday, April 10**Special Session on Recent Advances in Complex Function Theory, IV**

8:00 AM – 10:50 AM

Room 011, Mathematics
and Statistics BuildingOrganizers: **Brock Williams**, Texas Tech University
Roger W. Barnard, Texas Tech University
Kent Pearce, Texas Tech University

- 8:00AM (214) *Weighted distortion in conformal mapping in euclidean, hyperbolic and elliptic geometry.*
Daniela Kraus and **Oliver Roth***, Department of Mathematics, University of Würzburg, Germany (1006-30-125)
- 8:30AM (215) *Geodesics and curvature of a Möbius invariant metric.* Preliminary report.
▶ **Zair Ibragimov***, **David Herron** and **David Minda**, University of Cincinnati (1006-30-17)
- 9:00AM (216) *A Variational Method for Hyperbolically Convex Functions.*
Roger W Barnard, Texas Tech University, **G Lenny Ornas***, McNeese State University, and **Kent Pearce**, Texas Tech University (1006-30-227)
- 9:30AM (217) *Parametric representation and linear functionals associated with extension operators for biholomorphic mappings.*
Ian Graham, University of Toronto, **Gabriela Kohr**, Babes-Bolyai University, and **John Pfaltzgraff***, University of North Carolina (1006-32-166)
- 10:00AM (218) *Linear Invariant Families on the Ball, Extremal Problems and Invariant Mappings.* Preliminary report.
John A. Pfaltzgraff, UNC Chapel Hill, and **Ted J. Suffridge***, University of Kentucky (1006-32-211)
- 10:30AM (219) *Minimal area problem for nonvanishing functions.* Preliminary report.
Clint Richardson*, Stephen F. Austin State University, **Roger W. Barnard** and **Alex Yu. Solynin**, Texas Tech University (1006-30-207)

Special Session on Future Directions in Mathematical Systems and Control Theory, IV

8:30 AM – 9:50 AM

Room 108, Mass
Communications BuildingOrganizers: **David Gilliam**, Texas Tech University
W. P. Dayawansa, Texas Tech University

- 8:30AM (220) *Java and Control Systems Simulations.*
▶ **Channa N Navaratna**, Texas Tech University, Lubbock, TX 79413 (1006-93-192)
- 9:00AM (221) *Almost-Global Tracking of Simple Mechanical Systems on a General Class of Lie Groups.*
Sanjeeva D. H. Maithripala*, Post Doctoral Research Associate/Texas Tech University, **Jordan M Berg** and **Wijesuriya P Dayawansa**, Professor/Texas Tech University (1006-93-185)
- 9:30AM (222) *Generating Stable Travelling Pulses in MemS Arrays.* Preliminary report.
▶ **Rathnamalee Palamakumbura**, Department of Mathematics and Statistics, Texas Tech University, **Sanjeeva Maithripala**, Department of Mechanical Engineering, Texas Tech University, and **Wijesuriya Dayawansa***, Department of Mathematics and Statistics, Texas Tech University (1006-93-57)

Special Session on Topology of Continua, IV

8:30 AM – 11:20 AM

Room 110, Mathematics
and Statistics BuildingOrganizer: **Wayne Lewis**, Texas Tech University

- 8:30AM (223) *Metrics on Hyperspaces - Intuition and Theory.*
Wlodzimierz J. Charatonik* and **Matt Insall**, University of Missouri-Rolla (1006-54-218)
- 9:00AM (224) *Compactifications of $[0, \infty)$ are F_n -determined if n is different from 3.*
Jorge M Martinez-Montejano, Instituto de Matematicas, UNAM (1006-54-238)
- 9:30AM (225) *Representation of the Composant Equivalence Relation for Indecomposable Continua.* Preliminary report.
David J Ryden, Baylor University (1006-54-247)
- 10:00AM (226) *Equidistant sets of boundary components for connected open sets in the complex sphere.* Preliminary report.
▶ **Jan Aarts**, Technical University Delft, The Netherlands, **Gaston Brouwer*** and **Lex Oversteegen**, University of Alabama at Birmingham (UAB) (1006-54-257)
- 10:30AM Discussion
- 11:00AM Discussion

Special Session on Differential Geometry and Its Applications, IV

8:30 AM – 11:25 AM

Room 108, Mathematics
and Statistics BuildingOrganizers: **Josef F. Dorfmeister**, Munich University of Technology
Magdalena D. Toda, Texas Tech University
Hongyou Wu, Northern Illinois University

- 8:30AM *Soliton solutions of the self-dual Yang-Mills equation*
(227)
Bo Dai*, University of California, Irvine and Peking University, and **Chuu-Lian Terng**, Department of Mathematics, University of California, Irvine (1006-53-140)
- 9:30AM *Harmonic maps from the plane to Lie groups and symmetric spaces*. Preliminary report.
(228)
Emma Carberry*, Massachusetts Institute of Technology, **Ian McIntosh**, University of York, and **Erxiao Wang**, University of Texas at Austin (1006-53-119)
- 10:00AM *The Geometry of the Smallest Circle Enclosing a Finite Set of Points*.
▶ (229)
Lance D. Drager*, Texas Tech University, Department of Math and Stat., **Jeffery M. Lee**, Texas Tech University, Dept. of Math and Stat., and **Clyde F. Martin**, Texas Tech University, Department of Math and Stat. (1006-51-186)
- 10:30AM *Witten deformation and index of Dirac operators*.
(230)
Igor Prokhorenkov* and **Ken Richardson**, Texas Christian University (1006-58-13)
- 11:00AM Discussion

Special Session on Classical and Differential Galois Theory, IV

8:30 AM – 11:15 AM **Room 114, Mathematics and Statistics Building**

Organizers: **Lourdes Juan**, Texas Tech University
Arne Ledet, Texas Tech University
Andy R. Magid, University of Oklahoma

- 8:30AM *Generic Picard-Vessiot extensions and generic equations*.
(231)
Lourdes Juan*, Texas Tech University, and **Andy Magid**, University of Oklahoma (1006-12-200)
- 9:00AM *Regular realizations of p -groups*. Preliminary report.
(232)
John L. Hammond, University of Texas at Austin (1006-12-141)
- 9:30AM *Cyclic Algebras over p -adic Curves*.
(233)
David J Saltman, University of Texas at Austin (1006-16-161)
- 10:30AM *Galois theory of parameterized differential equations and linear differential algebraic groups*.
(234)
Phyllis J Cassidy, The City College of New York City, and **Michael F Singer***, North Carolina State university (1006-12-58)

Special Session on Topology of Dynamical Systems, IV

8:30 AM – 11:20 AM **Room 109, Mathematics and Statistics Building**

Organizer: **Brian Raines**, Baylor University

- 8:30AM Discussion
- 9:00AM Discussion
- 9:30AM *The structure of R -actions*. Preliminary report.
▶ (235)
Rolf Suabedissen, University of Oxford, UK (1006-54-154)
- 10:00AM *Chainability and Hemmingsen's theorem*.
(236)
Paul Bankston*, Marquette University, **Brian Raines**, Baylor University, and **Wim Ruitenburg**, Marquette University (1006-54-70)
- 10:30AM *Siegel Disks Whose Boundaries Have Only Two Complementary Domains*.
(237)
James T Rogers, Jr., Tulane University (1006-37-31)

- 11:00AM *Inverse limits applied to a Cash-in-advance model from economics*.
(238)
Judy A Kennedy*, **David R Stockman**, University of Delaware, and **James A Yorke**, University of Maryland (1006-37-129)

Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models, IV

9:00 AM – 10:20 AM **Room 110, Mass Communications Building**

Organizers: **Linda J. S. Allen**, Texas Tech University
Sophia Ruey-Jen Jang, University of Louisiana at Lafayette
Lih-Ing W. Roeger, Texas Tech University

- 9:00AM *The impact of isolation on population growth and epidemic propagation*.
▶ (239)
Fabio Augusto Milner*, Department of Mathematics, Purdue University, and **Daniel Maxin**, Department of Mathematics, Purdue University (1006-92-130)
- 9:30AM *A Discrete SIS-Model for a Vector-Transmitted Disease*. Preliminary report.
▶ (240)
K. W. Blayneh, Florida A&M University (1006-37-224)
- 10:00AM *A class of nonstandard symplectic discretization methods for Lotka-Volterra system*. Preliminary report.
(241)
Lih-Ing Wu Roeger, Texas Tech University (1006-65-54)

Special Session on Discrete Groups, Homogeneous Spaces, Rigidity, IV

9:00 AM – 11:20 AM **Room 014, Mathematics and Statistics Building**

Organizers: **Alex Gorodnik**, University of Michigan, Ann Arbor
Hee Oh, California Institute of Technology
Nicolas Monod, University of Chicago

- 9:00AM *Asymptotic exponents and Ramanujan graphs*.
▶ (242)
Preliminary report.
Rostislav Grigorchuk, Texas A&M University (1006-20-100)
- 10:00AM *Divergent torus orbits in homogeneous spaces of rational rank two*.
(243)
Pralay Chatterjee*, Department of Maths, Rice University, and **Dave Witte Morris**, Department of Mathematics and Computer Science, University of Lethbridge (1006-00-121)
- 10:30AM *Weakly hyperbolic actions of Kazhdan groups on tori*.
(244)
Benjamin I Schmidt, University of Michigan (1006-37-83)
- 11:00AM *Multiple mixing of non-commuting automorphisms*.
(245)
Preliminary report.
Alexander Gorodnik, California Institute of Technology (1006-37-118)

Special Session on Partial Differential Equation and Its Application in Biomedical Study, IV

9:00 AM – 10:45 AM **Room 109, Mass Communications Building**

Organizers: **Jay R. Walton**, Texas A&M University

Padmanabhan Seshaiyer, Texas Tech University

Akif Ibragimov, Texas Tech University

9:00AM (246) *On the Existence of Traveling Wave Solutions for a Parabolic-Hyperbolic System Arising from a Size Dependent Population Model.*

A I Ibragimov, Texas Tech University, and **J R Walton***, Texas A&M University (1006-35-128)

10:00AM (247) *Simulation and Modeling in Biological Systems (Problem Discussion).*

Akif Ibragimov, Texas Tech University (1006-92-217)

Special Session on Invariants of Links and 3-Manifolds, III

9:00 AM – 11:20 AM **Room 111, Mathematics and Statistics Building**

Organizers: **Mieczyslaw Krzysztof Dabkowski**, University of Texas at Dallas
Razvan Gelca, Texas Tech University
Jozef Henryk Przytycki, George Washington University

9:00AM (248) *The Alexander polynomial and knot homologies.*
Charles Frohman*, The University of Iowa, and **Oliver Dasbach**, Louisiana State University (1006-57-172)

9:30AM (249) *The Noncommutative A-polynomial of Torus Knots.* Preliminary report.
Kristen Sellke, The University of Iowa (1006-57-170)

10:00AM (250) *Notes on the Kauffman bracket skein module of handlebodies.*
Fumikazu Nagasato, Department of Mathematics, Tokyo Institute of Technology, Japan (From April, 1st) (1006-51-146)

10:30AM (251) *Spanning Trees and Khovanov Homology.*
Abhijit Champanerkar*, University of South Alabama, **Ilya Kofman***, Barnard College, Columbia University, and **Oleg Viro**, Uppsala University (1006-57-117)

11:00AM (252) *On Kauffman's spanning tree expansion of the Alexander Polynomial.* Preliminary report.
Oliver Dasbach*, LSU, and **Charles Frohman**, University of Iowa (1006-57-256)

Special Session on Real Algebraic Geometry, IV

9:20 AM – 10:30 AM **Room 010, Mathematics and Statistics Building**

Organizers: **Anatoly Korchagin**, Texas Tech University
David Weinberg, Texas Tech University

9:20AM (253) *Rigid isotopies of real y -trinomial curves.* Preliminary report.
Victor I. Zvonilov, Syktyvkar State University (1006-14-40)

10:00AM (254) *The classification of M -curves of bidegree $(d, 3)$ with $d \geq 2$ on the torus.* Preliminary report.
Lina M. Williams* and **Anatoly B. Korchagin**, Texas Tech University (1006-14-213)

Susan J. Friedlander
Associate Secretary
Chicago, Illinois