
Program of the Sessions

Denton, Texas, May 19-22, 1999

Wednesday, May 19

Meeting Registration

3:00 PM – 6:00 PM Lyceum Lobby, University Union

Exhibits and Book Sale

3:00 PM – 6:00 PM Silver Eagle Suites, University Union

Opening Ceremonies

7:00 PM – 7:30 PM Lyceum, University Union

Erdos Memorial Lecture

7:30 PM – 8:30 PM Lyceum, University Union

- ▶ (1) *Paul Erdős and his favorite problems in number theory.*
Ronald L. Graham, AT&T Labs (944-11-417)

Gala Reception

8:30 PM – 10:30 PM Golden Eagle Suite, University Union

Thursday, May 20

Meeting Registration

8:00 AM – 4:00 PM Lyceum Lobby, University Union

Exhibits and Book Sale

8:00 AM – 5:00 PM Silver Eagle Suites, University Union

Special Session on Stochastic Systems and Control, I

8:30 AM – 10:20 AM Room 409, University Union

Organizers: Daniel Hernandez-Hernandez,
CINVESTAV

Onesimo Hernandez-Lerma,
CINVESTAV

Guillermo Ferreyra, Louisiana State
University

- 8:30AM (2) *Recent progress in characterization theorems in white noise analysis.* Preliminary report.
Hui-Hsiung Kuo*, Louisiana State University,
Nobuhiro Asai, Nagoya University, and Izumi Kubo, Hiroshima University (944-60-147)
- 9:30AM (3) *Markov control processes with average cost criteria.*
Onesimo Hernandez-Lerma, CINVESTAV (944-93-143)
- 10:00AM (4) *Stochastic Approach to Estimation Problems for Some Differential Equations.*
Pao-Liu Chow, Wayne State University (944-60-109)

Special Session on Functional Analysis and Its Applications, I

8:30 AM – 10:20 AM Room 210, Wooten Hall

Organizers: S. Perez-Esteva, UNAM

Josefina Alvarez, University of New Mexico

- 8:30AM (5) *On Matrix Transformations on some Sequence Spaces.* Preliminary report.
Lourdes Palacios*, Universidad Autonoma Metropolitana - Universidad Nacional Autonoma de Mexico, Hugo Arizmendi and Angel Carrillo, Instituto de Matematicas, Universidad Nacional Autonoma de Mexico (944-46-31)
- 9:00AM (6) *Every Reasonably Sized Matrix Group is a Subgroup of S_∞ .*
▶ Robert R. Kallman, University of North Texas (944-46-253)
- 9:30AM (7) *On the axiomatics of joint spectra.* Preliminary report.
Antoni Wawrzyńczyk, Universidad Autónoma Metropolitana - Iztapalapa (944-46-82)
- 10:00AM (8) *Divergence-free multiwavelets.* Preliminary report.
Maria C. Pereyra*, University of New Mexico, and Joseph D. Lakey, New Mexico State University (944-41-323)

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 20, 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.

Special Session on Continuum Theory (in honor of the 60th birthday of Professor Sam B. Nadler Jr.), I

8:30 AM – 10:20 AM Room 117, Wooten Hall

Organizers: **Wayne Lewis**, Texas Tech University
Sergio Macias, UNAM
Alejandro Illanes, UNAM

- 8:30AM (9) *The mathematical work of Professor Sam B. Nadler Jr.*
Alejandro Illanes, Universidad Nacional Autonoma de Mexico (944-54-325)
- 9:30AM (10) *Bumping Boundaries Outside Continua.*
Eric L. McDowell* and **B. E. Wilder**, Berry College (944-54-348)
- 10:00AM (11) *Dendroids, digraphs and posets.*
Victor Neumann-Lara, Instituto de Matematicas, UNAM (944-54-320)

Special Session on Differential Equations, Nonlinear Analysis, and Numerical Solutions to PDEs, I

8:30 AM – 10:20 AM Room 413, University Union

Organizers: **John W. Neuberger**, University of North Texas
Alfredo C. Nicolas, UAM

- 8:30AM (12) *A Damped Conservation Law for the Energy Spectrum in Turbulence Theory.*
Ciprian I. Foias*, Indiana University, and **John W. Neuberger**, University of North Texas (944-76-67)
- 9:00AM (13) *Generalized Fourier transform for Schroedinger operators with potentials of order zero.*
Shmuel Agmon, The Hebrew University of Jerusalem, **Jaime Cruz-Sampedro***, UDLA-P, and **Ira W. Herbst**, University of Virginia (944-35-13)
- 9:30AM (14) *Morse index and Newton's method for solutions of nonlinear elliptic PDE.* Preliminary report.
John M. Neuberger, NAU (944-35-14)
- 10:00AM (15) *The Ginzburg-Landau Functional on a Rectangle with Holes.* Preliminary report.
Robert J. Renka* and **John W. Neuberger**, University of North Texas (944-65-112)

Special Session on Algebraic Geometry and Commutative Algebra, I

8:30 AM – 10:30 AM Room 417, University Union

Organizers: **Javier Elizondo**, UNAM
Xavier Gomez-Mont, CIMAT
Alberto Corso, Michigan State University
David A. Jorgensen, University of Texas at Arlington

- 8:30AM (16) *On systems of binomials in toric varieties.*
Shalom Eliahou, Université du Littoral, CALAIS Cédex, France, and **Rafael H. Villarreal***, CINVESTAV-IPN, México (944-13-140)
- 9:00AM (17) *Associated Primes of Toric Initial Ideals.*
Rekha R. Thomas*, Texas A&M University, and **Serkan Hosten**, George Mason University (944-13-311)
- 9:30AM (18) *Noether normalizations of some subrings of graphs.* Preliminary report.
Adrián Alcántar, ESFM-IPN, México (944-13-180)
- 10:00AM (19) *Integral closure, conductors and direct summands.*
Daniel Katz, University of Kansas (944-13-302)

Special Session on Geometric and Symbolic Dynamical Systems, I

8:30 AM – 10:20 AM Room 255, Eagle Student Services Center

Organizers: **Luca Q. Zamboni**, University of North Texas
Edgardo Ugaldé, University of San Luis Potosi

- 8:30AM (20) *Generalization of the Siegel integral formula and asymptotics for length spectra of quadratic differentials.*
William A. Veech, Rice University (944-99-346)
- 9:30AM (21) *Poisson Statistics of return times.* Preliminary report.
Benoît Saussol, Instituto Superior Tecnico (944-58-54)
- 10:00AM (22) *Return times for minimal sets.* Preliminary report.
Sandro Vaienti, Centre de Physique Theorique (944-28-349)

Special Session on Low Dimensional Topology, I

8:30 AM – 10:20 AM Room 212, Wooten Hall

Organizers: **Mark W. Brittenham**, University of North Texas
Francisco Gonzalez Acuna, IM-UNAM
Luis Valdez-Sanchez, University of Texas at El Paso

- 8:30AM (23) *Minimal Volume Maximal Cusps in Hyperbolic 3-Manifolds.*
Colin Adams*, Williams College, **David Biddle**, SUNY-Binghamton, **Carol Gwosdz**, University of Dallas, **Kathy Paur**, MIT, and **Scott Reynolds**, Williams College (944-57-247)
- 9:00AM (24) *Genus two 3-manifolds are built from handle number one pieces.*
Eric D. Sedgwick, Oklahoma State University (944-57-277)
- 9:30AM (25) *Quasi-Fuchsian surfaces of arbitrarily high genus.* Preliminary report.
Elizabeth Finkelstein, Hunter College (CUNY) (944-57-363)
- 10:00AM (26) *The geometry of R-covered foliations.* Preliminary report.
Danny C. Calegari, UC Berkeley (944-57-42)

Special Session on Stochastic Processes, I

8:30 AM – 10:20 AM Room 118, Wooten Hall

Organizers: **Frederi G. Viens**, University of North Texas
Jorge A. Leon, CINVESTAV
Juan Ruiz de Chavez, UAM

- 8:30AM (27) *Stationary and self-similar processes driven by Levy processes.*
Victor Perez Abreu, CIMAT (944-60-286)
- 9:00AM (28) *Construction of the Cauchy principal value (CPV) .*
Maria Emilia Caballero*, IMATE-UNAM, and **Jean Bertoin**, Laboratoire de Probabilites (944-60-116)
- 9:30AM (29) *Some Laws of the Iterated Logarithm for the Generalized Domain of a Gaussian law.*
Steven J. Sepanski, Saginaw Valley State University (944-60-115)
- 10:00AM (30) *The exit time of Brownian motion from the interior of a parabola.*
Rodrigo Banuelos, Purdue University, **R. Dante DeBlassie***, Texas A&M University, and **Robert Smits**, Syracuse University (944-60-142)

Special Session on Ring Theory, I

- 8:30 AM – 10:20 AM Room 418, University Union
- Organizers: **Carlos Signoret-Poillon**, UNAM-UAM
Sergio Lopez-Permouth, Ohio University
Ricardo Alfaro, University of Michigan-Flint
- 8:30AM *Equations in modules and chain conditions.*
 (31) Preliminary report.
John Dauns, Tulane University (944-16-234)
- 9:00AM *Preinjective modules and finite representation type of Artinian rings.*
 (32) **Nguyen V. Dung**, Ohio University (944-16-250)
- 9:30AM *π -regularity of band graded rings, Munn rings, and inverse semigroup rings.*
 (33) **Hema Gopalakrishnan**, Texas A&M University (944-16-225)
- 10:00AM *On FI-Extending Modules and Rings.* Preliminary report.
 (34) **Gary F. Birkenmeier**, University of Southwestern Louisiana, **Bruno J. Mueller**, McMaster University, and **S. Tariq Rizvi***, The Ohio State University (944-16-377)

Special Session on Noncommutative Geometry, Quantum Groups, and Applications, I

- 8:30 AM – 10:20 AM Room 112, Wooten Hall
- Organizers: **Micho Durdevich**, UNAM
Hanna Ewa Makaruk, Los Alamos National Laboratory
Robert M. Owczarek, Los Alamos National Laboratory
- 8:30AM *Non-Commutative Geometry and Twists.*
 (35) **Arthur M. Jaffe**, Harvard University (944-51-238)
- 9:30AM *Quantum Symmetry in Transverse Differential Geometry.*
 (36) **Alain Connes** and **Henri Moscovici***, The Ohio State University (944-53-344)

Special Session on Combinatorics and Combinatorial Geometry, I

- 8:30 AM – 10:20 AM Room 213, Wooten Hall
- Organizers: **Jorge Urrutia**, IMATE-UNAM and University of Ottawa
Włodzimierz Kuperberg, Auburn University
- 8:30AM *Equality case in sums of distinct congruence classes.* Preliminary report.
 (37) **Llano-Perez Bernardo**, Universidad Nacional Autónoma de México (944-05-392)
- 9:10AM *On the Existence of Trichromatic Triangles among 3-edge Colorings of K_n .* Preliminary report.
 (38) **Bernardo M. Abrego**, **Jozsef Beck** and **Silvia Fernandez-Merchant***, Rutgers University (944-05-299)
- 9:50AM *Optimal Floodlight Illumination of Stages.*
 (39) **Felipe Contreras***, University of Ottawa, **Jurek Czyzowicz**, Université du Québec à Hull, **Eduardo Rivera-Campo**, Universidad Autónoma Metropolitana, and **Jorge Urrutia**, University of Ottawa (944-05-386)

Special Session on Smooth Dynamical Systems, I

- 8:30 AM – 10:20 AM Room 116, Wooten Hall
- Organizers: **David A. Delatte**, University of North Texas
Dan Mauldin, University of North Texas
Jose Seade, UNAM
Mariusz Urbanski, University of North Texas
Alberto Verjovsky, UNAM
- 8:30AM Talk # 20 by **William Veech** is held jointly with this session in Room 255, ESSC.
- 9:30AM *Hyperbolicity and Astigmatism in High-dimensional Focusing Billiards.*
 (40) **Leonid A. Bunimovich**, Georgia Tech (944-58-137)
- 10:00AM *Chaotic billiard dynamics on surfaces of constant curvature.*
 (41) **Eugene Gutkin**, USC (944-58-269)

Special Session on Algebraic Topology, I

- 8:30 AM – 10:20 AM Room 215, Wooten Hall
- Organizers: **Frederick R. Cohen**, University of Rochester
Samuel Gitler, University of Rochester
Carlos Prieto, UNAM
- 8:30AM *New Techniques for Understanding the Cohomology of Simple Groups.* Preliminary report.
 (42) **R. James Milgram**, Stanford University (944-55-220)
- 9:30AM *Isogenies and the $K(2)$ -local sphere.* Preliminary report.
 (43) **Charles W. Rezk**, Northwestern University (944-55-340)
- 10:00AM *An Application of The Thomified Eilenberg-Moore spectral sequence.* Preliminary report.
 (44) **Douglas C. Ravenel**, University of Rochester (944-55-284)

Special Session on Differential Geometry and Geodesics, I

- 8:30 AM – 10:20 AM Room 214, Wooten Hall
- Organizers: **Phillip E. Parker**, Wichita State University
Lilia Del Riego, Univ. Auto. de San Luis Potosi
- 8:30AM *Null generators of Cauchy horizons.*
 (45) **John K. Beem***, University of Missouri-Columbia, and **Andrzej Królak**, Polish Academy of Sciences (944-53-15)
- 9:00AM Discussion.
- 9:30AM *Particle Geodesics and Spectra in the Spacetime Tangent Bundle.*
 (46) **Howard E. Brandt**, Army Research Laboratory (944-53-33)
- 10:00AM *Causality-generated topology for future boundaries of spacetimes.* Preliminary report.
 (47) **Steven G. Harris**, Saint Louis University (944-53-267)

Special Session on Representation Theory of Algebras, I

- 9:00 AM – 10:20 AM Room 411, University Union
- Organizers: **Jose A. de la Pena**, UNAM
Christof Geiss, UNAM

- Birge Huisgen-Zimmerman**, University of California at Santa Barbara
- 9:00AM *The algebras with discrete derived categories.*
(48) Preliminary report.
Dieter Vossieck, Instituto de Matemáticas, UNAM (944-16-319)
- 10:00AM *Derived-tame algebras.* Preliminary report.
(49) **Jose A. de la Pena**, UNAM (944-16-350)

Invited Address

- 11:00 AM – NOON Lyceum, University Union
- (50) *Parametrization of Modules.*
Raymundo Bautista, Instituto de Matemáticas, UNAM (944-16-318)

Special Session on Noncommutative Geometry, Quantum Groups, and Applications, II

- 1:00 PM – 4:30 PM Room 112, Wooten Hall
- Organizers: **Micho Durdevich**, UNAM
Hanna Ewa Makaruk, Los Alamos National Laboratory
Robert M. Owczarek, Los Alamos National Laboratory
- 1:00PM *Classification of Integration Patterns on \mathbb{R}^{11} .*
(51) **Oscar A. Sanchez-Valenzuela***, CIMAT, and **Carles Victoria-Monge**, UPC-Barcelona (944-58-149)
- 2:00PM *Lattice gauge field theory and skein modules.*
(52) **Douglas Bullock**, Boise State University, **Charles Frohman**, University of Iowa, and **Joanna Kania-Bartoszyńska***, Boise State University (944-81-262)
- 2:50PM *Homotopy quantization of skein modules.*
(53) **Jozef H. Przytycki**, GWU (944-57-309)
- 3:40PM *Exotic traces.*
(54) **Mariusz Wodzicki**, University of California at Berkeley (944-47-342)

Special Session on Smooth Dynamical Systems, II

- 1:00 PM – 4:20 PM Room 116, Wooten Hall
- Organizers: **David A. Delatte**, University of North Texas
Dan Mauldin, University of North Texas
Jose Seade, UNAM
Mariusz Urbanski, University of North Texas
Alberto Verjovsky, UNAM
- 1:00PM *Natural measures on the unstable and invariant manifolds in open billiards.* Preliminary report.
(55) **Peter A. Richardson**, University of North Texas (944-58-407)
- 1:30PM *Complex Schottky groups and Limit Sets.*
▶ (56) Preliminary report.
Guillermo Sienra, UNAM (944-58-288)
- 2:00PM *Some holomorphic dynamical systems determined by covering spaces.* Preliminary report.
(57) **Kevin M. Pilgrim**, Univ. of Missouri, Rolla (944-58-20)
- 2:30PM *Schottky groups on higher dimensional complex projective spaces.*
(58) **Jose A. Seade*** and **Alberto S. Verjovsky**, Instituto de Matemáticas, UNAM (944-32-102)
- 3:00PM *Higher dimensional complex Kleinian groups via twistor theory.*
(59) **Alberto S. Verjovsky*** and **Jose A. Seade**, Instituto de Matemáticas, UNAM (944-32-103)

- 3:30PM *Some connectedness properties of Julia sets.*
(60) **Irving N. Baker**, Imperial College UK, and **Patricia Dominguez***, Universidad Autonoma de Puebla, Mx. (944-30-95)
- 4:00PM *Distribution of return times for rational maps.*
(61) **Nicolai T. A. Haydn**, University of Southern California (944-58-289)

Special Session on Stochastic Systems and Control, II

- 2:00 PM – 4:20 PM Room 409, University Union
- Organizers: **Daniel Hernandez-Hernandez**, CINVESTAV
Onesimo Hernandez-Lerma, CINVESTAV
Guillermo Ferreyra, Louisiana State University
- 2:00PM *Reflected Diffusions in Polyhedral Domains and a Model of Generalized Processor Sharing.* Preliminary report.
(62) **Kavita Ramanan*** and **Martin Reiman**, Bell Laboratories, Lucent Technologies (944-60-322)
- 2:30PM *Sample-Path Average Cost Optimality for Semi-Markov Control Processes on Borel Spaces: Unbounded Costs and Mean Holding Times.*
(63) **Oscar Vega-Amaya*** and **Fernando Luque-Vásquez**, Universidad de Sonora (944-93-170)
- 3:00PM *Discrete-time stochastic control problems in the gambling industry.* Preliminary report.
▶ (64) **W. George Cochran**, Louisiana State Univ. (944-93-359)
- 3:30PM *New Estimates of Stability in some Queues and Insurance Risk Models.*
(65) **Evgueni Gordienko**, UAM-I (944-93-308)
- 4:00PM *Adaptive Policies for Discrete-Time Markov Control Processes with Unbounded Costs under Average Criterion.*
(66) **Adolfo Minjárez-Sosa**, Universidad de Sonora (944-93-169)

Special Session on Functional Analysis and Its Applications, II

- 2:00 PM – 3:50 PM Room 210, Wooten Hall
- Organizers: **S. Perez-Esteva**, UNAM
Josefina Alvarez, University of New Mexico
- 2:00PM *Variational Datta Fitting.*
(67) **Jose L. Martinez Morales**, Instituto de Matemáticas, UNAM (944-65-08)
- 2:30PM *Existence of extremals for some discontinuous functionals of geometric function theory.* Preliminary report.
(68) **Michael D. O'Neill*** and **Robert E. Thurman**, UTEP (944-30-312)
- 3:00PM *Compactness in L^p -subspaces of Holomorphic Functions.*
(69) **José A. Canavati** and **Fernando Galaz-Fontes***, Centro de Investigación en Matemáticas (944-46-161)
- 3:30PM *Some Characterizations of Q-algebras.*
(70) **Hugo Arizmendi***, Instituto de Matemáticas, Universidad Nacional Autónoma de México, and **Vesko Valov**, University of Swaziland (944-46-45)

Special Session on Continuum Theory (in honor of the 60th birthday of Professor Sam B. Nadler Jr.), II

2:00 PM – 4:20 PM Room 117, Wooten Hall

Organizers: **Wayne Lewis**, Texas Tech University
Sergio Macias, UNAM
Alejandro Illanes, UNAM

- 2:00PM *The Life and Times of Sam B. Nadler Jr.*
 ▶ (71) **Thelma R. West**, University of Southwestern Louisiana (944-01-193)
- 2:30PM *Problems on hyperspace retractions.*
 (72) **Janusz J. Charatonik*** and **Włodzimierz J. Charatonik**, Universidad Nacional Autonoma de Mexico (944-54-177)
- 3:00PM *Inverse Limits on $[0, 1]$ Using Piecewise Linear Unimodal Bonding Maps, II.* Preliminary report.
 (73) **W. T. Ingram**, University of Missouri - Rolla (944-54-174)
- 3:30PM *A degree of non-local connectedness.*
 (74) **Janusz J. Charatonik** and **Włodzimierz J. Charatonik***, Universidad Nacional Autonoma de Mexico (944-54-176)
- 4:00PM *Expansive Homeomorphisms and Invariant Cantor Sets.* Preliminary report.
 (75) **Christopher G. Mouron**, University of Delaware (944-54-283)

Special Session on Differential Equations, Nonlinear Analysis, and Numerical Solutions to PDEs, II

2:00 PM – 4:20 PM Room 413, University Union

Organizers: **John W. Neuberger**, University of North Texas
Alfredo C. Nicolas, UAM

- 2:00PM *An inverse function theorem and applications.* Preliminary report.
 (76) **Alfonso Castro**, University of Texas at San Antonio. (944-35-34)
- 2:30PM *Hidden Ground States.*
 (77) **Henry A. Warchall***, University of North Texas, and **Fred B. Weissler**, Universite Paris XIII (944-35-65)
- 3:00PM *Remarks on Blow-up in Nonlinear Wave and Kirchhoff Equations.* Preliminary report.
 (78) **Jorge A. Esquivel-Avila**, Universidad Autonoma Metropolitana (944-35-30)
- 3:30PM *On the construction of the couple coefficients for the two block AKNS system.*
 ▶ (79) **Gulmaro Corona Corona**, UAMA, Depto de Ciencias Basicas (944-35-07)
- 4:00PM *Aubry-Mather theory for PDE and pseudodifferential operators.*
 (80) **Rafael de la Llave**, Univ. of Texas at Austin (944-35-129)

Special Session on Algebraic Geometry and Commutative Algebra, II

2:00 PM – 4:30 PM Room 417, University Union

Organizers: **Javier Elizondo**, UNAM
Xavier Gomez-Mont, CIMAT
Alberto Corso, Michigan State University
David A. Jorgensen, University of Texas at Arlington

- 2:00PM *On low rank algebraic vector bundles.*
 (81) **N. Mohan Kumar**, **Chris Peterson***, Washington University, and **A. Prabhakar Rao**, University of Missouri - St. Louis (944-14-341)

- 2:30PM *Depth for complexes, and intersection theorems.*
 (82) **Srikanth B. Iyengar**, University of Missouri (944-13-159)
- 3:00PM *Refinements of a Conjecture of Nagata.* Preliminary report.
 (83) **Brian Harbourne**, University of Nebraska-Lincoln (944-14-292)
- 3:40PM *On the torsion freeness of symmetric powers of ideals.*
 (84) **Alexandre Tchernev**, University of Missouri - Columbia (944-13-330)
- 4:10PM *Fat point ideals for 8 or fewer points of P^2 .* Preliminary report.
 (85) **Brian Harbourne**, University of Nebraska, **Sandeep Holay**, Southeast Community College, and **Stephanie Fitchett***, Duke University (944-14-313)

Special Session on Geometric and Symbolic Dynamical Systems, II

2:00 PM – 4:20 PM Room 115, Wooten Hall

Organizers: **Luca Q. Zamboni**, University of North Texas
Edgardo Ugalde, University of San Luis Potosi

- 2:00PM *On Two-Sided Infinite Fixed Points of Morphisms and the Equation $h(xy) = yx$ in finite words.*
 (86) **Jeffrey Shallit** and **Ming-wei Wang***, University of Waterloo (944-68-97)
- 2:30PM *About Sturmian words and morphisms.*
 (87) **Adel Guerziz**, University of Picardie (944-05-397)
- 3:00PM *Algebraic presentation of good finitary isomorphisms of Markov shifts.* Preliminary report.
 (88) **Ricardo Gomez**, University of Maryland (944-58-358)
- 3:30PM *Automorphisms of Graphs and Surfaces.*
 (89) **Jerome E. Los**, INLN (Nice, France), and **Zbigniew H. Nitecki***, Tufts University (944-58-40)
- 4:00PM *Factors of Markov Subshifts.*
 (90) **Anthony N. Quas*** and **Paul B. Trow**, University of Memphis (944-58-424)

Special Session on Low Dimensional Topology, II

2:00 PM – 4:20 PM Room 212, Wooten Hall

Organizers: **Mark W. Brittenham**, University of North Texas
Francisco Gonzalez Acuna, IM-UNAM
Luis Valdez-Sanchez, University of Texas at El Paso

- 2:00PM *Comparing Heegaard and JSJ structures of orientable 3-manifolds.*
 (91) **Martin G. Scharlemann***, University of California, Santa Barbara, and **Jennifer Schultens**, Emory University (944-57-205)
- 2:30PM *Length multiplicities of hyperbolic 3-manifolds.*
 (92) **Joseph D. Masters**, University of Texas- Austin (944-57-139)
- 3:00PM *Abelian subgroup separability of Haken 3-manifolds.* Preliminary report.
 (93) **Emily Hamilton**, Emory University (944-57-287)
- 3:30PM *Normal forms of generating pairs for Fuchsian and related groups.*
 (94) **Arturo F. Ramirez***, CIMAT, and **Francisco González-Acuña**, IMATE, UNAM (944-20-194)
- 4:00PM *Seifert fibered surgeries on hyperbolic knots.* Preliminary report.
 (95) **Cameron McA. Gordon*** and **John Luecke**, University of Texas at Austin (944-57-406)

Special Session on Stochastic Processes, II

2:00 PM – 4:20 PM Room 118, Wooten Hall

Organizers: **Frederi G. Viens**, University of North Texas**Jorge A. Leon**, CINVESTAV
Juan Ruiz de Chavez, UAM

- 2:00PM (96) *Monte Carlo Methods for Stochastic Differential Equations*. Preliminary report.
Philip Protter, Purdue University (944-60-155)
- 2:30PM (97) *Self-Normalized Martingales: Exponential Inequalities and Moments*. Preliminary report.
Victor H. de la Peña*, Columbia University, **Michael J. Klass**, UC Berkeley, and **Tze L. Lai**, Stanford University (944-60-166)
- 3:00PM (98) *On Convergence Theorems for Quantiles*.
Jose M. Gonzalez-Barrios* and **Raul Rueda**, IIMAS, UNAM (944-60-27)
- 4:00PM (99) *Conditional laws and dominating points*.
Ana Meda, Facultad de Ciencias, UNAM (944-60-120)

Special Session on Ring Theory, II

2:00 PM – 4:20 PM Room 418, University Union

Organizers: **Carlos Signoret-Poillon**, UNAM-UAM
Sergio Lopez-Permouth, Ohio University**Ricardo Alfaro**, University of Michigan-Flint

- 2:00PM (100) *On the lattices of natural and conatural classes in R -mod*. Preliminary report.
Alejandro Alvarado*, **Hugo Alberto Rincon-Mejia** and **Jose Rios**, Universidad Nacional Autonoma de Mexico (944-16-96)
- 2:30PM (101) *On Linear Filters and Torsion Theories in $\sigma[M]$* . Preliminary report.
Saul Diaz-Alvarado*, Universidad Autonoma del Estado de Mexico, and **Jose Rios**, Instituto de Matematicas, UNAM (944-16-184)
- 3:00PM (102) *The lattice of pre-natural classes of modules*.
Yiqiang Zhou, Memorial University of Newfoundland (944-16-186)
- 3:30PM (103) *The lattice structure of preradicals*. Preliminary report.
Francisco Raggi*, Instituto de Matematicas, UNAM, **Hugo Rincon**, Facultad de Ciencias, UNAM, **Jose Rios**, Instituto de Matematicas, UNAM, and **Carlos Signoret**, Depto. de Matematicas, UAM-I (944-16-315)
- 4:00PM (104) *On the nilpotence of the τ -closed prime radical in rings with τ -Krull dimension*. Preliminary report.
Toma Albu, University of Bucharest, **Günter R. Krause***, University of Manitoba, and **Mark L. Teply**, University of Wisconsin-Milwaukee (944-16-229)

Special Session on Combinatorics and Combinatorial Geometry, II

2:00 PM – 3:50 PM Room 213, Wooten Hall

Organizers: **Jorge Urrutia**, IMATE-UNAM and University of Ottawa**Wlodzimirz Kuperberg**, Auburn University

- 2:00PM (105) *Rigidity of Hamming spaces and Mastermind game*. Preliminary report.
Grigori A. Kabatianski, Texas A&M University (944-05-391)

2:40PM (106) *Algorithms to Tile the Infinite Grid with Finite Clusters*.**Mario Szegedy**, AT&T Research (944-51-260)3:20PM (107) *Packing 12, 13 and 19 equal circles in a circle*.
Ferenc Fodor, Auburn University (944-52-182)**Special Session on Algebraic Topology, II**

2:00 PM – 4:20 PM Room 215, Wooten Hall

Organizers: **Frederick R. Cohen**, University of Rochester**Samuel Gitler**, University of Rochester
Carlos Prieto, UNAM

- 2:00PM (108) *K theoretic Adams spectral sequence and the exponent of the stable homotopy groups of spheres*.
Jesus Gonzalez, CINVESTAV - IPN (944-55-80)
- 2:30PM (109) *Homotopy exponents of mod-2 Moore spaces*.
Stephen D. Theriault, University of Illinois at Chicago (944-55-343)
- 3:00PM (110) *From Representation Theory to Homotopy Groups*.
Donald M. Davis, Lehigh University (944-55-12)
- 3:30PM (111) *On Natural Coalgebra Decompositions of Tensor Algebras and Natural Decompositions of Loop Suspensions*.
Jie Wu*, University of Pennsylvania, and **Paul Selick**, University of Toronto (944-55-26)
- 4:00PM (112) *R-Quillen theorems*.
Calin Popescu, Université Catholique de Louvain (944-55-89)

Special Session on Complex Analysis, I

2:00 PM – 4:20 PM Room 111, Wooten Hall

Organizers: **E. Ramirez de Arellano**, CINVESTAV
John E. Fornæss, University of Michigan, Ann Arbor

- 2:00PM (113) *On equivalence of certain sufficient conditions for global regularity of the d -bar Neumann problem*. Preliminary report.
Emil J. Straube, Texas A&M University (944-32-356)
- 2:30PM (114) *Equivalence of Condition R and Existence of Global Smooth Linear/Solution Operators of the $\bar{\partial}$ -Equation on Smoothly Bounded Pseudoconvex Domains in C^n* .
Norberto Salinas, University of Kansas (944-47-185)
- 3:00PM (115) *Hypoellipticity on CR manifolds*.
Joseph J. Kohn, Princeton University (944-32-420)
- 3:30PM (116) *Polynomial hulls and an optimization problem*. Preliminary report.
Marshall A. Whittlesey, Texas A&M University (944-32-374)
- 4:00PM (117) *Bergman Space on Tube Domains and Commuting Toeplitz Operators*.
Nikolai Vasilevski and **Enrique Ramirez de Arellano***, CINVESTAV-IPN (944-32-191)

Special Session on Differential Geometry and Geodesics, II

2:00 PM – 4:20 PM Room 214, Wooten Hall

Organizers: **Phillip E. Parker**, Wichita State University**Lilia Del Riego**, Univ. Auto. de San Luis Potosi

- 2:00PM (118) *Volume Comparison on Pseudo-Riemannian Manifolds*.
Paul E. Ehrlich, University of Florida (944-53-24)
- 2:30PM Discussion.

- 3:00PM (119) *A Note on the pseudo-Riemannian Osserman problem.*
Maria E. Vazquez-Abal*, **Eduardo Garcia-Rio**, Univ. Santiago de Compostela (Spain), **Demir N. Kupeli**, Middle East Technical University (Turkey), and **Ramon Vazquez-Lorenzo**, Univ. Santiago de Compostela (Spain) (944-53-92)
- 3:30PM (120) *Geodesic completeness for semiRiemannian transverse structures on foliations.* Preliminary report.
Alberto Candel, California Institute of Technology, and **Raul Quiroga***, CINVESTAV-IPN (944-53-163)
- 4:00PM (121) *Functional Geodesics and Gravitational Fields.* Preliminary report.
Hernando Quevedo, Instituto de Ciencias Nucleares UNAM (944-83-413)

Special Session on Representation Theory of Algebras, II

2:30 PM – 4:20 PM Room 411, University Union

Organizers: **Jose A. de la Pena**, UNAM
Christof Geiss, UNAM
Birge Huisgen-Zimmerman, University of California at Santa Barbara

- 2:00PM (122) *Global dimension and characteristic independence.*
Edward L. Green, Virginia Tech University, **Oyvind Solberg**, University of Trondheim, Norway, and **Dan Zacharia***, Syracuse University (944-16-212)
- 2:30PM (123) *Brauer tree algebras and universal deformation rings.* Preliminary report.
Frauke M. Bleher*, Southern Illinois University, and **Ted Chinburg**, University of Pennsylvania (944-16-236)
- 3:00PM (124) *Gröbner Bases associated to bases of finite modules.* Preliminary report.
Maria A. Aviño* and **Luis D. Garcia**, Universidad Nacional Autonoma de Mexico (944-16-239)
- 3:30PM (125) *The Uniserial Geometry of Multiserial Algebras.*
Brian J. Jue, U.C. Santa Barbara (944-16-355)
- 4:00PM (126) *The Upper Annihilating Series of a Finite Endomorphism Ring.*
María Alicia Aviño and **Marcos Zyman***, Facultad de Ciencias, UNAM (944-16-393)

Invited Address

5:00 PM – 6:00 PM Lyceum, University Union

- ▶ (127) *Gradient systems in finite and infinite dimensions.*
Jack K. Hale, Georgia Institute of Technology (944-34-423)

Friday, May 21

Exhibits and Book Sale

8:00 AM – 5:00 PM Silver Eagle Suites, University Union

Meeting Registration

8:00 AM – 4:00 PM Lyceum Lobby, University Union

Special Session on Smooth Dynamical Systems, III

8:00 AM – 10:20 AM Room 116, Wooten Hall

Organizers: **David A. Delatte**, University of North Texas

Dan Mauldin, University of North Texas
Jose Seade, UNAM
Mariusz Urbanski, University of North Texas
Alberto Verjovsky, UNAM

- 8:00AM (128) *Hyperbolicity and KAM Bottles in Driven Lorentz Gas.* Preliminary report.
Maciej P. Wojtkowski, University of Arizona (944-58-389)
- 8:30AM (129) *Invariant manifolds associated to non-resonant subspaces.*
Rafael de la Llave, Univ. of Texas at Austin (944-58-131)
- 9:00AM (130) *Lagrangian flows: The dynamics of globally minimizing orbits.*
Gonzalo Contreras, CIMAT, **Jorge Delgado**, UFF-Brazil, and **Renato Iturriaga***, CIMAT (944-58-101)
- 9:30AM (131) *Lagrangian Graphs and Mañé's Critical Values.*
Gonzalo Contreras*, **Renato Iturriaga**, CIMAT, **Gabriel Paternain** and **Miguel Paternain**, CMAT-Uruguay (944-58-272)
- 10:00AM (132) *Finsler Metrics and Action Potentials.* Preliminary report.
Renato Iturriaga, CCIMAT, and **Hector Sanchez-Morgado***, Instituto de Matematicas. UNAM (944-58-93)

Special Session on Stochastic Systems and Control, III

8:30 AM – 10:20 AM Room 409, University Union

Organizers: **Daniel Hernandez-Hernandez**, CINVESTAV
Onesimo Hernandez-Lerma, CINVESTAV
Guillermo Ferreyra, Louisiana State University

- 8:30AM (133) *Recent Advances in Identification and Adaptive Control of Some Stochastic Systems.*
Bozenna Pasik-Duncan, University of Kansas (944-93-276)
- 9:30AM (134) *One HJB equation with nonlinear boundary conditions.* Preliminary report.
Angel Soriano, IMATE-UNAM (944-49-63)
- 10:00AM (135) *On the Value Function for Some Stochastic Control Problem.*
Jesus A. Pascal, Universidad del Zulia, Venezuela (944-93-219)

Special Session on Functional Analysis and Its Applications, III

8:30 AM – 10:20 AM Room 210, Wooten Hall

Organizers: **S. Perez-Esteva**, UNAM
Josefina Alvarez, University of New Mexico

- 8:30AM (136) *Some aspects of normal structure in Banach spaces.*
Helga Fetter* and **Berta Gamboa de Buen**, Centro de Investigación en Matemáticas (944-46-76)
- 9:00AM (137) *Completeness and regularity of inductive limits.* Preliminary report.
Carlos Bosch*, Instituto Tecnológico Autónomo de México and Washington State University, and **Jan Kucera**, Washington State University (944-46-111)
- 9:30AM (138) *Normed Barrelled Spaces.* Preliminary report.
Christopher E. Stuart, Eastern New Mexico University (944-46-64)

- 10:00AM *Polynomial convergence of sequences in Banach spaces.* (139)
Fernando Bombal, Universidad Complutense de Madrid, and **Maite Fernandez-Unzueta***, Centro de Investigacion en Matematicas (944-46-85)

Special Session on Continuum Theory (in honor of the 60th birthday of Professor Sam B. Nadler Jr.), III

8:30 AM – 10:20 AM Room 117, Wooten Hall

Organizers: **Wayne Lewis**, Texas Tech University
Sergio Macias, UNAM
Alejandro Illanes, UNAM

- 8:30AM *Local Connectedness and Unicoherence at Subcontinua.* Preliminary report.
Deborah Oliveros*, Instituto de Matemáticas, and **Isabel Puga**, Facultad de Ciencias U.N.A.M. (944-54-200)
- 9:00AM *Boundaries of preimages of Siegel disks of polynomials.* Preliminary report.
James T. Rogers Jr., Tulane University (944-58-135)
- 9:30AM *On semi-universal mappings.*
Escobedo Raúl, Instituto de Matematicas, UNAM (944-54-204)
- 10:00AM *On the Nonexistence of Almost Continuous Surjections between Certain Continua.*
Sam B. Nadler Jr., West Virginia University (944-54-162)

Special Session on Differential Equations, Nonlinear Analysis, and Numerical Solutions to PDEs, III

8:30 AM – 10:20 AM Room 413, University Union

Organizers: **John W. Neuberger**, University of North Texas
Alfredo C. Nicolas, UAM

- 8:30AM *Radial solutions to a Dirichlet problem arising in Astrophysics.* Preliminary report.
Alfonso Castro, The University of Texas at San Antonio, and **Victor Padron***, The University of Texas at San Antonio and Universidad de Los Andes, Merida, Venezuela (944-35-59)
- 9:00AM *Boundary Value Problems for Fourth Order Composite Partial Differential.* Preliminary report.
Francisco Castillo-Aranguren, Instituto Tecnológico y de Estudios Superiores de Monterrey, Campus (944-35-29)
- 9:30AM *Diffusion in Deformable Media.* Preliminary report.
R. E. Showalter, University of Texas (944-35-16)
- 10:00AM *Macro-hybrid mixed finite element schemes and penalty-duality algorithms.* Preliminary report.
Gonzalo Alduncin, Mexican Institute of Petroleum and Institute of Geophysics, UNAM (944-35-208)

Special Session on Algebraic Geometry and Commutative Algebra, III

8:30 AM – 10:30 AM Room 417, University Union

Organizers: **Javier Elizondo**, UNAM
Xavier Gomez-Mont, CIMAT
Alberto Corso, Michigan State University
David A. Jorgensen, University of Texas at Arlington

- 8:30AM *Gorenstein Modules.* Preliminary report.
Graham J. Leuschke, University of Nebraska (944-13-368)

- 9:00AM *Depth of symmetric algebras of certain ideals.* (149)
Mark R. Johnson, University of Arkansas (944-13-304)
- 9:30AM *On residually S_2 ideals.* Preliminary report.
Claudia Polini*, Hope College, and **Alberto Corso**, Michigan State University (944-13-151)
- 10:00AM *Strange summands of direct sums of copies of a module.* Preliminary report.
Roger A. Wiegand, University of Nebraska (944-13-314)

Special Session on Geometric and Symbolic Dynamical Systems, III

8:30 AM – 10:20 AM Room 115, Wooten Hall

Organizers: **Luca Q. Zamboni**, University of North Texas
Edgardo Ugalde, University of San Luis Potosi

- 8:30AM *Higher dimensional “solenoids” as bundles.* Preliminary report.
Robert F. Williams, The University of Texas at Austin (944-58-301)
- 9:00AM *Systems of rotations with two atoms.* Preliminary report.
Arek Goetz, Boston University (944-58-148)
- 9:30AM *Geometry and coding for billiards on surfaces of constant curvature.* Preliminary report.
Eugene Gutkin, USC (944-51-271)
- 10:00AM *An entropy estimate for infinite interval exchange transformations.* Preliminary report.
Frank Blume, John Brown University (944-28-17)

Special Session on Low Dimensional Topology, III

8:30 AM – 10:20 AM Room 212, Wooten Hall

Organizers: **Mark W. Brittenham**, University of North Texas
Francisco Gonzalez Acuna, IM-UNAM
Luis Valdez-Sanchez, University of Texas at El Paso

- 8:30AM *Positive diagrams for Seifert manifolds.* Preliminary report.
John Hempel, Rice University (944-57-373)
- 9:00AM *Bounded Degeneration of Tunnel Number.*
Martin G. Scharlemann, UCSB, and **Jennifer C. Schultens***, Emory University (944-57-293)
- 9:30AM *Incompressible surfaces and 1-bridge knots w.r.t. a torus.* Preliminary report.
Mario Eudave-Munoz, UCSB and UNAM (944-57-387)
- 10:00AM *Minimum energy polygonal knots.* Preliminary report.
Jonathan K. Simon* and **Joshua Tokle**, Univ. of Iowa (944-57-365)

Special Session on Stochastic Processes, III

8:30 AM – 10:20 AM Room 118, Wooten Hall

Organizers: **Frederi G. Viens**, University of North Texas
Jorge A. Leon, CINVESTAV
Juan Ruiz de Chavez, UAM

- 8:30AM *On Solutions of Stochastic Wave Equations.* Preliminary report.
Pao-Liu Chow, Wayne State University (944-60-108)

- 9:30AM (161) *Stochastic Viscosity Solutions for Nonlinear Stochastic Partial Differential Equations.*
Rainer Buckdahn, University of Brest, and **Jin Ma***, Purdue University (944-60-188)
- 10:00AM (162) *Ergodic Control for the Stochastic Navier-Stokes Equation.* Preliminary report.
P. Sundar*, Louisiana State University, and **S. S. Sritharan**, U.S. Navy (944-60-210)

- 8:30AM (170) *Symbolic Dynamics from Transverse Heteroclinic Intersections for Whiskered Tori.*
Clark Robinson, Northwestern University (944-70-403)
- 9:30AM (171) *Microswimming and the N body problem.*
Joaquin Delgado, UAM-Iztapalapa (944-70-405)
- 10:00AM (172) *Reducibility of linear quasiperiodic systems.*
Ruben Flores-Espinoza, Universidad de Sonora (944-70-398)

Special Session on Ring Theory, III

8:30 AM – 10:20 AM Room 418, University Union

Organizers: **Carlos Signoret-Poillon**, UNAM-UAM
Sergio Lopez-Permouth, Ohio University
Ricardo Alfaro, University of Michigan-Flint

- 8:30AM (163) *The Double Infinite Chain Condition for Posets With Applications to Rings and Modules.* Preliminary report.
Toma Albu, Ohio State University, **Gunter Krause**, University of Manitoba, and **Mark L. Teply***, University of Wisconsin-Milwaukee (944-16-295)
- 9:00AM (164) *Chain conditions on quotient finite (uniform) dimensional modules.* Preliminary report.
Toma Albu* and **S. Tariq Rizvi**, The Ohio State University (944-16-243)
- 9:30AM (165) *Quotient rings of algebras of functions and operators.*
S. K. Jain*, Ohio University, and **Ajit I. Singh**, University of Delhi (944-16-316)
- 10:00AM (166) *Iterated skew polynomial rings of quantum coordinate type.* Preliminary report.
Kenneth R. Goodearl, University of California (944-16-179)

Special Session on Noncommutative Geometry, Quantum Groups, and Applications, III

8:30 AM – 10:40 AM Room 112, Wooten Hall

Organizers: **Micho Durdevich**, UNAM
Hanna Ewa Makaruk, Los Alamos National Laboratory
Robert M. Owczarek, Los Alamos National Laboratory

- 8:30AM (167) *Quantum Classifying Spaces.*
Micho Durdevich, Institute of Mathematics, UNAM (944-58-296)
- 9:10AM (168) *Clifford bigebra as a quantum braided group.* Preliminary report.
Zbigniew Oziewicz, Universidad Nacional Autónoma de México, Facultad de Estudios Superiores Cuautitlán Izcalli, Estado de México (944-16-11)
- 10:00AM (169) *On the Topology of the Symmetry Group of the Standard Model.*
Miguel Socolovsky*, Institute of Nuclear Sciences, UNAM, and **Marcelo Aguilar**, Institute of Mathematics, UNAM (944-20-331)

Special Session on Nonlinear Models in Biology and Celestial Mechanics, I

8:30 AM – 10:20 AM Room 412, University Union

Organizers: **Ernesto Perez-Chavela**, UAM
Jorge X. Velasco-Hernandez, UAM
Mary E. Parrott, University of South Florida
Ernesto A. Lacomba, UAM

Special Session on Combinatorics and Combinatorial Geometry, III

8:30 AM – 10:20 AM Room 213, Wooten Hall

Organizers: **Jorge Urrutia**, IMATE-UNAM and University of Ottawa
Wlodzimierz Kuperberg, Auburn University

- 8:30AM (173) *Minimum kissing numbers of finite translative packings of a convex body.*
István Talata, Auburn University (944-52-256)
- 9:10AM (174) *Density bounds for packings with translates of a cone (pyramid) whose base is a centrally symmetric convex plane region.*
Andras Bezdek, Auburn University and the Mathematical Institute of the Hungarian Academy of Sciences, and **Wlodzimierz Kuperberg***, Auburn University (944-52-410)
- 9:50AM (175) *Acyclic Combinatorics in Tournaments.* Preliminary report.
Victor Neumann-Lara, Instituto de Matematicas, UNAM (944-05-321)

Special Session on Algebraic Topology, III

8:30 AM – 10:20 AM Room 215, Wooten Hall

Organizers: **Frederick R. Cohen**, University of Rochester
Samuel Gitler, University of Rochester
Carlos Prieto, UNAM

- 8:30AM (176) *An EO_2 approach to calculating $\pi_*(L_{K(2)}S^0$.* Preliminary report.
Mark E. Mahowald* and **Charles Rezk**, Northwestern University (944-55-237)
- 9:30AM (177) *Equivariant Approximation.*
Gregory Arone, University of Chicago, and **William G. Dwyer***, University of Notre Dame (944-55-291)
- 10:00AM (178) *Some interesting examples of homology approximations of spaces with a group action.*
Gregory Z. Arone, University of Chicago (944-55-175)

Special Session on Differential Geometry and Geodesics, III

8:30 AM – 10:20 AM Room 214, Wooten Hall

Organizers: **Phillip E. Parker**, Wichita State University
Lilia Del Riego, Univ. Auto. de San Luis Potosi

- 8:30AM (179) *Geometry of Hyperbolic Operators.* Preliminary report.
Adam D. Helfer, University of Missouri-Columbia (944-53-415)
- 9:00AM (180) *Curvature of the Levi-Civita connection on the canonical bundle of a hermitian manifold.*
Gil Bor and **Luis Hernandez-Lamoned***, CIMAT (944-53-28)

- 9:30AM (181) *Aspects of Kaehler Cone Metrics*. Preliminary report. **Thalia D. Jeffres***, Instituto de Fisica y Matematicas, UMSNH, and **Rafe Mazzeo**, Stanford University (944-53-213)
- 10:00AM (182) *The moduli space of metrics of positive scalar curvature of some even dimensional manifolds*. **Egidio Barrera-Yanez**, CINVESTAV (944-53-19)

Special Session on Representation Theory of Algebras, III

9:00 AM – 10:20 AM Room 411, University Union

Organizers: **Jose A. de la Pena**, UNAM
Christof Geiss, UNAM
Birge Huisgen-Zimmerman, University of California at Santa Barbara

- 9:00AM (183) *Infinite dimensional representations of finite groups*. **David J. Benson**, University of Georgia (944-20-254)
- 10:00AM (184) *Stable equivalence and generic modules*. **Henning Krause**, University of California, Santa Barbara (944-16-231)

Session for Contributed Papers

9:00 AM – 10:10 AM Room 211, Wooten Hall

- 9:15AM (185) *Numerical Study of Equations with Negative Viscosity*. **Mahmoud Affouf**, Penn State Univ (944-35-327)
- 9:30AM (186) *New trigonometric series expansions of the logarithmic derivatives of the elliptic θ_{1-4} functions and of twelve Jacobian elliptic functions*. **David S. Tselnik** (944-33-114)
- 9:45AM (187) *Ordered binary matrices and their applications*. Preliminary report. **G. Sampath**, University of Massachusetts at Dartmouth (944-68-78)
- 10:00AM (188) *A contractible, nowhere locally connected compactum*. **Robert D. Edwards**, UCLA (944-54-332)

Invited Address

11:00 AM – NOON Lyceum, University Union

- (189) *Eigenvalues, invariant factors, highest weights, and Schubert calculus*. **William Fulton**, University of Michigan (944-15-305)

Invited Address

1:00 PM – 2:00 PM Lyceum, University Union

- (190) *Stochastic optimal control: The direct method and the linear programming approach*. Preliminary report. **Onesimo Hernandez-Lerma**, CINVESTAV-IPN (944-93-138)

Special Session on Representation Theory of Algebras, IV

2:30 PM – 4:20 PM Room 411, University Union

Organizers: **Jose A. de la Pena**, UNAM
Christof Geiss, UNAM
Birge Huisgen-Zimmerman, University of California at Santa Barbara

- 2:30PM (191) *On the first Hochschild cohomology group of an algebra*. **Manuel Saorin**, University of California at Santa Barbara (944-16-187)

- 3:00PM (192) *The strong simple connectedness of a tame tilted algebra*. **Ibrahim Assem**, University of Sherbrooke (944-16-419)
- 3:30PM (193) *One Point Extensions of Quasitilted Algebras*. Preliminary report. **Jose A. de la Peña** and **Sonia E. Trepode***, Instituto de Matematicas, UNAM (944-16-383)
- 4:00PM Discussion.

Special Session on Stochastic Systems and Control, IV

2:30 PM – 4:20 PM Room 409, University Union

Organizers: **Daniel Hernandez-Hernandez**, CINVESTAV
Onesimo Hernandez-Lerma, CINVESTAV
Guillermo Ferreyra, Louisiana State University

- 2:30PM (194) *Fractional Brownian Motion and Some Applications*. **Tyrone E. Duncan**, University of Kansas (944-60-226)
- 3:00PM (195) *Applications to portfolio management of risk sensitive control*. Preliminary report. **Daniel Hernandez**, CINVESTAV (944-93-156)
- 3:30PM (196) *Degenerate Variance Control of a Scalar Itô Process*. **Daniel Ocone***, Rutgers University, and **Ananda Weerasinghe**, Iowa State University (944-93-270)
- 4:00PM (197) *Controlled Markov Chains with Risk-Sensitive Criteria: Average Cost, Optimality Equations, and Optimal Solutions*. **Rolando Cavazos-Cadena***, Universidad Autónoma Agraria Antonio Narro, and **Emmanuel Fernández-Gaucherand**, SIE, University of Arizona (944-93-230)

Special Session on Functional Analysis and Its Applications, IV

2:30 PM – 3:50 PM Room 210, Wooten Hall

Organizers: **S. Perez-Esteva**, UNAM
Josefina Alvarez, University of New Mexico

- 2:30PM (198) *Representing Measures and (sb) operators*. Preliminary report. **Elizabeth M. Bator***, University of North Texas, and **Dawn R. Slavens**, Mount Union College (944-46-354)
- 3:00PM (199) *Generalizations of Lyapounov's convexity theorem to measures with atoms*. **Pieter Cornelis Allaart**, University of North Texas (944-28-90)
- 3:30PM (200) *Locally complete and locally Baire spaces*. Preliminary report. **Armando Garcia**, Instituto de Matematicas, Universidad Nacional Autonoma de Mexico (944-46-46)

Special Session on Continuum Theory (in honor of the 60th birthday of Professor Sam B. Nadler Jr.), IV

2:30 PM – 4:20 PM Room 117, Wooten Hall

Organizers: **Wayne Lewis**, Texas Tech University
Sergio Macias, UNAM
Alejandro Illanes, UNAM

- 2:30PM (201) *On Period Three and Topological Entropy in Hereditarily Decomposable Arclike Continua*. **Héctor Méndez-Lango**, Universidad Nacional Autonoma de Mexico (944-54-57)

Program of the Sessions – Denton, TX, Friday, May 21 (cont'd.)

3:00PM *Boundaries of Rotation Domains*. Preliminary report.
(202) **Andrew O. Maner, John C. Mayer*** and **Lex G. Oversteegen**, UAB (944-54-241)

3:30PM *Smooth Fans and Unique Hyperspace*.
▶ (203) **Gerardo Acosta**, Universidad Nacional Autonoma de Mexico (944-54-51)

4:00PM *Nonseparating Plane Continua*.
▶ (204) **Charles L. Hagopian**, California State University, Sacramento (944-54-141)

Special Session on Differential Equations, Nonlinear Analysis, and Numerical Solutions to PDEs, IV

2:30 PM – 4:20 PM **Room 413, University Union**

Organizers: **John W. Neuberger**, University of North Texas

Alfredo C. Nicolas, UAM

2:30PM *Sobolev Gradients and Nonlinearly Constrained Optimization*.
(205) **Javier Garza**, Tarleton State University (944-49-23)

3:00PM *Numerical Computation of a Visco-Elastic Fluid Flow*. Preliminary report.
(206) **Edward J. Dean**, University of Houston (944-65-32)

3:30PM *Fast Computation of a Class of Radially Symmetric Solutions of the 2D Navier-Stokes equation*.
(207) **Henrik O. Nordmark**, UAM-Azcapotzalco (944-65-66)

4:00PM *Simulation of Viscous Flows in Domains with Cylindrical Obstacles*.
(208) **Lorenzo Hector Juarez-Valencia**, Universidad Autonoma Metropolitana-I (944-76-60)

Special Session on Algebraic Geometry and Commutative Algebra, IV

2:30 PM – 4:30 PM **Room 417, University Union**

Organizers: **Javier Elizondo**, UNAM
Xavier Gomez-Mont, CIMAT
Alberto Corso, Michigan State University
David A. Jorgensen, University of Texas at Arlington

2:30PM *On The Gauss-Manin Connection*. Preliminary report.
(209) **Herbert Kanarek**, Instituto de Matemáticas, UNAM (944-14-378)

3:00PM *Generalized Auslander Regular Algebras*. Preliminary report.
(210) **Roberto Martínez-Villa**, Instituto de Matemáticas, UNAM, México (944-13-206)

3:40PM *Associated graded rings of normal ideals*.
(211) **Sam Huckaba**, Florida State University, and **Thomas Marley***, University of Nebraska-Lincoln (944-13-259)

4:10PM *Divisors of a Rees Algebra*. Preliminary report.
(212) **Susan E. Morey***, Southwest Texas State University, and **Wolmer V. Vasconcelos**, Rutgers University (944-13-307)

Special Session on Geometric and Symbolic Dynamical Systems, IV

2:30 PM – 4:20 PM **Room 115, Wooten Hall**

Organizers: **Luca Q. Zamboni**, University of North Texas
Edgardo Ugalde, University of San Luis Potosi

2:30PM *Multifractal Analysis of Gibbs measures and Option Pricing*. Preliminary report.
(213) **Roza Galeeva**, Universidad Nacional Autonoma de Mexico (944-58-55)

3:00PM *Symbolic dynamics for sticky sets in Hamiltonian systems*.
(214) **Jesús Urías*** and **Valentin Afraimovich**, Universidad Autonoma de San Luis Potosi (944-58-53)

3:30PM *Development stages of incomplete horseshoes*.
(215) **Christof Jung**, Universidad Nacional Autonoma de Mexico (944-58-56)

4:00PM *Dependence on parameters of SRB measures and their thermodynamic limits in Coupled Map Lattices*.
(216) **Miaohua Jiang**, Wake-Forest University, and **Rafael de la Llave***, Univ. of Texas at Austin (944-82-136)

Special Session on Low Dimensional Topology, IV

2:30 PM – 4:20 PM **Room 212, Wooten Hall**

Organizers: **Mark W. Brittenham**, University of North Texas

Francisco Gonzalez Acuna, IM-UNAM
Luis Valdez-Sanchez, University of Texas at El Paso

2:30PM *Automorphisms of handlebodies and compression bodies*.
(217) **Ulrich Oertel**, Rutgers University (944-57-165)

3:00PM *Intersection Graphs and Dehn Surgery*. Preliminary report.
(218) **Cynthia J. Verjovsky Marcotte**, The University of Texas at Austin (944-57-375)

3:30PM *The 3-sphere as a cover of S^3 branched over a knot*. Preliminary report.
(219) **Enrique Ramirez-Losada**, Facultad de Ciencias, UNAM (944-57-246)

4:00PM *Surgery on knots which yield the same 3-manifold*.
(220) **John K. Osoinach Jr.**, Eureka College (944-57-380)

Special Session on Stochastic Processes, IV

2:30 PM – 4:20 PM **Room 118, Wooten Hall**

Organizers: **Frederi G. Viens**, University of North Texas

Jorge A. Leon, CINVESTAV
Juan Ruiz de Chavez, UAM

2:30PM *Double stochastic equations: Approximation and small perturbations*.
(221) **Tudor Constantin**, CIMAT and U. of Bucharest (944-60-77)

3:30PM *Anticipating Integral Equations*.
(222) **Jorge A. Leon***, CINVESTAV-IPN, and **David Nualart**, Universitat de Barcelona (944-60-117)

4:00PM *A branching processes approach to blowup of semilinear equations*.
▶ (223) **Jose Alfredo Lopez Mimbela**, CIMAT (944-60-79)

Special Session on Ring Theory, IV

2:30 PM – 4:20 PM **Room 418, University Union**

Organizers: **Carlos Signoret-Poillon**, UNAM-UAM
Sergio Lopez-Permouth, Ohio University
Ricardo Alfaro, University of Michigan-Flint

- 2:30PM (224) *Semiartinian Von Neumann regular rings with prescribed poset of representatives of simple modules.* Preliminary report.
Giuseppe Bacella, Università di L'Aquila (944-16-290)
- 3:00PM (225) *Projective modules over semilocal rings.*
Alberto Facchini, Università di Udine, Udine, Italy (944-16-87)
- 3:30PM (226) *Symmetric radicals over Noetherian rings.* Preliminary report.
Karl A. Kosler, University of Wisconsin-Waukesha (944-16-83)
- 4:00PM (227) *Nonsingular Semiperfect CS-Rings.*
S. K. Jain, Ohio University, **Pramod Kanwar***, Truman State University, and **Sergio R. Lopez-Permouth**, Ohio University (944-16-317)

Special Session on Noncommutative Geometry, Quantum Groups, and Applications, IV

2:30 PM – 4:30 PM Room 112, Wooten Hall

Organizers: **Micho Durdevich**, UNAM
Hanna Ewa Makaruk, Los Alamos National Laboratory
Robert M. Owczarek, Los Alamos National Laboratory

- 2:30PM (228) *On Biological and Hardware Neural Nets.*
Valeriu Beiu, Rose Research (944-68-347)
- 3:00PM (229) *Braided logic.* Preliminary report.
María Ernestina Chávez Rodríguez and **Zbigniew Oziewicz***, Universidad Nacional Autónoma de México, Facultad de Estudios Superiores Cuautitlán Izcalli, Estado de México (944-03-261)
- 3:30PM (230) *Applications of quantum groups and noncommutative geometry in physics, Part 1.*
Robert M. Owczarek, Los Alamos National Laboratory (944-53-335)
- 4:00PM (231) *Symbolic Computations in Non-Commutative geometry and Quantum Groups: Package in Mathematica.*
Hanna E. Makaruk*, Los Alamos National Laboratory, and **Micho Durdevich**, Instituto de Matematicas, Universidad Nacional Autonoma de Mexico (944-20-334)

Special Session on Nonlinear Models in Biology and Celestial Mechanics, II

2:30 PM – 4:50 PM Room 412, University Union

Organizers: **Ernesto Perez-Chavela**, UAM
Jorge X. Velasco-Hernandez, UAM
Mary E. Parrott, University of South Florida
Ernesto A. Lacomba, UAM

- 2:30PM (232) *Periodicity in a Dynamical Model of Phyllotaxis.*
Pau Atela, Smith College (944-70-401)
- 3:00PM (233) *Heteroclinic primary intersections and codimension one Melnikov method for volume preserving maps.*
Hector E. Lomeli*, ITAM-MEXICO, and **James D. Meiss**, University of Colorado (944-70-399)
- 3:30PM (234) *Symbolic dynamics of the collinear three-body problem.*
Samuel R. Kaplan, Bowdoin College (944-70-416)
- 4:00PM (235) *Some Remarks on the Marchuk's Model of the Immune System.*
Cristobal Vargas, CINVESTAV-IPN (944-92-122)

- 4:30PM (236) *Center manifolds and normal forms in epidemic models.*
Christopher M. Kribs-Zaleta, University of Texas at Arlington (944-34-214)

Special Session on Combinatorics and Combinatorial Geometry, IV

2:30 PM – 4:20 PM Room 213, Wooten Hall

Organizers: **Jorge Urrutia**, IMATE-UNAM and University of Ottawa
Wlodzimierz Kuperberg, Auburn University

- 2:30PM (237) *Inequalities between Lattice Packing and Covering Densities of Centrally Symmetric Plane Convex Bodies.*
Dan Ismailescu, Courant Institute of Mathematical Sciences, New York University (944-52-221)
- 3:10PM (238) *Subsets without Upper Bounds in Coxeter Groups under the Weak Order.* Preliminary report.
Debra J. Waugh, University of Texas of the Permian Basin (944-05-48)

Special Session on Smooth Dynamical Systems, IV

2:30 PM – 4:20 PM Room 116, Wooten Hall

Organizers: **David A. Delatte**, University of North Texas
Dan Mauldin, University of North Texas
Jose Seade, UNAM
Mariusz Urbanski, University of North Texas
Alberto Verjovsky, UNAM

- 2:30PM (239) *Heteroclinic connections in mechanical systems with cubic homogeneous potentials.* Preliminary report.
Ernesto A. Lacomba*, UAM-Iztapalapa, Mexico, and **Manuel Falconi**, UNAM (944-70-94)
- 3:00PM (240) *On countable number of limit cycles for generic polynomial differential equations in C^2 .*
Laura Ortiz-Bobadilla, **Ernesto Rosales-Gonzalez***, National Autonomous University of Mexico, and **Arsenii Shcherbakov**, Frumkin Inst. of Electrochemistry, Russian Academy of Sciences (944-34-171)
- 3:30PM (241) *Poincare-Hopf index and completeness for Hamiltonian vector fields.* Preliminary report.
Jesus R. Muciño-Raymundo, UNAM (944-34-275)
- 4:00PM (242) *Numerical Calculation of Decay of Correlations.*
Marek R. Rychlik, University of Arizona (944-65-395)

Special Session on Algebraic Topology, IV

2:30 PM – 4:20 PM Room 215, Wooten Hall

Organizers: **Frederick R. Cohen**, University of Rochester
Samuel Gitler, University of Rochester
Carlos Prieto, UNAM

- 2:30PM (243) *The lower algebraic K theory of fuchsian groups.*
Ethan Berkove, U.S. Military Academy West Point, **Daniel Juan Pineda***, UNAM, Inst. de Matematicas, Unidad Morelia, and **Kimberly Pearson**, U. of Valparaiso, IN (944-55-84)
- 3:00PM (244) *Periodic Complexes and Group Actions.* Preliminary report.
Alejandro Adem*, University of Wisconsin, and **Jeff H. Smith**, Purdue University (944-55-81)

- 3:30PM (245) *Steenrod Operations and Long Group Extensions*. Preliminary report.
Miguel A. Xicotencatl, Depto. de Matematicas del CINVESTAV, Mexico. (944-55-216)
- 4:00PM (246) *Centers of Weyl groups versus centers of Lie groups*. Preliminary report.
Clarence W. Wilkerson Jr., Purdue University (944-22-370)

Dan Mauldin, University of North Texas
Jose Seade, UNAM
Mariusz Urbanski, University of North Texas
Alberto Verjovsky, UNAM

Special Session on Complex Analysis, II

2:30 PM – 4:20 PM Room 111, Wooten Hall

Organizers: **E. Ramirez de Arellano**, CINVESTAV
John E. Fornæss, University of Michigan, Ann Arbor

- 2:30PM (247) *Functions and differential forms in C^m : a new approach*. Preliminary report.
Reynaldo Rocha-Chávez, **Michael Shapiro***, Instituto Politécnico Nacional, Mexico City, Mexico, and **Frank Sommen**, National Fund for Scientific Research, Belgium (944-30-69)
- 3:00PM (248) *Some new integral theorems in C^m* . Preliminary report.
Reynaldo Rocha-Chávez*, **Michael Shapiro**, Instituto Politécnico Nacional, Mexico, and **Frank Sommen**, National Fund for Scientific Research, Belgium (944-30-70)
- 3:30PM (249) *Treatment of acoustic potentials in the plane by hypercomplex methods*. Preliminary report.
Marco Antonio Macias-Cedeño*, and **Michael Shapiro**, Instituto Politécnico Nacional, Mexico (944-30-303)
- 4:00PM (250) *On a class of convolutions with kernels having singularities on a sphere*. Preliminary report.
Alexey N. Karapetyants, CINVESTAV-I.P.N. (944-31-390)

- 8:00AM (255) *Hausdorff Dimension and Measure for Complex Continued Fractions with Restricted Entries*.
Pawel Hanus, University of North Texas (944-30-411)
- 8:30AM Talk #268 by **V. Afraimovich** is held jointly with this session in Room 255, ESSC.
- 9:30AM (256) *New results on lifting ergodicity in affine extensions*. Preliminary report.
Maresh G. Nerurkar, Rutgers University (944-28-47)
- 10:00AM (257) *Real planar polynomial foliations*.
Xavier Jarque* and **Jaume Llibre**, Universitat Autònoma de Barcelona, Catalonia, Spain (944-34-110)
- 10:30AM (258) *Hamiltonian Stability in the Plane*.
Xavier Jarque, UAB, Barcelona, and **Zbigniew H. Nitecki***, Tufts University (944-58-39)
- 11:00AM (259) *Positive Kolmogorov-Sinai entropy for the standard map*.
Oliver R. Knill, University of Texas (944-58-384)
- 11:30AM (260) *Dynamical Properties of Continued Fraction Type Algorithms*.
Robert M. Burton, Oregon State University (944-99-266)

Special Session on Differential Geometry and Geodesics, IV

2:30 PM – 4:20 PM Room 214, Wooten Hall

Organizers: **Phillip E. Parker**, Wichita State University
Lilia Del Riego, Univ. Auto. de San Luis Potosi

- 2:30PM (251) *Geodesic Flows on the Oscillator Group*.
Shirley T. Bromberg*, UAM-I (Mexico), and **Alberto Medina**, UAM-I(Mexico), Umontp2 (France) (944-83-223)
- 3:00PM (252) *A generalized exponential map and Jacobi field for a non-linear connection*. Preliminary report.
Lilia Del Riego*, Univ. Aut. San Luis Potosi, and **Phillip E. Parker**, Wichita State University (944-53-105)
- 3:30PM (253) *A Finslerian Poincare disc*. Preliminary report.
David Bao, University of Houston (944-53-209)
- 4:00PM (254) *On regular values for maps between graded domains*. Preliminary report.
Fausto Ongay, Centro de Investigación en Matemáticas (944-53-211)

Special Session on Continuum Theory (in honor of the 60th birthday of Professor Sam B. Nadler Jr.), V

8:30 AM – 11:50 AM Room 117, Wooten Hall

Organizers: **Wayne Lewis**, Texas Tech University
Sergio Macias, UNAM
Alejandro Illanes, UNAM

- 8:30AM (261) *Embeddings of Chainable Continua into the Plane*.
Piotr Minc, Auburn University (944-54-217)
- 9:00AM (262) *Symmetric Products Which Are Products or Cones*.
Enrique Castañeda, IMATE, UNAM. (944-54-164)
- 9:30AM (263) *Spans of Certain Continua Cross Arcs*.
Thelma R. West, University of Southwestern Louisiana (944-54-326)
- 10:00AM (264) *Generalized Whitney Properties*. Preliminary report.
Fernando Orozco, IMATE, UNAM. (944-54-167)
- 10:30AM (265) *Exactly k -to-1 mappings and hereditarily indecomposable tree-like continua*.
Thomas E. Gonzalez, Auburn University (944-54-353)
- 11:00AM (266) *Hyperspaces which are locally Euclidian at the top*.
Sergio López, UNAM-UPN (944-54-144)
- 11:30AM (267) *Concerning continua that are Irreducible about finitely many points*.
David J. Ryden, Oklahoma State University (944-54-258)

Saturday, May 22

Special Session on Smooth Dynamical Systems, V

8:00 AM – 11:50 AM Room 116, Wooten Hall

Organizers: **David A. Delatte**, University of North Texas

Meeting Registration

8:30 AM – NOON Lyceum Lobby, University Union

Special Session on Geometric and Symbolic Dynamical Systems, V

8:30 AM – 11:50 AM Room 255, Eagle Student Services Center

Organizers: **Luca Q. Zamboni**, University of North Texas

- Edgardo Ugalde**, University of San Luis Potosi
- 8:30AM (268) *Some problems related to dimension-like characteristics in dynamical systems.*
Valentin Afraimovich, Universidad Autonoma de San Luis Potosi (944-58-263)
- 9:30AM (269) *Symmetric fractals generated by a cellular automaton.*
Andre Barbe and **Fritz von Haeseler***, K.U.Leuven ESAT/SISTA (944-28-362)
- 10:00AM (270) *Primitive substitutive sequences in minimal subshifts.* Preliminary report.
Charles G. Holton, University of California at Berkeley (944-51-394)
- 10:30AM (271) *Prefix-suffix automaton and realization of substitutions.*
Vincent Canterini, Institut de Mathematiques de Luminy, and **Anne Siegel***, IML (944-99-152)
- 11:00AM (272) *Geodesic laminations as geometric realizations of sequences of complexity $2n + 1$.*
Victor F. Sirvent, Universidad Simon Bolivar (944-58-233)
- 11:30AM (273) *Spectral decomposition of a class of \mathbb{Z}^d substitution tiling dynamical systems.* Preliminary report.
Natalie M. Priebe, Rensselaer Polytechnic Institute (944-28-381)

Exhibits and Book Sale

9:00 AM – NOON Silver Eagle Suites, University Union

Special Session on Representation Theory of Algebras, V

9:00 AM – 11:50 AM Room 411, University Union

Organizers: **Jose A. de la Pena**, UNAM
Christof Geiss, UNAM
Birge Huisgen-Zimmerman, University of California at Santa Barbara

- 9:30AM (274) *Representation Type of Commutative Noetherian Rings II: Tameness.*
Lawrence S. Levy*, University of Wisconsin, and **Lee Klingler**, Florida Atlantic University (944-13-333)
- 10:00AM (275) *Matrix problems as relatively projective modules.* Preliminary report.
Mark Kleiner, Syracuse University (944-16-178)
- 10:30AM (276) *Opening Boxes.*
Raymundo Bautista and **Rita Zuazua***, Instituto de Matematicas, UNAM (944-16-324)
- 11:00AM (277) *Bocses and Representations of k -Species.* Preliminary report.
Raymundo Bautista and **Jesus Efren Perez***, Instituto de Matematicas UNAM (944-16-310)
- 11:30AM (278) *New Invariant Factors and Canonical Forms of Matrices and Generalized Interlacing Inequalities.*
Peter M. Joyce*, CCBC-Catonsville, and **Nilotpal Ghosh**, CCBC (944-15-09)

Special Session on Stochastic Systems and Control, V

9:00 AM – 11:55 AM Room 409, University Union

Organizers: **Daniel Hernandez-Hernandez**, CINVESTAV
Onesimo Hernandez-Lerma, CINVESTAV
Guillermo Ferreyra, Louisiana State University

- 9:00AM (279) *Stochastic Optimization Models in Incomplete Markets.*
Thaleia Zariphopoulou, University of Wisconsin-Madison (944-60-278)
- 10:00AM (280) *Hedging and Value at Risk in Markets with Frictions.*
Simon McNair* and **Thaleia Zariphopoulou**, University of Wisconsin-Madison (944-60-282)
- 10:30AM (281) *Optimal adaptive tracking of functional time-varying autoregressive models.*
Nadine Hilgert, CINVESTAV (944-93-168)
- 11:00AM (282) *Nearly Optimal Stationary Policies in Negative Dynamic Programming.*
Rolando Cavazos-Cadena, Departamento de Estadística y Cálculo, Universidad Autónoma Agraria Antonio Narro, and **Raul Montes-de-Oca***, Departamento de Matematicas, Universidad Autónoma Metropolitana-Iztapalapa (944-93-274)
- 11:30AM (283) *Comparing solutions of SDEs pathwise. Applications.*
Guillermo Ferreyra* and **P. Sundar**, Louisiana State University (944-93-153)

Special Session on Functional Analysis and Its Applications, V

9:00 AM – 11:20 AM Room 210, Wooten Hall

Organizers: **S. Perez-Esteva**, UNAM
Josefina Alvarez, University of New Mexico

- 9:00AM (284) *The dispersionless limit of the periodic Toda system and Toeplitz operators.* Preliminary report.
Alejandro Uribe, University of Michigan (944-35-297)
- 9:30AM (285) *Boundedness of certain convolution operators.*
Magali Folch-Gabayet, IMUNAM (944-43-44)
- 10:00AM (286) *λ -central mean oscillation and λ -central Carleson measures.*
Josefina Alvarez, New Mexico State University, **Martha Guzman-Partida***, Universidad de Sonora, and **Joseph Lakey**, New Mexico State University (944-42-10)
- 10:30AM (287) *An application of spectral multiplicity theory to wavelets.* Preliminary report.
Kathy D. Merrill, Colorado College (944-43-183)
- 11:00AM (288) *An abstract interpretation of the wavelet dimension function.*
Lawrence W. Baggett, University of Colorado (944-42-273)

Special Session on Differential Equations, Nonlinear Analysis, and Numerical Solutions to PDEs, V

9:00 AM – 10:50 AM Room 413, University Union

Organizers: **John W. Neuberger**, University of North Texas
Alfredo C. Nicolas, UAM

- 9:00AM (289) *A Penalty Method for Finite Element Approximations of the Stationary Power-law Stokes Problem.*
Lew E. Lefton* and **Dongming Wei**, University of New Orleans (944-65-203)
- 9:30AM (290) *A Numerical Scheme for Natural Convection.* Preliminary report.
Francisco Javier Sanchez*, Universidad Autónoma Metropolitana-Iztapalapa, **Blanca Bermudez**, Benemerita Universidad Autónoma de Puebla, and **Alfredo Nicolas**, Universidad Autónoma Metropolitana-Iztapalapa (944-35-50)
- 10:00AM (291) *Computing the Spectrum of Sturm-Liouville Problems with SLEIGN2.*
Anton Zettl, Northern Illinois University (944-34-345)

10:30AM Sobolev Preconditioning for Semiconductor
(292) Modeling.
Walter B. Richardson Jr., UT San Antonio
(944-35-107)

Special Session on Algebraic Geometry and Commutative Algebra, V

9:00 AM – NOON Room 417, University Union

Organizers: **Javier Elizondo**, UNAM
Xavier Gomez-Mont, CIMAT
Alberto Corso, Michigan State University
David A. Jorgensen, University of Texas at Arlington

9:00AM *On the classification of double meanders of M-curves of degree 5.*
(293) **Anatoly B. Korzhagin**, Texas Tech University
(944-14-25)

9:30AM *Noetherian domains inside a homomorphic image of a completion I.*
(294) **William Heinzer**, Purdue University, **Christel Rotthaus**, Michigan State University, and **Sylvia M. Wiegand***, University of Nebraska (944-13-280)

10:05AM *Noetherian domains inside a homomorphic image of a completion II.* Preliminary report.
(295) **Heinzer William**, Purdue University, **Christel Rotthaus***, Michigan State University, and **Sylvia Wiegand**, University of Nebraska (944-13-248)

10:40AM *Some results on rational surfaces and Fano varieties.*
(296) **Bangere P. Purnaprajna***, University of Kansas, and **Francisco J. Gallego**, Universidad Complutense de Madrid (944-14-382)

11:10AM *Serre's Multiplicity Conjectures for Connected Algebras.*
(297) **Izuru Mori**, University of Texas at Arlington
(944-16-201)

11:40AM *Normalization of toric varieties.* Preliminary report.
(298) **Joseph P. Brennan**, North Dakota State University
(944-13-364)

Special Session on Low Dimensional Topology, V

9:00 AM – 11:50 AM Room 212, Wooten Hall

Organizers: **Mark W. Brittenham**, University of North Texas
Francisco Gonzalez Acuna, IM-UNAM
Luis Valdez-Sanchez, University of Texas at El Paso

9:00AM *Cutting and pasting immersed surfaces.* Preliminary report.
(299) **Max Neumann-Coto**, Universidad Nacional Autonoma de Mexico (944-57-379)

9:30AM *Experimenting with the involutory Kuperberg invariant using structure coefficients in Gelacki's Hopf algebras.* Preliminary report.
(300) **Fernando J. O. Souza***, **Louis H. Kauffman** and **David E. Radford**, University of Illinois at Chicago
(944-57-352)

10:00AM *A new proof of Johansson's Deformation Theorem.* Preliminary report.
(301) **Peter Scott***, University of Michigan, and **Gadde A. Swarup**, University of Melbourne (944-57-367)

10:30AM *Finiteness Results for Heegaard Surfaces in Surgered Manifolds.*
(302) **Yo'av Rieck*** and **Eric Sedgwick**, Oklahoma State University (944-57-306)

11:00AM *The Topology of Recombination.*
▶ (303) **Isabel K. Darcy**, University of Texas at Austin
(944-92-329)

11:30AM *3-Manifolds obtained by surgery on closed pure 3-braids.* Preliminary report.
(304) **Lorena Armas-Sanabria**, Instituto de Matematicas, UNAM (944-57-385)

Special Session on Stochastic Processes, V

9:00 AM – 11:50 AM Room 118, Wooten Hall

Organizers: **Frederi G. Viens**, University of North Texas
Jorge A. Leon, CINVESTAV
Juan Ruiz de Chavez, UAM

9:00AM *Self-intersection of generalized Ornstein-Uhlenbeck processes.*
(305) **Luis G. Gorostiza**, CINVESTAV-IPN (944-60-58)

10:00AM *Self-intersection local time of the fluctuation limit of a multitype branching particle system.*
(306) **Ekaterina Todorova**, CIMAT (944-60-61)

10:30AM *A Particle System on the Tree with Surprising Asymptotic Behavior.* Preliminary report.
(307) **Shirin Joy Handjani**, University of Mississippi
(944-60-257)

11:00AM *A branching particle system for transport of pollutants.* Preliminary report.
(308) **Luis G. Gorostiza**, CINVESTAV-IPN, and **Eliane R. Rodrigues***, IMATE-UNAM (944-60-160)

11:30AM *Modeling inhomogeneous random media.*
(309) **John A. Quintanilla***, University of North Texas, and **Sal Torquato**, Princeton University (944-60-118)

Special Session on Ring Theory, V

9:00 AM – 10:30 AM Room 418, University Union

Organizers: **Carlos Signoret-Poillon**, UNAM-UAM
Sergio Lopez-Permouth, Ohio University
Ricardo Alfaro, University of Michigan-Flint

9:00AM *CS modules and rings with chain conditions.*
(310) **Dinh V. Huynh**, Institute of Mathematics, Hanoi, Vietnam/ Ohio University at Athens (944-16-404)

9:30AM *Local Krull-Gabriel dimension.*
(311) **Ivo Herzog**, The Ohio State University at Lima
(944-16-408)

10:00AM Discussion.

Special Session on Noncommutative Geometry, Quantum Groups, and Applications, V

9:00 AM – NOON Room 112, Wooten Hall

Organizers: **Micho Durdevich**, UNAM
Hanna Ewa Makaruk, Los Alamos National Laboratory
Robert M. Owczarek, Los Alamos National Laboratory

9:00AM *A Hopf bar-operation for quantum SU_2 with q of modulus one: A possible step in a basic construction of the standard model?*
(312) **Daniel Kastler**, CPT-Universite de la Mediterranee, Aix-Marseille II (944-16-298)

10:00AM *On quantized envelopings of Lie algebras.*
(313) **Vladislav Kharchenko**, FES-Cuautitlan (944-16-251)

10:50AM *All under one roof—Recent developments on cross product bialgebras.*
(314) **Bernhard Drabant**, DAMTP-University of Cambridge
(944-16-360)

11:40AM (315) *Applications of quantum groups and noncommutative geometry in physics, Part 2.*
Robert M. Owczynek, Los Alamos National Laboratory (944-53-421)

Special Session on Nonlinear Models in Biology and Celestial Mechanics, III

9:00 AM – 12:30 PM Room 412, University Union

Organizers: **Ernesto Perez-Chavela**, UAM
Jorge X. Velasco-Hernandez, UAM
Mary E. Parrott, University of South Florida
Ernesto A. Lacomba, UAM

9:00AM (316) *Dynamics of the domain in biological pattern formation modeling.*
Faustino Sanchez, UNAM (944-92-123)

10:00AM (317) *A qualitative mathematical model of the motor circadian rhythm in crayfish.*
Miguel Lara-Aparicio, UNAM (944-92-121)

10:30AM (318) *A model for Hepatitis C.*
Lourdes Esteva-Peralta, UNAM (944-92-124)

11:00AM (319) *Antimonotonicity in Hamiltonian Systems: Generic Twistless Bifurcations.*
James D. Meiss, University of Colorado at Boulder (944-58-418)

11:30AM (320) *Heteroclinical connections on the triple collision manifold.*
Antoni Susin*, UPC-Spain, and **Carles Simo**, Universidad de Barcelona (944-70-400)

12:10PM (321) *On a continuous of central configurations in a charged problem.*
Feleipe Alfaro* and **Ernesto Perez-Chavela**, UAM-Iztapalapa (944-70-376)

Special Session on Combinatorics and Combinatorial Geometry, V

9:00 AM – 11:30 AM Room 213, Wooten Hall

Organizers: **Jorge Urrutia**, IMATE-UNAM and University of Ottawa
Wlodzimierz Kuperberg, Auburn University

9:00AM (322) *Compass Routing on Geometric Networks.*
Evangelos Kranakis, Carleton University, **Harvinder Singh** and **Jorge Urrutia***, University of Ottawa (944-05-396)

9:40AM (323) *Structural Results for Planar Sets with many Equilateral Triangles.* Preliminary report.
Bernardo M. Abrego*, Rutgers University, **Gyorgy Elekes**, Eotvos University, and **Silvia Fernandez-Merchant**, Rutgers University (944-05-300)

10:20AM (324) *Iterated Clique Graphs and Tic, Tac, Toe Reduction.* Preliminary report.
Martin Eduardo Frias-Armenta*, Instituto de Matematicas-Facultad de Ciencias-UNAM, and **Victor Neumann-Lara**, Instituto de Matematicas-UNAM (944-05-422)

11:00AM (325) *On unit circles which avoid all but two points of a given pointset.*
András Bezdek, Auburn University, AL and Hungarian Academy of Sciences, Budapest (944-52-198)

Special Session on Algebraic Topology, V

9:00 AM – 11:50 AM Room 215, Wooten Hall

Organizers: **Frederick R. Cohen**, University of Rochester
Samuel Gitler, University of Rochester
Carlos Prieto, UNAM

9:00AM (326) *Essential equivariant maps and Borsuk-Ulam theorems.*
Mónica Clapp*, UNAM, and **Waclaw Marzantowicz**, A. Mickiewicz University (944-55-232)

10:00AM (327) *The Classifying Space of an Orbifold and Some Applications.*
Charles P. Boyer, University of New Mexico (944-55-218)

10:30AM (328) *Fixed point theory and framed cobordism.* Preliminary report.
Carlos Prieto, Instituto de Matemáticas, UNAM (944-55-91)

11:00AM (329) *Bockstein Operators on the Kirby-Siebenmann Class.*
Duane Randall, Loyola University, New Orleans (944-55-22)

11:30AM (330) *Quasifibrations and Bott periodicity.*
Marcelo A. Aguilar* and **Carlos Prieto**, UNAM (944-55-197)

Special Session on Complex Analysis, III

9:00 AM – 10:50 AM Room 111, Wooten Hall

Organizers: **E. Ramirez de Arellano**, CINVESTAV
John E. Fornaess, University of Michigan, Ann Arbor

9:00AM (331) *Majorant series.* Preliminary report.
Harold P. Boas, Texas A&M University (944-30-202)

9:30AM (332) *The Shape of the Ford Domains for the Hecke Congruence Subgroups.*
Antonio Lascurain Orive, Universidad Nacional Autónoma de México (944-30-268)

10:00AM (333) *The Harmonic Extension of Quasihomographies.* Preliminary report.
Lino F. Reséndis O., Universidad Autónoma Metropolitana-Azc. (944-30-172)

10:30AM (334) *Numerical conformal mapping via interpolating polynomials.*
R. Michael Porter, Depto. de Matemáticas, CINVESTAV-I.P.N. (944-30-86)

Special Session on Differential Geometry and Geodesics, V

10:00 AM – 11:50 AM Room 214, Wooten Hall

Organizers: **Phillip E. Parker**, Wichita State University
Lilia Del Riego, Univ. Auto. de San Luis Potosi

10:00AM (335) *Geometry of 2-step nilpotent Lie groups.* Preliminary report.
Patrick B. Eberlein, University of North Carolina at Chapel Hill (944-53-98)

10:30AM Discussion.

11:00AM (336) *Isometry groups of 2-step nilspaces.* Preliminary report.
Phillip E. Parker*, Wichita State Univ., and **Luis A. Cordero**, Universidade de Santiago (944-53-402)

11:30AM (337) *Poisson Homogeneous Spaces of a Poisson-Lie Group.*
Alberto Medina, UAM-I(Mexico), UMont2 (France) (944-53-222)

Special Session on Smooth Dynamical Systems, VI

1:00 PM – 3:50 PM Room 116, Wooten Hall

Organizers: **David A. Delatte**, University of North Texas
Dan Mauldin, University of North Texas
Jose Seade, UNAM
Mariusz Urbanski, University of North Texas
Alberto Verjovsky, UNAM

- 1:00PM *Absolutely Continuous Invariant Measures for C^1 Expanding Maps.*
 (338) **Anthony N. Quas**, University of Memphis (944-58-43)
- 1:30PM *Trajectory of the turning point is dense for a $co-\sigma$ -porous set of tent maps.*
 (339) **Karen M. Brucks***, UWM-Milwaukee, and **Zoltán Buczolich**, Eötvös Loránd University (944-99-130)
- 2:00PM *Non-Collet-Eckmann maps and decay of correlations.*
 (340) **Henk Bruin**, Caltech (944-28-113)
- 2:30PM *Pointwise Dimension of Attractors of Iterated Function Systems.*
 (341) **Brian R. Hunt**, University of Maryland, College Park (944-28-369)
- 3:00PM *Substitutions in Life.* Preliminary report.
 (342) **William Geller** and **Michal Misiurewicz***, IUPUI (944-58-227)
- 3:30PM *The Multi-port Volterra Series for Modeling of Smooth Dynamic Systems.*
 (343) **Denis N. Sidorov**, Energy Systems Institute (944-45-49)

Special Session on Representation Theory of Algebras, VI

1:30 PM – 2:50 PM Room 411, University Union

Organizers: **Jose A. de la Pena**, UNAM
Christof Geiss, UNAM
Birge Huisgen-Zimmerman, University of California at Santa Barbara

- 1:30PM *Non-Noetherian Down-Up Algebras.*
 (344) **Ellen E. Kirkman*** and **James J. Kuzmanovich**, Wake Forest University (944-16-265)
- 2:00PM Discussion.
- 2:30PM *On Reflexivity of Direct Sums.*
 (345) **Victor P. Camillo** and **Kent R. Fuller***, University of Iowa (944-16-199)

Special Session on Functional Analysis and Its Applications, VI

1:30 PM – 3:20 PM Room 210, Wooten Hall

Organizers: **S. Perez-Esteve**, UNAM
Josefina Alvarez, University of New Mexico

- 1:30PM *An analogue of Paley-Wiener Theorem for White Noise Analysis.*
 (346) **Aurel I. Stan**, Louisiana State University (944-46-328)
- 2:00PM *Uncertainty principles and Poisson summation.*
 (347) **Joseph D. Lakey**, NMSU (944-42-157)
- 2:30PM *On the convergence of series of translates of a function.* Preliminary report.
 (348) **R. Daniel Mauldin***, University of North Texas, **Jean Pierre Kahane**, Universite de Paris-Sud, and **Zoltan Buczolich**, Eotvos Lorand University (944-46-294)

- 3:00PM *Linear Extension of Nonlinear Semigroups.*
 (349) **J. W. Neuberger***, University of North Texas, and **J. R. Dorroh**, LSU (944-46-71)

Special Session on Continuum Theory (in honor of the 60th birthday of Professor Sam B. Nadler, Jr.), VI

1:30 PM – 3:30 PM Room 117, Wooten Hall

Organizers: **Wayne Lewis**, Texas Tech University
Sergio Macias, UNAM
Alejandro Illanes, UNAM

- 1:30PM *Homeomorphisms of a Solenoid Homotopic to the Identity.* Preliminary report.
 (350) **Alex D. Clark**, University of North Texas (944-58-372)
- 2:00PM *A homogeneous arcwise connected, non-locally connected continuum.* Preliminary report.
 (351) **Janusz R. Prajs**, Texas Tech University (944-54-235)
- 2:30PM *The Plane Fixed Point Problem.*
 (352) **Vladimir N. Akis**, California State University, Los Angeles (944-53-125)
- 3:00PM Open problems.

Special Session on Differential Equations, Nonlinear Analysis, and Numerical Solutions to PDEs, VI

1:30 PM – 2:50 PM Room 413, University Union

Organizers: **John W. Neuberger**, University of North Texas
Alfredo C. Nicolas, UAM

- 1:30PM *Analysis of the asymptotic behavior of semigroups generated by partial differential equations.*
 (353) **Peter Seibert** and **Juan H. Arredondo, R***, Universidad Autonoma Metropolitana (944-35-249)
- 2:00PM *Chebyshev pseudospectral-finite element method for two-dimensional unsteady Navier-Stokes equation.* Preliminary report.
 (354) **Jingyu Hou***, Univ. of Southern Queensland, and **Benyu Guo**, Shanghai University (944-65-145)
- 2:30PM *The Kite Method for Accelerating Vortex Method Solutions of Euler's and Navier-Stokes' Equations.*
 (355) **Randall E. Rausch**, Raytheon Systems Company (944-76-21)

Special Session on Geometric and Symbolic Dynamical Systems, VI

1:30 PM – 2:50 PM Room 115, Wooten Hall

Organizers: **Luca Q. Zamboni**, University of North Texas
Edgardo Ugalde, University of San Luis Potosi

- 1:30PM *An alternative construction of normal numbers.*
 (356) **Edgardo Ugalde**, Universidad Autonoma de San Luis Potosi (944-11-264)
- 2:00PM *Non-integer bases, kneading sequences, and a self-similar arithmetic set.*
 (357) **Jean-Paul S. Allouche**, CNRS (944-11-192)
- 2:30PM *Irrational Dilations of Pascal's Triangle (joint with D. Berend and G. Kosesnik).*
 (358) **Michael D. Boshernitzan**, Rice University (944-11-371)

Special Session on Low Dimensional Topology, IV

1:30 PM – 3:20 PM Room 212, Wooten Hall

Organizers: **Mark W. Brittenham**, University of North Texas

Francisco Gonzalez Acuna, IM-UNAM
Luis Valdez-Sanchez, University of Texas at El Paso

- 1:30PM *Truly universal links*. Preliminary report.
 (359) **Victor Núñez**, CIMAT (944-57-215)
- 2:00PM *The topology of deformation spaces of hyperbolic 3-manifolds*.
 (360) **James W. Anderson**, University of Southampton, **Richard D. Canary**, University of Michigan, and **Darryl McCullough***, University of Oklahoma (944-57-119)
- 2:30PM *Normal forms for basis conjugating automorphisms of a free group*.
 (361) **Mauricio Gutierrez**, Tufts University (944-20-357)
- 3:00PM *Finding Planar Surfaces and the Word Problem*.
 (362) **William H. Jaco***, **Eric Sedgwick**, Oklahoma State University, and **Joachim H. Rubinstein**, University of Melbourne (944-57-336)

Special Session on Stochastic Processes, VI

1:30 PM – 3:20 PM Room 118, Wooten Hall

Organizers: **Frederi G. Viens**, University of North Texas

Jorge A. Leon, CINVESTAV
Juan Ruiz de Chavez, UAM

- 1:30PM *A brief survey of white noise analysis*.
 (363) **Hui-Hsiung Kuo**, Louisiana State University (944-60-146)
- 2:30PM *Stochastic approach to quantum tunneling*.
 (364) **Chebotarev Alexander**, Quantum Statistics Department, Moscow State University, and **Quezada Roberto***, Departamento de Matemáticas, UAM-Iztapalapa, Mexico City (944-60-52)
- 3:00PM *Unbounded completely positive maps and conservativity of quantum dynamical semigroups*. Preliminary report.
 (365) **Julio C. García*** and **Roberto B. Quezada**, Universidad Autónoma Metropolitana, Iztapalapa. (944-60-41)

Special Session on Noncommutative Geometry, Quantum Groups, and Applications, VI

1:30 PM – 3:40 PM Room 112, Wooten Hall

Organizers: **Micho Durdevich**, UNAM
Hanna Ewa Makaruk, Los Alamos National Laboratory
Robert M. Owczarek, Los Alamos National Laboratory

- 1:30PM *On quantum Lie algebras and the PBW theorem*.
 (366) **Cesar Bautista**, Facultad de Ciencias de la Computacion, BUAP (944-16-252)
- 2:20PM *Yang-Baxter operators on ε -commutative algebras and quantum minors*. Preliminary report.
 (367) **Carles Victoria-Monge***, UPC-Barcelona, and **Oscar A. Sanchez-Valenzuela**, CIMAT & SMM (944-16-150)
- 3:00PM *Bilinear Generating Functions For The Continuous q -Hermite Polynomials*.
 (368) **Natig Atakishiyev***, Institute of Mathematics-Cuernavaca, UNAM, and **M. K. Atakishiyeva**, Facultad de Ciencias, UAEM (944-33-255)

Special Session on Algebraic Topology, VI

1:30 PM – 3:20 PM Room 215, Wooten Hall

Organizers: **Frederick R. Cohen**, University of Rochester

Samuel Gitler, University of Rochester
Carlos Prieto, UNAM

- 1:30PM *The Adelic Grassmannian*.
 (369) **Ernesto Lupercio**, University of Michigan, CINVESTAV - ESFM-IPN (944-55-207)
- 2:30PM *Stability of holomorphic spheres and Morse theory*. Preliminary report.
 (370) **Ralph L. Cohen**, Stanford University (944-57-190)
- 3:00PM *A report on the structure of the higher dimensional Cayley-Dickson algebras*.
 (371) **Guillermo Moreno**, Depto. de Matematicas del CINVESTAV, Mexico. (944-55-173)

Special Session on Differential Geometry and Geodesics, VI

1:30 PM – 3:30 PM Room 214, Wooten Hall

Organizers: **Phillip E. Parker**, Wichita State University

Lilia Del Riego, Univ. Auto. de San Luis Potosi

- 1:30PM Informal discussions.

Invited Address

4:00 PM – 5:00 PM Lyceum, University Union

- (372) *Unsolvable problems about knots and related groups*. Preliminary report.
Francisco J. Gonzalez-Acuña, Instituto de Matematicas, UNAM (944-57-245)

Closing Ceremonies and Banquet

6:30 PM – 10:30 PM Golden Eagle Suite, University Union

Cash Bar Reception at 6:30 p.m.; Dinner served at 7:00 p.m.

Lesley M. Sibner
 Associate Secretary
 Brooklyn, New York