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# Program of the Sessions

Houston, Texas, May 13–15, 2004

## Wednesday, May 12

### Meeting Registration

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2:00 PM – 5:00 PM Exhibit Hall, Lower Level, Hyatt

### Exhibit and Book Sale

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2:00 PM – 5:00 PM Exhibit Hall, Lower Level, Hyatt

### Opening Ceremonies

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7:00 PM – 7:45 PM Imperial Ballroom West, 3rd Floor, Hyatt

### Invited Address

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8:00 PM – 8:50 PM Imperial Ballroom West, 3rd Floor, Hyatt

- (1) *A mathematician flips a coin.*  
Persi W. Diaconis, Stanford University (998-60-02)

### Welcoming Reception

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9:00 PM – 10:00 PM Imperial Foyer, 3rd Floor, Hyatt

## Thursday, May 13

### Meeting Registration

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8:00 AM – 4:00 PM Exhibit Hall, Lower Level, Hyatt

### Exhibit and Book Sale

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8:00 AM – 4:00 PM Exhibit Hall, Lower Level, Hyatt

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

### Special Session on Harmonic and Functional Analysis, I

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8:00 AM – 11:20 AM Redbud, 3rd Floor, Hyatt

Organizers: Salvador Pérez-Esteve,  
UNAM-Cuernavaca  
Carlos Bosch, ITAM  
Josefina Alvarez, New Mexico State  
University

- 8:00AM *New analyses and analogs of Warner boundedness.*  
(2) Stephen A. Saxon, University of Florida  
(998-46-429)
- 8:30AM *Some properties of  $\Lambda\{E\}$  depending on  $E$ .*  
(3) Preliminary report.  
Armando García, IMATE-UNAM (998-46-320)
- 9:00AM *Locally Baire Spaces, Locally Complete Spaces and regularity.*  
(4) Carlos Bosch, ITAM, Fernando Garibay, UMSNH, Cesar L. Garcia, Claudia Gomez, ITAM, and Rigoberto Vera\*, UMSNH (998-47-153)
- 9:30AM *Convenient vector spaces in the locally convex setting.* Preliminary report.  
(5) Thomas E Gilsdorf, University of North Dakota  
(998-46-68)
- 10:00AM *On Topological  $Q$ -algebras.* Preliminary report.  
(6) Lourdes Palacios\*, Universidad Autónoma Metropolitana Iztapalapa, and Hugo Arizmendi, Instituto de Matemáticas UNAM (998-46-193)
- 10:30AM *On the topological invertible elements of a topological algebra.* Preliminary report.  
(7) Hugo Peimbert Arizmendi\* and Angel Carrillo, Universidad Nacional Autónoma de México (998-46-206)
- 11:00AM *The Greedy Algorithm and Elton's theorem.*  
(8) Preliminary report.  
Steve Dilworth, University of South Carolina, Edward Odell, University of Texas at Austin, Thomas Schlumprecht\*, Texas A&M University, and Andras Zsak, Texas A&M University and Fitzwilliam College (998-46-375)

found in Volume 25, 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 Algebraic Topology, I**

8:30 AM – 11:20 AM Pecan, 4th Floor, Hyatt

Organizers: **Miguel A. Xicoténcatl**, CINVESTAV  
**Frederick R. Cohen**, University of Rochester

- 8:30AM (9) *Stable splittings of mapping spaces.*  
**Craig C. Westerland**, University of Michigan (998-55-105)
- 9:30AM (10) *Spaces of rational maps and the Stone-Weierstrass Theorem.*  
**Jacob Mostovoy**, Universidad Nacional Autonoma de Mexico (UNAM) (998-55-340)
- 10:30AM (11) *New  $G_2$  spaces.*  
▶ **Guillermo Moreno**, CINVESTAV (998-55-401)
- 11:00AM (12) *Topological robotics in lens spaces: an approach to the immersion problem for real projective spaces.*  
**Jesus Gonzalez**, CINVESTAV (998-55-97)

- 9:30AM (20) *A hybrid adaptive method for multi-phase flows with an optimal geometry-based fluid indicator.*  
**Hector D Cenicerós\***, University of California Santa Barbara, and **Alexandre M Roma**, Universidade de Sao Paulo (998-65-101)
- 10:00AM (21) *A Least Square Extrapolation Method for the A Posteriori Error Estimate of the Incompressible Navier-Stokes Problem.* Preliminary report.  
**Marc Garbey\***, University of Houston, and **Wei Shyy**, University of Florida (998-65-170)
- 10:30AM (22) *Some 2D incompressible viscous natural convection flows.* Preliminary report.  
**Elsa Baez\*** and **Alfredo Nicolas**, UAM-I (998-76-162)
- 11:00AM (23) *The direct numerical simulation of non-smooth shape particles settling in incompressible viscous fluid.* Preliminary report.  
**T.-W. Pan\*** and **R. Glowinski**, University of Houston (998-65-322)

**Special Session on Problems and Issues in Electronic Publishing, I**

8:30 AM – 11:20 AM Live Oak, 4th Floor, Hyatt

Organizers: **Klaus Kaiser**, University of Houston  
**Bernd Wegner**, Technische Universität Berlin  
**Enrique Ramírez de Arellano**, CINVESTAV

- 8:30AM (13) ▶ *Some Remarks on the New Schemes in Electronic Publishing in Mathematics.* Preliminary report.  
**Constancio Hernandez**, Universidad Autonoma Metropolitana (998-00-199)
- 9:00AM (14) ▶ *Electronic publishing for the Boletín de la Sociedad Matemática Mexicana?*  
**Enrique Ramírez de Arellano**, Cinvestav-IPN, México, D. F. (998-00-231)
- 9:30AM (15) *Efficient processing of journal submissions.* Preliminary report.  
**A J Hildebrand**, University of Illinois (998-00-249)
- 10:00AM (16) *Triangular Relationships in Electronic Publishing: What Problem-Solving Solutions Can Subscription Agents Offer?*  
**Katy Ginanni**, EBSCO Information Services (998-00-378)
- 10:30AM (17) *Some Recent Issues on the Business of Journal Publishing: An Independent Point of View.*  
**Klaus Kaiser**, University of Houston (998-00-78)
- 11:00AM (18) ▶ *Some aspects of running the Eletron. J. Diff. Eqns.* Preliminary report.  
**Julio G. Dix**, Texas State University - San Marcos (998-00-79)

**Special Session on Space and Time Decomposition Methods in Computational and Applied Mathematics, I**

8:30 AM – 11:20 AM Ebony, 4th Floor, Hyatt

Organizers: **Roland Glowinski**, University of Houston  
**Tsongr-Whay Pan**, University of Houston  
**L. Héctor Juárez V.**, UAM-Iztapalapa

- 8:30AM (19) *Inverse, Shifted Inverse, and Rayleigh Quotient Iteration as Newton's Method.*  
**Richard A. Tapia**, Rice University (998-65-165)

**Special Session on Coding Theory and Cryptography, I**

8:30 AM – 11:20 AM Cedar, 4th Floor, Hyatt

Organizers: **Horacio Tapia-Recillas**, UAM-Iztapalapa  
**Neal I. Koblitz**, University of Washington

- 8:30AM (24) ▶ *Improvement of Ax-Katz's, Moreno-Moreno's and Wan's Results.*  
**Oscar Moreno\*** and **Francis N Castro**, University of Puerto Rico (998-11-50)
- 9:00AM (25) ▶ *Inference Control.* Preliminary report.  
**Jessica N Staddon**, Palo Alto Research Center (998-68-34)
- 9:30AM (26) *Formulae for the number of polynomials over a finite field satisfying given requirements.* Preliminary report.  
**Joseph L Yucas**, Southern Illinois University (998-11-32)
- 10:00AM (27) *Recent results related to value sets of polynomials over finite fields.*  
**Pinaki Das**, Penn State Altoona (998-11-45)
- 10:30AM (28) *Custom Elliptic Curves for Fast Public-Key Cryptography.* Preliminary report.  
**Jerome A Solinas**, National Security Agency (998-11-381)
- 11:00AM (29) *LDPC Codes and Their Constructions.*  
**Jon-Lark Kim**, University of Nebraska - Lincoln (998-94-22)

**Special Session on Designing Frames and Wavelets: From Theory to Digitization, I**

8:30 AM – 11:20 AM Sandalwood, 4th Floor, Hyatt

Organizers: **Peter R. Massopust**, Tuboscope Pipeline Services  
**Manos I. Papadakis**, University of Houston

- 8:30AM (30) *Some Recent Results on Wavelet Sets.* Preliminary report.  
**David R. Larson**, Texas A&M University (998-46-25)
- 9:00AM (31) *Wavelet Frames and Admissible Group Representations.* Preliminary report.  
**Eric Weber**, Iowa State University (998-42-185)

- 9:30AM *Designing Irregular Wavelet Frames.*  
(32) **Akram Aldroubi**, Vanderbilt University, **Carlos Cabrelli\*** and **Ursula Molter**, University of Buenos Aires (998-42-39)
- 10:00AM *The existence problems for Gabor frames.*  
(33) **Deguang Han\***, University of Central Florida, and **Yang Wang**, Georgia Institute of Technology (998-42-20)
- 10:30AM *Group action and Wavelet frames in  $R^n$ .*  
▶ (34) **Gestur Olafsson\***, Louisiana State University, and **Darrin Speegle**, Saint Louis University (998-46-28)
- 11:00AM *Wavelets with composite dilations.*  
(35) **Kanghai Guo**, Southwest Missouri State University, **Demetrio Labate**, North Carolina State University, **Wang-Q Lim**, Washinton University in St. Louis, **Guido L. Weiss** and **Edward N. Wilson\***, Washington University in St. Louis (998-42-47)

**Special Session on Graph Theory and Combinatorics, I**

8:30 AM – 11:20 AM Dogwood, 3rd Floor, Hyatt

Organizers: **Gelacio Salazar**, IICO, UASLP  
**Isidoro Gitler**, CINVESTAV  
**Nathaniel Dean**, Texas Southern University

- 8:30AM *Independence Number as a Predictor of Stability of Fullerenes and Benzenoids.*  
▶ (36) **Siemion Fajtlowicz**, University of Houston (998-05-341)
- 9:30AM *The Square Cycle Problem.* Preliminary report.  
(37) **Nathaniel Dean\***, Texas Southern University, and **Jessica Zuniga**, Cornell University (998-05-418)
- 10:00AM *Dice, Elections and Domination.* Preliminary report.  
▶ (38) **Graham Brightwell**, London School of Economics, **H. A. Kierstead\***, Arizona State University, **A. V. Kostochka**, University of Illinois, at Urbana-Champaign, and **Peter Winkler**, Bell Labs, Lucent Technologies (998-05-414)
- 10:30AM *On the Frame-Stewart Conjecture about the Towers of Hanoi.*  
(39) **Xiao Chen** and **Jian Shen\***, Texas State University-San Marcos (998-05-374)
- 11:00AM *New Variations on the Theme of Graph Pebbling: Cover Pebbling and Fractional Pebbling.* Preliminary report.  
▶ (40) **Glenn Hurlbert**, Arizona State University (998-05-404)

**Special Session on Differential Geometry, I**

8:30 AM – 11:20 AM Raintree, 4th Floor, Hyatt

Organizers: **Raul Quiroga Barranco**, CINVESTAV  
**Alberto Candell**, California State University, Northridge

- 8:30AM *Gauge Theory and Flows on a Trivalent Graph.*  
(41) Preliminary report.  
**Ricardo Francisco Vila-Freyer**, CIMAT (998-51-196)
- 9:00AM *Examples of lens spaces, isospectral on  $p$ -forms but not isospectral on functions.*  
(42) **Ruth Gornet\***, University of Texas at Arlington, and **Jeffrey M. McGowan**, Central Connecticut State University (998-58-366)
- 9:30AM *Measuring  $S^3/G$ .* Preliminary report.  
(43) **William Dunbar**, Simon's Rock College, **Sarah Greenwald**, Appalachian State University, **Jill McGowan**, Howard University, and **Catherine Searle\***, IMATE-Cuernavaca, UNAM (998-53-252)

- 10:00AM *Warped cones and large scale geometry.*  
(44) Preliminary report.  
**John Roe**, Penn State (998-53-373)
- 10:30AM *A trace formula for Lie foliations.*  
(45) **Jesús A. Álvarez López\***, Universidade de Santiago de Compostela, and **Yuri A. Kordyukov**, Ufa State Aviation Technical University (998-58-212)
- 11:00AM *Deformations of Dirac Operators.*  
(46) **Igor Prokhoronkov** and **Ken Richardson\***, Texas Christian University (998-58-308)

**Special Session on Associative Rings, I**

8:30 AM – 11:20 AM Cottonwood, 3rd Floor, Hyatt

Organizers: **José Ríos Montes**, UNAM  
**Mária-José Arroyo**, UAM-Iztapalapa  
**Sergio R. López-Permouth**, Ohio University

- 8:30AM *Perfect rings with enough idempotents.* Preliminary report.  
(47) **Gene D Abrams\***, University of Colorado, and **Frank W Anderson**, University of Oregon (998-16-159)
- 9:00AM *Modules with a semilocal endomorphism ring revisited.*  
(48) **Dolors Herbera**, Universitat Autònoma de Barcelona (998-16-219)
- 9:30AM *Idempotents and Annihilators in Endomorphism Rings.*  
▶ (49) **S. Tariq Rizvi** and **Cosmin S Roman\***, The Ohio State University (998-16-200)
- 10:00AM *Clean endomorphism rings.*  
▶ (50) **W K Nicholson**, **K Varadarajan**, University of Calgary, and **Yiqiang Zhou\***, Memorial University of Newfoundland (998-16-278)
- 10:30AM *Some results on simple rings and prime rings.*  
▶ (51) **Dinh Van Huynh**, Ohio University (998-16-299)
- 11:00AM *Some applications of primeness in the study of noetherian rings and modules.* Preliminary report.  
▶ (52) **Pascual Jara**, University of Granada (998-16-80)

**Special Session on Continuum Theory and General Topology (in Honor of David Bellamy's 60th Birthday), I**

8:30 AM – 11:20 AM Regency Room, 2nd Floor, Hyatt

Organizers: **Janusz J. Charatonik**, UNAM  
**Charles L. Hagopian**, California State University, Sacramento  
**Sergio Macias**, UNAM

- 8:30AM *The Life of David Bellamy.* Preliminary report.  
▶ (53) **Judy A. Kennedy**, University of Delaware (998-54-142)
- 10:00AM *Research Work of D. P. Bellamy.*  
▶ (54) **Sam B. Nadler**, West Virginia University (998-01-136)
- 11:00AM *Whitney preserved properties.*  
(55) **Alejandro Illanes**, UNAM - CSUS (998-54-300)

**Special Session on Low Dimensional Topology, I**

8:30 AM – 10:50 AM Magnolia, 3rd Floor, Hyatt

Organizers: **Victor Núñez**, CIMAT  
**Luis G. Valdez**, University of Texas, El Paso

## Program of the Sessions – Houston, TX, Thursday, May 13 (cont'd.)

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- 8:30AM *Doubly composite knots with unknotting number 1.*  
(56) Preliminary report.  
**Cameron McA Gordon\*** and **John E Luecke**,  
University of Texas at Austin (998-57-397)
- 9:00AM *Bounds for the genus and number of acylindrical*  
(57) *surfaces in knot and link exteriors.* Preliminary  
report.  
**Mario Eudave-Muñoz**, Instituto de Matematicas  
UNAM, and **Max Neumann-Coto\***, Instituto de  
Matematicas, UNAM (998-57-420)
- 9:30AM *Finite quotient of rings and applications to*  
(58) *subgroup separability of linear groups.*  
**Emily Hamilton**, Emory University (998-57-169)
- 10:00AM *Automorphisms of the complex of separating*  
(59) *curves, and applications.*  
**John D. McCarthy**, Michigan State University, and  
**William R. Vautaw\***, Southeastern Louisiana  
University (998-57-40)
- 10:30AM *Retractions of groups.* Preliminary report.  
(60) **Darren Long**, U.C.S.B., and **Alan W. Reid\***, Univ. of  
Texas at Austin (998-57-313)

### Special Session on Probability and Stochastic Processes, I

8:30 AM – 11:20 AM Ponderosa, 4th Floor, Hyatt

Organizers: **Daniel Hernández Hernandez**, CIMAT  
**Christian Houdre**, Georgia Institute of  
Technology

- 8:30AM *Extreme value theory, ergodic theory, and the*  
(61) *boundary between short memory and long memory*  
*for stationary stable processes.*  
**Gennady Samorodnitsky**, Cornell University  
(998-60-93)
- 9:00AM *Successive approximations in partially observable*  
(62) *Markov decision chains with risk-sensitive average*  
*criterion.*  
**Rolando Cavazos-Cadena\***, UAAAN, and **Daniel**  
**Hernandez-Hernandez**, Cimat (998-60-348)
- 9:30AM *Zero-Sum Continuous-Time Markov Games in*  
(63) *Countable Spaces with Discounted and Average*  
*Payoffs.*  
**Onesimo Hernandez-Lerma**, Departamento de  
Matematicas, CINVESTAV (998-60-149)
- 10:00AM *An empirical central limit theorem for pre-Gaussian*  
(64) *classes of functions.*  
**Joel Zinn\***, Texas A&M University, and **Shahar**  
**Mendelson**, The Australian National University  
(998-60-143)
- 10:30AM *Gaussian limits for random geometric structures.*  
▶ (65) **Joseph E. Yukich**, Lehigh University (998-60-75)
- 11:00AM *An extension of the divergence operator.*  
(66) **Jorge A. Leon**, Departamento de Control  
Automatico, CINVESTAV (998-60-150)

### Special Session on Geometric Variational Problems, I

9:00 AM – 11:20 AM Holly, 4th Floor, Hyatt

Organizers: **Clara Garza-Hume**, IIMAS, UNAM  
**Michael Wolf**, Rice University  
**Robert M. Hardt**, Rice University

- 9:00AM *Jacobi fields along harmonic maps.*  
(67) **John C. Wood**, University of Leeds (England)  
(998-53-77)
- 9:30AM *On the L2 cohomology of asymptotically complex*  
(68) *hyperbolic Kahler manifolds.*  
**Xiaodong Wang**, M. I. T. (998-53-226)

- 10:00AM *Jet bundle formalism for variational problems on*  
(69) *supermanifolds.*  
**José Antonio Vallejo**, Universidad Autónoma de  
San Luis Potosí (998-49-179)
- 10:30AM *On the first stability eigenvalue of constant mean*  
(70) *curvature hypersurfaces in spheres.*  
**Luis J. Alias\***, Universidad de Murcia, **Abdenago**  
**Barros** and **Aldir Brasil**, Universidade Federal do  
Ceara (998-53-24)
- 11:00AM *Singularities of immersed stable minimal*  
(71) *hypersurfaces.* Preliminary report.  
**Neshan Wickramasekera**, Massachusetts Institute  
of Technology (998-53-336)

### Special Session on Algebraic Geometry, I

9:00 AM – 11:20 AM Mesquite, 3rd Floor, Hyatt

Organizers: **Pedro Luis Del Angel R.**, CIMAT  
**Emma Previato**, Boston University  
**Frank Sottile**, University of  
Massachusetts, Amherst  
**Isidro Nieto**, Universidad de San  
Nicolas Hidalgo

- 9:00AM *Ramified coverings of polarized abelian type*  
▶ (72) *(1,3)-surfaces.* Preliminary report.  
**Isidro B. Nieto**, Universidad Michoacana de San  
Nicolas de Hidalgo (998-14-288)
- 9:30AM *Orbifold conformal blocks and the stack of pointed*  
(73) *G-covers.*  
**Matt Szczesny**, University of Pennsylvania  
(998-14-339)
- 10:00AM *Nef and effective cones of moduli spaces of stable*  
(74) *maps.* Preliminary report.  
**Ana-Maria Castravet**, University of Texas at Austin  
(998-14-393)
- 10:30AM *Higher-dimensional versions of stable rational*  
(75) *curves.*  
**Jenia Tevelev**, University of Texas in Austin  
(998-14-392)
- 11:00AM *Classical models of moduli spaces of curves of*  
(76) *small genus.*  
**Brendan E Hassett**, Rice University (998-14-268)

### Special Session on Dynamical Systems, I

9:00 AM – 11:20 AM Willow, 4th Floor, Hyatt

Organizers: **Renato Iturriaga**, CIMAT  
**Rafael de la Llave**, University of Texas  
at Austin

- 9:00AM *Dynamics and Exact Solutions of Smoluchowski's*  
▶ (77) *Equations with Diffusion.*  
**M. Rodrigo\***, Instituto Tecnológico Autónomo  
de México, and **M. A. Herrero**, Universidad  
Complutense de Madrid (998-35-15)
- 9:30AM *Rotation vectors and invariant sets for twist maps*  
(78) *in higher dimensions.* Preliminary report.  
**Hector E Lomeli**, ITAM (998-58-52)
- 10:00AM *The obstruction criterion for non existence of*  
(79) *invariant circles and renormalization.*  
**Rafael De la Llave**, Univ. of Texas at Austin, and  
**Arturo Olvera\***, IIMAS-UNAM (998-37-74)
- 10:30AM *Rigidity of germs of dicritic foliations.*  
(80) **Laura Ortiz-Bobadilla**, UNAM, **Sergey M. Voronin**,  
Chelyabinsk State University, and **Ernesto**  
**Rosales-Gonzalez\***, UNAM (998-34-82)

- 11:00AM *Linear Response functions of Coupled Hyperbolic Attractors*. Preliminary report.  
(81) **Miaohua Jiang\***, Wake Forest University, and **Rafael de la Llave**, University of Texas (998-37-225)

**Jorge X. Velasco Hernández**, Instituto Mexicana del Petroleo

### Invited Address

11:30 AM – 12:20 PM **Regency Room, 2nd Floor, Hyatt**

- (82) *Topology of complete intersections*.  
**Samuel Gitler**, CINVESTAV (998-57-03)

### Special Session on Algebraic Topology, II

2:00 PM – 4:40 PM **Pecan, 4th Floor, Hyatt**

Organizers: **Miguel A. Xicoténcatl**, CINVESTAV  
**Frederick R. Cohen**, University of Rochester

- 2:00PM *Quantum cohomology and  $S^1$  actions*.  
(83) **Eduardo A. Gonzalez**, Stony Brook University (998-53-157)
- 3:00PM *Motivic Integrals and Orbifold K-theory*.  
(84) **Ernesto Lupercio\***, Cinvestav - Mexico, **Mainak Poddar**, University of Waterloo, and **Bernardo Uribe**, University of Michigan (998-55-183)
- 4:00PM *Cohomology operations via Morse theory*.  
(85) Preliminary report.  
**Ralph L Cohen**, Stanford University (998-57-384)

### Special Session on Problems and Issues in Electronic Publishing, II

2:00 PM – 4:50 PM **Live Oak, 4th Floor, Hyatt**

Organizers: **Klaus Kaiser**, University of Houston  
**Bernd Wegner**, Technische Universität Berlin  
**Enrique Ramírez de Arellano**, CINVESTAV

- 2:00PM *The Mathematics Survey*. Preliminary report.  
▶ (86) **Jim Pitman**, University of California, Berkeley (998-00-175)
- 2:30PM *Facilities in e-Edita for authoring and publishing interactive mathematical materials for the Internet*. Preliminary report.  
▶ (87) **Feliu Davino Sagols**, Centro de Investigacion y de Estudios Avanzados del IPN (998-94-108)
- 3:00PM *Electronic Publishing - The View from the Library*.  
(88) **Molly T White**, University of Texas at Austin (998-00-398)
- 3:30PM *EMANI - Current Achievements of a Project for the Long-term Preservation of Electronic Publications in Mathematics*.  
▶ (89) **Bernd Wegner**, TU Berlin (998-68-139)
- 4:00PM *Preprints and Journals: The experience from MP-ARC, MPEJ and Experimental Mathematics*.  
(90) **Rafael de la Llave**, Univ. of Texas at Austin (998-00-86)
- 4:30PM *XML Query in Web Site Organization*.  
(91) **Elena A Fraboschi**, Indiana University Mathematics Journal (998-00-269)

### Special Session on Continuous Distributed Parameters Models in Mathematical Biology, I

2:00 PM – 3:50 PM **Willow, 4th Floor, Hyatt**

Organizers: **William E. Fitzgibbon**, University of Houston

- 2:00PM *Density dependent behavior at habitat boundaries and the Allee effect*.  
(92) **Robert Stephen Cantrell\***, The University of Miami, and **Chris Cosner**, The University of Miami (998-92-173)

- 2:30PM *Varying boundary conditions may induce multiple reversals of competitive advantage in diffusive two-species Lotka-Volterra competition models*. Preliminary report.

**Robert Stephen Cantrell**, **Chris Cosner\***, University of Miami, and **Yuan Lou**, The Ohio State University (998-92-164)

- 3:00PM *A control model for tuberculosis and other infectious diseases*. Preliminary report.

- ▶ (94) **Fabio Augusto Milner\***, **Zhilan Feng**, Purdue University, and **Mimmo Iannelli**, Università degli Studi di Trento, Italy (998-92-94)

- 3:30PM *Genetic regulatory networks and pattern formation*.  
(95) **Pablo Padilla\***, IIMAS, UNAM, **Elena Alvarez-Buylla**, Instituto de Ecología, UNAM, and **Carlos Espinosa**, Instituto de Ecología (998-92-276)

### Special Session on Geometric Variational Problems, II

2:00 PM – 4:50 PM **Holly, 4th Floor, Hyatt**

Organizers: **Clara Garza-Hume**, IIMAS, UNAM  
**Michael Wolf**, Rice University  
**Robert M. Hardt**, Rice University

- 2:00PM *Averaging and solitons in a periodically forced nonlinear Schrödinger equation*.  
(96) **Panayotis Panayotaros**, IIMAS-UNAM (998-49-259)
- 2:30PM *Analysis of Weil-Petersson Tangent Cones on Teichmüller Spaces*. Preliminary report.  
(97) **Sumio Yamada**, University of Alabama at Birmingham (998-58-285)
- 3:00PM *Geometric Variational Aspects of Moduli Space of Riemann Surfaces*. Preliminary report.  
(98) **Zheng Huang**, University of Oklahoma (998-32-216)
- 3:30PM *Harmonic maps from a 2-complex*.  
(99) **Chikako Mese\***, Connecticut College, and **Georgios Daskalopoulos**, Brown University (998-53-207)
- 4:00PM *Minimal capillary graphs over convex quadrilaterals*. Preliminary report.  
(100) **Robert Huff**, Indiana University (998-51-217)
- 4:30PM *Symmetries of minimal surfaces in the three-sphere*. Preliminary report.  
▶ (101) **John McCuan\*** and **Ryan Hynd**, Georgia Tech (998-53-383)

### Special Session on Coding Theory and Cryptography, II

2:00 PM – 3:50 PM **Cedar, 4th Floor, Hyatt**

Organizers: **Horacio Tapia-Recillas**, UAM-Iztapalapa  
**Neal I. Koblitz**, University of Washington

- 2:00PM *Computing discrete logarithms in finite fields*.  
(102) Preliminary report.  
**Oliver A Schirokauer**, Oberlin College (998-11-400)

## Program of the Sessions – Houston, TX, Thursday, May 13 (cont'd.)

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- 2:30PM *On the equivalence of codes over finite rings and modules.*  
▶ (103) **Hai Quang Dinh**, North Dakota State University, and **Sergio R. Lopez-Permouth\***, Ohio University (998-94-158)
- 3:00PM Discussion
- 3:30PM *Efficient Instantiations of Tweakable Blockciphers.*  
(104) Preliminary report.  
**Phillip Rogaway**, UC Davis (998-68-428)

### Special Session on Designing Frames and Wavelets: From Theory to Digitization, II

2:00 PM – 4:50 PM Sandalwood, 4th Floor, Hyatt

Organizers: **Peter R. Massopust**, Tuboscope Pipeline Services  
**Manos I. Papadakis**, University of Houston

- 2:00PM *Directional Hypercomplex Wavelets for Multidimensional Signal Analysis and Processing.*  
(105) **Wai Lam Chan\***, **Hyeokho Choi** and **Richard G. Baraniuk**, Rice University (998-00-35)
- 2:30PM *Operator Reconstruction in Wavelet Bases and Its Use in Partial Differential Equations.*  
(106) **Shijun Zheng\***, Louisiana State University, **Dennis Healy**, University of Maryland, and **Ioannis Konstantinidis**, University of Houston (998-65-242)
- 3:00PM *Bivariate Multiwavelets.*  
(107) **Jian-ao Lian**, Prairie View A&M University (998-39-53)
- 3:30PM *Wavelet-domain Approximation and Compression of Piecewise Smooth Images.*  
▶ (108) **Michael B Wakin\***, **Justin K Romberg**, **Hyeokho Choi** and **Richard G Baraniuk**, Rice University (998-94-27)
- 4:00PM *Multiresolution super-wavelets.*  
▶ (109) **Dorin Ervin Dutkay**, The University of Iowa (998-42-30)
- 4:30PM *Analytic Oriented Wavelet Frames and Applications.*  
(110) **Ivan W Selesnick**, Polytechnic University (998-94-26)

### Special Session on Graph Theory and Combinatorics, II

2:00 PM – 4:50 PM Redbud, 3rd Floor, Hyatt

Organizers: **Gelacio Salazar**, IICO, UASLP  
**Isidoro Gitler**, CINVESTAV  
**Nathaniel Dean**, Texas Southern University

- 2:00PM *Standard Noether Normalizations of the Graph Subring.*  
(111) **Florian Luca\*** and **Rita Zuazua**, IMATE-UNAM (Morelia) (998-05-344)
- 2:30PM *The spectra of super line multigraphs of regular graphs.*  
▶ (112) **Daniela Ferrero\***, Texas State University, and **Robert Ellis**, Texas A&M University (998-05-324)
- 3:00PM *Generalized Quotients of (partial) latin squares.*  
(113) **Carlos J Rubio\*** and **Lev Glebsky**, IICO-UASLP (998-05-347)
- 3:30PM *Characteristic Equation of a Graph - Hypergraph Classification - Enumeration of Graphs - Graph Code.* Preliminary report.  
(114) **Niki M Palla**, National University Of Athens (998-05-345)

- 4:00PM *Using Graphs in the Binomial Set Complete Intersections.* Preliminary report.  
▶ (115) **Enrique Reyes**, Cinvestav-IPN (998-05-326)
- 4:30PM *Restricted Postman Tours on Mixed Graphs.*  
▶ (116) **Francisco J. Zaragoza**, Universidad Autonoma Metropolitana, Unidad Azcapotzalco (998-05-426)

### Special Session on Homological Algebra of Commutative Rings, I

2:00 PM – 4:50 PM Mesquite, 3rd Floor, Hyatt

Organizers: **Srikanth Iyengar**, University of Nebraska  
**Graham J. Leuschke**, University of Toronto

- 2:00PM *Geometry of 2-regular algebraic sets.* Preliminary report.  
(117) **David Eisenbud**, UC Berkeley and MSRI (998-13-240)
- 2:30PM *Products in Tate-Vogel cohomology over Gorenstein local rings.*  
(118) **Oana Veliche\***, Purdue University, and **Luchezar L. Avramov**, University of Nebraska (998-13-245)
- 3:00PM *The category of modules of G-dimension zero.* Preliminary report.  
(119) **Ryo Takahashi**, Okayama University (998-13-106)
- 3:30PM *Hilbert-Kunz functions of normal local rings.* Preliminary report.  
(120) **Craig Huneke\***, University of Kansas, **Maira McDermott**, Gustavus Adolphus College, and **Paul Monsky**, Brandeis University (998-13-96)
- 4:00PM *The structure of F-pure rings.*  
(121) **Ian M Aberbach**, University of Missouri, Columbia, and **Florian Enescu\***, University of Utah (998-13-161)
- 4:30PM *On the functor  $\mathcal{U}$ .* Preliminary report.  
(122) **Mara D Neusel**, Texas Tech University (998-13-260)

### Special Session on Curvature and Geodesics, I

2:00 PM – 3:40 PM Raintree, 4th Floor, Hyatt

Organizers: **David D. W. Bao**, University of Houston  
**Lilia Del Riego**, Universidad Autónoma San Luis Potosí

- 2:00PM *The topology of Brownian Motion on a Riemannian Manifold.* Preliminary report.  
(123) **Ricardo Francisco Vila-Freyer**, CIMAT (998-51-195)
- 3:00PM *Time-efficient travel under windy conditions.*  
▶ (124) **Colleen Robles**, University of Rochester (998-53-293)

### Special Session on Representations of Algebras, I

2:00 PM – 4:50 PM Cottonwood, 3rd Floor, Hyatt

Organizers: **Rita Esther Zuazua Vega**, UNAM  
**Gordana G. Todorov**, Northeastern University

- 2:00PM *Koszul equivalences and dualities.* Preliminary report.  
(125) **Roberto Martinez-Villa\***, UNAM, and **Manuel Saorin**, Universidad de Murcia (998-18-107)
- 2:30PM *The geometry of self-injective Koszul algebras.* Preliminary report.  
(126) **Edward L Green\***, Virginia Tech, and **Oeyvind Solberg**, NTNU (998-13-33)

- 3:00PM *Node deletion and stably equivalent Koszul algebras*. Preliminary report.  
(127) **Roberto Martínez-Villa**, Instituto de Matemáticas, UNAM, Unidad Morelia, and **Gustavo Montaña-Bermúdez\***, Facultad de Ciencias, UAEMex (998-16-327)
- 3:30PM *On the Auslander-Reiten quiver of the category of coherent sheaves over the projective  $n$ -space*. Preliminary report.  
(128) **Dan Zacharia\***, Syracuse University, and **Roberto Martínez-Villa**, UNAM-Morelia (998-16-250)
- 4:00PM *Periodic Coxeter matrices*.  
(129) **José Antonio de la Peña**, Instituto de Matemáticas, UNAM (998-16-416)
- 4:30PM *Monoidal structures on representations of algebras*. Preliminary report.  
(130) **Alex Martsinkovsky\***, Northeastern University, and **Anatoly Vlassov**, Belarus State University (998-16-182)

**Special Session on Nonlinear Analysis, I**

2:00 PM – 4:50 PM Dogwood, 3rd Floor, Hyatt

Organizers: **Mónica Clapp**, UNAM**Alfonso Castro**, University of Texas at San Antonio

- 2:00PM *Multiple Positive Solutions for Classes of  $p$ -Laplacian Equations*.  
(131) **Mythily Ramaswamy**, Tata Institute for Fundamental Research, and **Ratnasingham Shivaji\***, Mississippi State University (998-35-172)
- 2:30PM *A class of singular Gierer-Meinhardt systems of elliptic boundary value problems*.  
(132) **Eun Heui Kim**, California State University at Long Beach (998-35-129)
- 3:00PM *On the Improved Hardy Inequalities*.  
(133) **Zhi-Qiang Wang**, Utah State University (998-35-243)
- 3:30PM *On a Resonant Schrodinger Equation in  $R^N$  with Unbounded Nonlinearities*.  
(134) **Hossein T Tehrani**, UNLV (998-35-283)
- 4:00PM *Limiting Embeddings of Fractional Sobolev Spaces and Elliptic Systems with Critical Exponents*.  
(135) **David G. Costa\***, University of Nevada Las Vegas, **Djairo G. de Figueiredo**, Universidade Estadual de Campinas, and **Jianfu Yang**, Chinese Academy of Sciences (998-35-265)
- 4:30PM *Resonance and strong resonance for semilinear elliptic equations in  $R^N$* .  
▶ (136) **Gabriel Lopez Garza**, Universidad Pedagogica Nacional (998-35-357)

**Special Session on Continuum Theory and General Topology (in Honor of David Bellamy's 60th Birthday), II**

2:00 PM – 4:50 PM Regency Room, 2nd Floor, Hyatt

Organizers: **Janusz J. Charatonik**, UNAM**Charles L. Hagopian**, California State University, Sacramento**Sergio Macias**, UNAM

- 2:00PM *On The Hyperspace Suspension of a Continuum*.  
(137) **María de Jesus Lopez\***, **Raul Escobedo**, Benemerita Universidad Autonoma de Puebla, and **Sergio Macias**, Universidad Nacional Autonoma de Mexico (998-54-360)

- 2:30PM *Inverse Limits of Upper Semi-continuous Set Valued Functions*.  
(138) **W. T. Ingram\***, University of Missouri-Rolla, and **William S. Mahavier**, Emory University (998-54-188)
- 3:00PM *Semi-homogeneous continua*.  
(139) **Victor Neumann-Lara**, **Patricia Pellicer** and **Isabel Puga\***, UNAM (998-54-204)
- 4:00PM *Rigid Embeddings in the Plane*.  
(140) **Wayne Lewis**, Texas Tech University (998-54-215)
- 4:30PM *On semi-homogeneous continua*. Preliminary report.  
(141) **Patricia Pellicer\***, **Isabel Puga** and **Victor Neumann**, Universidad Nacional Autónoma de México (998-54-301)

**Special Session on Low Dimensional Topology, II**

2:00 PM – 4:50 PM Magnolia, 3rd Floor, Hyatt

Organizers: **Victor Núñez**, CIMAT**Luis G. Valdez**, University of Texas, El Paso

- 2:00PM *Acyindrical surfaces in knot and link complements*. Preliminary report.  
(142) **Mario Eudave-Munoz\*** and **Max Neumann-Coto**, Instituto de Matematicas, UNAM (998-57-408)
- 2:30PM *On the relationship between 3-manifolds and Hopf-algebra objects*. Preliminary report.  
(143) **Fernando J. O. Souza**, University of Iowa (998-57-396)
- 3:00PM *Relations between Quantum Gravity and Topology*.  
(144) **J Manuel Garcia-Islas**, Centro de Investigacion en Matematicas (998-83-387)
- 3:30PM *Depths of Seifert surfaces*. Preliminary report.  
(145) **Mark Brittenham**, University of Nebraska (998-57-349)
- 4:00PM *Colorability, Tangles and Quandles*.  
▶ (146) **Junalyn P. Navarra-Madsen\***, UT-Dallas, and **Isabel K. Darcy**, University of Iowa (998-57-174)
- 4:30PM *Enzymes that change the topology of DNA*.  
▶ (147) **Mariel Vazquez**, U.C. Berkeley (998-92-343)

**Special Session on Probability and Stochastic Processes, II**

2:00 PM – 4:50 PM Ponderosa, 4th Floor, Hyatt

Organizers: **Daniel Hernández Hernandez**, CIMAT  
**Christian Houdre**, Georgia Institute of Technology

- 2:00PM *Uniqueness of Solutions to Stochastic Differential Inclusions*. Preliminary report.  
▶ (148) **Kavita Ramanan\***, Carnegie Mellon University, **Rami Atar**, Technion, and **Amarjit Budhiraja**, University of North Carolina, Chapel Hill (998-60-133)
- 2:30PM *Dynamical Walks*.  
(149) **David Levin**, **Pedro J. Méndez** and **Davar Khoshnevisan\***, University of Utah (998-60-90)
- 3:00PM *A Brownian-Time Excursion into 4th Order PDEs and SPDEs*.  
(150) **Hassan Allouba**, Kent State University (998-60-148)
- 3:30PM *Matrix-exponential distributions: calculus and interpretations via flows*.  
(151) **Mogens Bladt**, IIMAS-UNAM (998-60-144)
- 4:00PM *Existence and regularity properties of weak solutions of a fractal Burgers equation with a noise term*.  
(152) **Ekaterina T. Kolkovska**, CIMAT (998-60-146)

- 4:30PM *Differentiable Optimal Solutions of Discounted Markov Control Processes.*  
(153) **Raul Montes de Oca**, UAM-Iztapalapa (998-60-147)

**Session for Contributed Papers**

2:00 PM – 4:25 PM **Ebony, 4th Floor, Hyatt**

- 2:00PM *A pair of transformations on odd analytic functions.*  
(154) **George O. Golightly**, Jacksonville, Texas (998-30-08)
- 2:15PM *Developing Hyperspherical Function Method in Impulse Representation applicable for the microscopic investigations of various Nuclear and Hypernuclear systems.*  
(155) **Lia Leon Chachanidze-Margolin**, Katharine Gibbs College, New York, NY (998-33-09)
- 2:30PM *A uniqueness result for asymptotically simple spacetimes of de Sitter type.* Preliminary report.  
(156) **Didier A Solis**, University of Miami (998-83-119)
- 2:45PM *Linear Feasibility Problem and Linear Programming.*  
(157) **Shah M. S. Imdadi\***, Sharjah College, and **Jai N. Singh**, Barry University (998-90-203)
- 3:00PM *Suspaces of Certain Rearrangement Invariant Spaces Not Containing  $l_2$ .* Preliminary report.  
(158) **Andrew B. Perry**, Springfield College (998-46-224)
- 3:15PM *Hellinger Distance Estimation of Nonlinear Dynamical Systems.*  
(159) **Ouagnina Hili**, National Polytechnic Institute of Yamoussoukro (998-62-18)
- 3:30PM *Harmonic Cellular Continuum.*  
(160) **Avery S. Zoch**, EquationGallery.com (998-54-06)
- 3:45PM *Analysis of a Conveyor Model Viewed as a Priority Queueing System with Finite Buffers.*  
(161) **Aliakbar Montazer Haghighi\***, Prairie View A & M University, TX, and **Dimitar P. Mishev**, Prairie View A & M University (998-60-246)
- 4:00PM *Minimal Prime Ideals of Skew-polynomial Rings.*  
(162) **Vijay Kumar Bhat**, Banasthali Vidyapith, Rajasthan India 304022 (998-16-10)
- 4:15PM *Chaos and Self - Oscillatory Regimes in Ecological Systems of two competing Species and one Predator.* Preliminary report.  
(163) **Tolibjon Ergashevich Buriev\*** and **Vafokul Ergashev**, Samarkand State University (998-13-13)

- 8:30AM *A General and Systematic Discontinuous Galerkin Method.*  
(164) **Ismael Herrera**, Universidad Nacional Autonoma de Mexico, (UNAM) Instituto de Geofísica (998-35-81)
- 9:00AM *A Numerical Method For A Fully Nonlinear Elasticity Equation.*  
(165) **Edward J. Dean\*** and **Roland Glowinski**, University of Houston (998-65-312)
- 9:30AM *Finite Element Method and Operator Splitting for a Viscous Incompressible Free Surface Flow.*  
(166) **Roland Glowinski**, University of Houston, and **Hector Juarez\***, UAM-I, Mexico (998-76-61)
- 10:00AM *Computational Methods for Multi-phase Multi-reaction Equilibrium Problem - Modeling Urban and Regional Aerosols.*  
(167) **Jiwen He**, University of Houston (998-49-228)
- 10:30AM *A Comparison of Some Operator Splitting Schemes.* Preliminary report.  
(168) **Francisco Javier Sanchez\***, Universidad Autonoma Metropolitana-Iztapalapa, and **Javier Salcedo**, Instituto Politecnico Nacional (998-65-287)
- 11:00AM *Singular Shocks.* Preliminary report.  
(169) **Richard Sanders**, University of Houston (998-65-166)

**Special Session on Coding Theory and Cryptography, III**

8:30 AM – 11:20 AM **Cedar, 4th Floor, Hyatt**

Organizers: **Horacio Tapia-Recillas**, UAM-Iztapalapa  
**Neal I. Koblitz**, University of Washington

- 8:30AM *Minimum distance bounds for divisible codes.*  
(170) Preliminary report.  
**Iwan Duursma**, University of Illinois at Urbana-Champaign (998-94-64)
- 9:00AM *How to find smooth parts of integers.*  
(171) **Daniel J. Bernstein**, University of Illinois at Chicago (998-11-98)
- 9:30AM *Construction of Linear Codes via Grobner bases.*  
(172) Preliminary report.  
**Shuhong Gao**, Clemson University (998-94-43)
- 10:30AM *Correlation Among Signal Sets.* Preliminary report.  
(173) **Guang Gong**, University of Waterloo (998-94-51)
- 11:00AM *An Essay on Equivalence of Linear Codes, III.*  
(174) **Jay A Wood**, Western Michigan University (998-94-277)

**Special Session on Graph Theory and Combinatorics, III**

8:30 AM – 11:20 AM **Dogwood, 3rd Floor, Hyatt**

Organizers: **Gelacio Salazar**, IICO, UASLP  
**Isidoro Gitler**, CINVESTAV  
**Nathaniel Dean**, Texas Southern University

- 8:30AM *On Random Points in the Unit Disk.*  
(175) **Catherine Yan\***, **Robert Ellis**, Texas A&M University, and **Xingde Jia**, Texas State University-San Marcos (998-05-279)
- 9:00AM *Applications of the Conjecture-Making Program Graffiti.pc.*  
(176) **Ermelinda DeLaVina**, University of Houston-Downtown (998-05-406)
- 9:30AM *On Pseudo-Transitive Graphs.*  
(177) **Farhad Shahrokhi**, UNT (998-05-403)

**Friday, May 14**

**Meeting Registration**

8:00 AM – 4:00 PM **Exhibit Hall, Lower Level, Hyatt**

**Exhibit and Book Sale**

8:00 AM – 4:00 PM **Exhibit Hall, Lower Level, Hyatt**

**Special Session on Space and Time Decomposition Methods in Computational and Applied Mathematics, II**

8:30 AM – 11:20 AM **Ebony, 4th Floor, Hyatt**

Organizers: **Roland Glowinski**, University of Houston  
**Tsorng-Whay Pan**, University of Houston  
**L. Héctor Juarez V.**, UAM-Iztapalapa

- 10:00AM *A geometric construction of large vertex transitive graphs of diameter 2.* (178)  
**Gabriela Araujo\***, Instituto de Matemáticas, UNAM, **Marc Noy**, Universidad Politécnica de Cataluña, España., and **Oriol Serra**, Universidad Politécnica de Cataluña, España (998-05-83)
- 10:30AM *New facets for the Planar Subgraph Polytope.* (179)  
**Iliya V. Hicks**, Texas A&M University (998-90-271)
- 11:00AM *Triangulations and a Generalization of Bose's Method.* Preliminary report. (180)  
**Gloria Aguilar-Cruz\*** and **Feliu D. Sagols**, Department of Mathematics. CINVESTAV (998-05-85)

- 10:00AM *Koszul duality, stabilization, and derived categories.* Preliminary report. (190)  
**Roberto Martínez Villa**, UNAM, Morelia, and **Alex Martsinkovsky\***, Northeastern University (998-18-181)
- 10:30AM *Extremal algebras.* (191)  
**Luchezar L. Avramov**, University of Nebraska, **Srikanth Iyengar**, University of Missouri, and **Claudia Miller\***, Syracuse University (998-13-257)
- 11:00AM *Constructing modules of finite projective dimension.* (192)  
**Greg Piepmeyer** and **Paul C. Roberts\***, University of Utah (998-13-171)

### Special Session on Differential Geometry, II

8:30 AM – 11:20 AM Raintree, 4th Floor, Hyatt

- Organizers: **Raul Quiroga Barranco**, CINVESTAV  
**Alberto Candel**, California State University, Northridge
- 8:30AM *Singular metrics from holomorphic maps.* (181)  
**Jesus Muciño-Raymundo**, IMATE-Morelia, UNAM (998-53-255)
- 9:00AM *Dynamics on the space of harmonic functions and the foliated Liouville problem.* (182)  
**Renato Feres\***, Washington University in St. Louis, and **A Zeghib**, ENS Lyon (998-53-263)
- 9:30AM *Two results about the moduli space of smooth Levi-flat, integrable, CR-structures on the 5-sphere.* (183)  
**Laurent Meersseman**, I.R.M.A.R. Université de Rennes I, and **Alberto Verjovsky\***, IMATE-Cuernavaca, UNAM (998-53-254)
- 10:00AM *Harmonic morphisms between Riemannian manifolds.* (184)  
**John C. Wood**, University of Leeds, England (998-53-124)
- 10:30AM *Orthogonal actions in complex projective spaces and an equivariant Arnold-Kuiper-Massey Theorem.* (185)  
**Dung Trang Le**, Centre de Mathématiques et d'Informatique, **Jose Seade\*** and **Alberto Verjovsky**, IMATE-Cuer, UNAM (998-53-154)
- 11:00AM *Geometric interpretation of the  $\mathbb{Q}$ -rank of a locally symmetric space.* Preliminary report. (186)  
**Pralay Chatterji**, Rice University, and **Dave Witte Morris\***, University of Lethbridge (998-53-132)

### Special Session on Homological Algebra of Commutative Rings, II

8:30 AM – 11:20 AM Sandalwood, 4th Floor, Hyatt

- Organizers: **Srikanth Iyengar**, University of Nebraska  
**Graham J. Leuschke**, University of Toronto
- 8:30AM *Maximal Cohen-Macaulay Modules over the Generic Determinant.* Preliminary report. (187)  
**Ragnar-Olaf Buchweitz\*** and **Graham Leuschke**, Univ. of Toronto (998-13-331)
- 9:00AM *Multiplicity Bounds for Ideals linked to a Complete Intersection.* (188)  
**Hema Srinivasan**, University of Missouri (998-13-363)
- 9:30AM *A functorial approach to modules of G-dimension zero.* Preliminary report. (189)  
**Yuji Yoshino**, Okayama University (998-13-211)

### Special Session on Harmonic and Functional Analysis, II

8:30 AM – 11:20 AM Redbud, 3rd Floor, Hyatt

- Organizers: **Salvador Pérez-Esteva**, UNAM-Cuernavaca  
**Carlos Bosch**, ITAM  
**Josefina Alvarez**, New Mexico State University
- 8:30AM *An attempt to generalize some metric fixed point theorems to topological vector spaces.* Preliminary report. (193)  
**Helga Fetter**, Centro de Investigación en Matemáticas (998-46-125)
- 9:00AM *Asymptotic Uniform Convexity and Smoothness on Banach Spaces.* (194)  
**Cesar L Garcia**, Instituto Tecnológico Autónomo de México (998-46-141)
- 9:30AM *Elliptic boundary value problems in two dimensions.* (195)  
**Irina Mitrea**, Cornell University (998-45-167)
- 10:00AM *Herz classes and Toeplitz operators in the disk.* (196)  
**Maribel Loaiza\***, **Marcos Lopez-Garcia**, UNAM, and **Salvador Perez-Esteva**, Unidad Cuernavaca, UNAM (998-46-319)
- 10:30AM *On the spaces  $Q_\alpha(\mathbb{R}^n)$  and their dyadic versions.* (197)  
**Galia D Dafni\***, Concordia University, and **Jie Xiao**, Memorial University (998-42-317)
- 11:00AM *Orlicz Bounds for Operators of Restricted Weak Type.* (198)  
**Paul Alton Hagelstein**, Baylor University (998-42-316)

### Special Session on Associative Rings, II

8:30 AM – 11:20 AM Cottonwood, 3rd Floor, Hyatt

- Organizers: **José Ríos Montes**, UNAM  
**Mária-José Arroyo**, UAM-Iztapalapa  
**Sergio R. López-Permouth**, Ohio University
- 8:30AM *Prime and Irreducible Preradicals.* (199)  
**Carlos Signoret**, Universidad Autónoma Metropolitana Iztapalapa (998-16-120)
- 9:00AM *Multiplicative Structure of Arbitrary Galois Extensions.* Preliminary report. (200)  
**Baoping Jia**, Maryville University of Saint Louis (998-16-118)
- 9:30AM *Coprime Preradicals and Modules.* (201)  
**Francisco F Raggi**, Instituto de Matemáticas, UNAM (998-16-180)
- 10:00AM *Divisibility and Factorization of Kernel Functors.* (202)  
**Ana M. de Viola-Prioli**, Universidad Simon Bolívar, and **Jorge E. Viola-Prioli\***, Florida Atlantic University (998-16-65)

## Program of the Sessions – Houston, TX, Friday, May 14 (cont'd.)

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- 10:30AM *The Lattice of Preradicals over  $\mathbb{Z}_p^n$ .*  
(203) **Rogelio Fernández-Alonso\*** and **Silvia Gavito**,  
Universidad Autónoma Metropolitana - Iztapalapa  
(998-06-60)
- 11:00AM *Direct sum decompositions of modules, almost  
trace ideals, and pullbacks of monoids.* Preliminary  
report.  
**Alberto Facchini**, University of Padua, Italy  
(998-16-71)

### Special Session on Low Dimensional Topology, III

8:30 AM – 11:20 AM **Magnolia, 3rd Floor, Hyatt**

Organizers: **Victor Núñez**, CIMAT

**Luis G. Valdez**, University of Texas, El Paso

- 8:30AM *3-manifolds of  $S^1$ -category two.* Preliminary report.  
(205) **Francisco González-Acuña**, IMATE-UNAM and  
CIMAT (998-57-329)
- 9:00AM *Quadrisecants of knots with small crossing  
▶ (206) number.* Preliminary report.  
**Gyo Taek Jin**, Korea Advanced Institute of Science  
and Technology (998-57-421)
- 9:30AM *Closed Essential Surfaces in the Complements of  
(207) Large Volume Berge Knots.* Preliminary report.  
**Kenneth L Baker**, University of Texas at Austin  
(998-57-410)
- 10:00AM *An example of a hyperbolic 3-manifold realizing a  
(208) bound on Dehn fillings.* Preliminary report.  
**Lorena Armas-Sanabria**, UNAM (998-57-380)
- 10:30AM *On nonexistence of foliations.* Preliminary report.  
(209) **Sergio Fenley**, Florida State University, **Rachel  
Roberts\***, **John Shareshian**, Washington University  
in St Louis, and **Melanie Stein**, Trinity College  
(998-57-417)
- 11:00AM *Homology and Derived Series of Groups.* Preliminary  
(210) report.  
**Tim D. Cochran\***, Rice University, and **Shelly  
Harvey**, M.I.T. (998-57-427)

### Special Session on Probability and Stochastic Processes, III

8:30 AM – 11:20 AM **Ponderosa, 4th Floor, Hyatt**

Organizers: **Daniel Hernández Hernandez**, CIMAT  
**Christian Houdre**, Georgia Institute of  
Technology

- 8:30AM *The large deviation principle for M-estimators.*  
(211) Preliminary report.  
**Miguel A Arcones**, Binghamton University  
(998-62-63)
- 9:00AM *Existence of local time and Tanaka formula for a  
(212) two-type superprocess.*  
**Jose Alfredo Lopez-Mimbela**, CIMAT (998-60-151)
- 9:30AM *Upper Estimates of Dynamic VaR and Mean Loss  
(213) Associated to Diffusion Processes.* Preliminary  
report.  
**Laurent Denis**, Université du Maine, France,  
**Begoña Fernández** and **Ana Meda\***, Facultad de  
Ciencias, UNAM (998-60-66)
- 10:00AM *Singular Control with State Constraints.*  
(214) **Amarjit Budhiraja**, Department of Statistics,  
University of North Carolina at Chapel Hill  
(998-60-145)
- 10:30AM *Analysis of codependence of linear fractional stable  
(215) noise.* Preliminary report.  
**Joshua Levy**, University of Minnesota-Morris  
(998-60-198)

- 11:00AM *On the tradeoff between endowment and  
(216) investment.*  
**Daniel Hernandez-Hernandez**, CIMAT  
(998-60-202)

### Special Session on Geometric Variational Problems, III

9:00 AM – 11:20 AM **Holly, 4th Floor, Hyatt**

Organizers: **Clara Garza-Hume**, IIMAS, UNAM  
**Michael Wolf**, Rice University  
**Robert M. Hardt**, Rice University

- 9:00AM *Elastica, Sessile Drops, and Exotic Containers.*  
▶ (217) Preliminary report.  
**Henry C Wente**, University of Toledo (998-49-388)
- 9:30AM *Plane-like minimal surfaces in periodic media with  
▶ (218) exclusions.*  
**Monica Torres**, Northwestern University  
(998-35-244)
- 10:00AM *The formation of tree leaf.* Preliminary report.  
▶ (219) **Qinglan Xia**, University of Texas at Austin  
(998-49-121)
- 10:30AM *The double-well potential and phase transitions.*  
(220) **Clara Garza-Hume\***, IIMAS, UNAM, Mexico, and  
**Pablo Padilla**, IIMAS, UNAM (998-49-241)
- 11:00AM *Topological properties of bubble clusters.*  
(221) Preliminary report.  
**Pablo Padilla\*** and **C.E. Garza-Hume**, IIMAS-UNAM,  
Mexico (998-49-262)

### Special Session on Mathematical Physics, I

9:00 AM – 11:20 AM **Pecan, 4th Floor, Hyatt**

Organizers: **Carlos Villegas-Blas**, UNAM  
**Alejandro Uribe**, University of  
Michigan, Ann Arbor

- 9:00AM *Some recent developments in Segal-Bargmann  
(222) analysis.* Preliminary report.  
**Stephen Bruce Sontz**, Centro de Investigación en  
Matemáticas, A.C. (CIMAT) (998-81-14)
- 9:30AM *Segal-Bargmann transform for noncompact  
(223) symmetric spaces.* Preliminary report.  
**Brian C. Hall\***, Univ. of Notre Dame, and **Jeffrey J.  
Mitchell**, Baylor University (998-81-352)
- 10:00AM *On the quantization of the moduli space of flat  
(224)  $SU(2)$ -connections on the torus.*  
**Razvan Gelca\***, Texas Tech University, and  
**Alejandro Uribe**, University of Michigan  
(998-81-184)
- 10:30AM *Eigenfunction expansions and spectral projections  
(225) for isotropic elasticity outside an obstacle.*  
**F Menendez-Conde**, CIMA - Universidad Autónoma  
de Hidalgo (998-46-389)
- 11:00AM *Perturbations of Schrödinger Operators with a  
▶ (226) Wigner-von Neumann Like Potential Leaving the  
Embedded Eigenvalue Fixed.*  
**Jaime Cruz-Sampedro**, Universidad Autónoma del  
Estado de Hidalgo (998-81-137)

### Special Session on Mathematical Problems in the Analysis of Synchronous States in Networks, I

9:00 AM – 11:20 AM **Live Oak, 4th Floor, Hyatt**

Organizers: **Kresimir Josic**, University of Houston  
**Valentin Afraimovich**, IICO-UASLP

- 9:00AM *Pinching Synchronization of Coupled Map Lattices.*  
 ▶ (227) Preliminary report.  
**Franco Bagnoli**, Dipartimento di Energetica, Università di Firenze, and **Raul Rechtman\***, Centro de Investigación en Energía, UNAM (998-37-395)
- 9:30AM *Coupled Cell Systems.*  
 (228) **Martin Golubitsky\***, University of Houston, and **Ian Stewart**, University of Warwick (998-34-87)
- 10:00AM *Two-Color Patterns of Synchrony in Lattice Dynamical Systems.*  
 (229) **Yunjiao Wang\*** and **Martin Golubitsky**, University of Houston (998-34-102)
- 10:30AM *Reproducibility of transient dynamics in a model of neural networks.* Preliminary report.  
 ▶ (230) **V. S. Afraimovich\***, IICO-UASLP, and **M. I. Rabinovich**, INS, UCSD (998-37-128)
- 11:00AM *Towards Generalized Synchronization on Strictly Different Chaotic Systems.* Preliminary report.  
 (231) **R Femat\***, Matemáticas Aplicadas y Sistemas Computacionales, IPICYT, **L Kocarev**, Institute for Nonlinear Science, UCSD., and **M. E. Monsivais-Pérez**, Matemáticas Aplicadas y Sistemas Computacionales, IPICYT (998-93-335)

### Special Session on Representations of Algebras, II

9:00 AM – 11:20 AM Regency Room, 2nd Floor, Hyatt

Organizers: **Rita Esther Zuazua Vega**, UNAM  
**Gordana G. Todorov**, Northeastern University

- 9:00AM *Stacks of algebras and their homology.*  
 (232) **Nancy E Heinschel**, National Security Agency, and **Birge K Huisgen-Zimmermann\***, University of California at Santa Barbara (998-16-342)
- 9:30AM *The universal cover of a preprojective algebra.*  
 (233) **Christof Geiss**, UNAM (998-16-309)
- 10:00AM *The Hochschild cohomology ring of a monomial algebra.*  
 (234) **Edward L Green**, VPI&SU, **Nicole Snashall\***, University of Leicester, and **Oeyvind Solberg**, NTNU (998-16-49)
- 10:30AM *Stratifying Systems via relative projective modules.*  
 (235) **Eduardo Do N. Marcos**, Sao Paulo, Brazil, **Octavio Mendoza\***, Instituto de Matemáticas, UNAM, and **Edith Corina Saenz**, Facultad de Ciencias, UNAM (998-16-187)
- 11:00AM *Modules with bounded Betti numbers.* Preliminary report.  
 (236) **Oeyvind Solberg**, NTNU (998-18-38)

### Special Session on Dynamical Systems, II

9:00 AM – 11:20 AM Willow, 4th Floor, Hyatt

Organizers: **Renato Iturriaga**, CIMAT  
**Rafael de la Llave**, University of Texas at Austin

- 9:00AM *Domain Relaxation in Polymer Monolayers.*  
 ▶ (237) Preliminary report.  
**James C. Alexander\***, Case Western Reserve University, **Andrew Bernoff**, Harvey Mudd College, **Elizabeth Mann**, Kent State University, and **J. Adin Mann**, Case Western Reserve University (998-37-227)
- 9:30AM *Period-doubling cascades with external noise.*  
 ▶ (238) Preliminary report.  
**Oliver R Diaz**, University of Texas at Austin (998-37-239)

- 10:00AM *C2 densely the 2-sphere has an elliptic closed geodesic.*  
 (239) **Gonzalo Contreras\***, CIMAT, Guanajuato, Mexico, and **Fernando Oliveira**, Universidade Federal de Minas Gerais, Brazil (998-37-303)
- 10:30AM *Lagrangian singularities and stability for periodic orbits in Hamiltonian systems.*  
 (240) **D. C. Offin**, Queen's University, Canada (998-58-353)
- 11:00AM *Dynamics of 2D time-periodic Euler flows.*  
 (241) Preliminary report.  
**Philip L Boyland**, University of Florida (998-37-409)

### Special Session on Algebraic Geometry, II

9:30 AM – 11:20 AM Mesquite, 3rd Floor, Hyatt

Organizers: **Pedro Luis Del Angel R.**, CIMAT  
**Emma Previato**, Boston University  
**Frank Sottile**, University of Massachusetts, Amherst  
**Isidro Nieto**, Universidad de San Nicolas Hidalgo

- 9:30AM *A Complexity Threshold for Real Fewnomials.*  
 (242) Preliminary report.  
**J. Maurice Rojas\*** and **Casey Stella**, Texas A&M University (998-14-425)
- 10:00AM *Algebraic Geometry Applications in Bayesian Model Selection.* Preliminary report.  
 (243) **Luis David Garcia**, Virginia Polytechnic (998-14-364)
- 10:30AM *Lower Bounds for Real Polynomial Systems.*  
 (244) Preliminary report.  
**Evgenia Soprunova**, University of Massachusetts (998-14-367)
- 11:00AM *The Cayley-Bacharach theorem and coding theory.*  
 (245) **Leah Gold**, Texas A&M University, **John Little**, College of the Holy Cross, and **Hal Schenck\***, Texas A&M University (998-14-372)

### Invited Address

11:30 AM – 12:20 PM Regency Room, 2nd Floor, Hyatt

- (246) *Homomorphisms of commutative rings.*  
**Luchezar L. Avramov**, University of Nebraska (998-13-01)

### Invited Address

2:30 PM – 3:20 PM Regency Room, 2nd Floor, Hyatt

- (247) *Lie superalgebras associated to the adjoint representation.*  
**Adolfo Sánchez-Valenzuela**, Centro de Investigación en Matemáticas (998-17-04)

### Special Session on Complex Analysis and Operator Theory, I

3:30 PM – 6:20 PM Ponderosa, 4th Floor, Hyatt

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

- 3:30PM *F(p, q, s) spaces and Harmonic Majorants.*  
 ▶ (248) Preliminary report.  
**L. F. Reséndis O.\***, Universidad Autónoma Metropolitana-Azcapotzalco, **Enrique Ramirez de Arellano**, CINVESTAV-IPN, and **Luis Manuel Tovar Sanchez**, Escuela Superior de Física y Matemáticas del IPN (998-30-69)
- 4:00PM *Characterizations for  $B^{p,q}$  Spaces by Bloch Spaces in Clifford Analysis.*  
 (249) **Ahmed A. El-Sayed**, South Valley University, **Klaus K. Gürlebeck**, Bauhaus-Universität Weimar, **Lino F. Resendis**, Universidad Autónoma Metropolitana, and **Luis M. Tovar\***, Instituto Politécnico Nacional (998-30-104)
- 4:30PM *Essentially Reductive Hilbert Modules.* Preliminary report.  
 (250) **Ronald G Douglas**, Texas A & M University (998-47-221)
- 5:00PM *Global regularity for the  $\bar{\partial}$ -Neumann operator.*  
 (251) Preliminary report.  
**Emil J. Straube**, Texas A&M University (998-32-229)
- 5:30PM *Report: Reviewing an example of Hölder estimates for the Cauchy-Riemann equation on complex singular spaces.* Preliminary report.  
 (252) **Fermin Acosta**, ITESM-CINVESTAV (998-32-325)
- 6:00PM *Invariant path integrals from invariant distances.*  
 (253) Preliminary report.  
**David E Barrett**, University of Michigan (998-51-368)

### Special Session on Algebraic Topology, III

- 3:30 PM – 6:20 PM **Pecan, 4th Floor, Hyatt**
- Organizers: **Miguel A. Xicoténcatl**, CINVESTAV  
**Frederick R. Cohen**, University of Rochester
- 3:30PM *What is the homotopy type of the space of long knots in  $R^3$ ? or the space of closed knots in  $S^3$ ?*  
 (254) Preliminary report.  
**Ryan Budney**, University of Rochester (998-55-100)
- 4:30PM *Calculus of functors and spaces of knots.*  
 (255) **Ismar Volic**, University of Virginia (998-55-110)
- 5:30PM *Realizing Diagrams of Homotopy Groups.*  
 (256) Preliminary report.  
**David Blanc**, University of Haifa, **Mark Johnson**, Pennsylvania State University, Altoona, and **James M Turner\***, Calvin College (998-55-307)
- 6:00PM *On the IA-automorphisms of a free group.*  
 (257) Preliminary report.  
**F. R. Cohen\***, University of Rochester, **B. Farb**, University of Chicago, and **J. Pakianathan**, University of Rochester (998-55-411)

### Special Session on Continuous Distributed Parameters Models in Mathematical Biology, II

- 3:30 PM – 5:20 PM **Willow, 4th Floor, Hyatt**
- Organizers: **William E. Fitzgibbon**, University of Houston  
**Jorge X. Velasco Hernández**, Instituto Mexicana del Petroleo
- 3:30PM *Suppression and control of nonlinear dynamics in distributed parameter biological systems.*  
 ▶ (258) Preliminary report.  
**Hector F Puebla\*** and **Roland Martin**, Instituto Mexicano del Petroleo (998-93-281)

- 4:00PM *Mathematical Models of Prion Proliferation.*  
 ▶ (259) **Glenn F. Webb\***, Vanderbilt University, **Meredith Greer**, Bates College, **Laurent Pujo-Menjouet** and **Jan Pruss**, Vanderbilt University (998-92-205)
- 4:30PM *Evolutional solution and characteristic patterns of a free boundary problem model of ductal carcinoma in situ.* Preliminary report.  
 (260) **Yongzhi Steve Xu**, University of Tennessee at Chattanooga (998-35-186)
- 5:00PM *Modeling spread of tumors along linear and tubular structures.* Preliminary report.  
 ▶ (261) **Marek Kimmel\***, Rice University, and **Anna Marciniak - Czochra**, Heidelberg University (998-92-430)

### Special Session on Mathematical Physics, II

- 3:30 PM – 6:20 PM **Ebony, 4th Floor, Hyatt**
- Organizers: **Carlos Villegas-Blas**, UNAM  
**Alejandro Uribe**, University of Michigan, Ann Arbor
- 3:30PM *Time Development of Exponentially Small Non-Adiabatic Transitions.*  
 (262) **George A. Hagedorn\***, Virginia Tech, and **Alain Joye**, Université de Grenoble I (998-81-135)
- 4:00PM *A Time-Independent Born-Oppenheimer Approximation with Exponentially Small Error Estimates.*  
 (263) **George A Hagedorn**, Virginia Polytechnic Institute and State University, and **Julio H Toloza\***, Universidad Autónoma del Estado de Hidalgo (998-81-95)
- 4:30PM *Low regularity solutions to a gently stochastic non-linear wave equation in non-equilibrium statistical mechanics.* Preliminary report.  
 (264) **Lawrence E Thomas\***, University of Virginia, and **Luc Rey-Bellet**, University of Massachusetts (998-82-248)
- 5:00PM *A Sharp analog of Young's Inequality on  $S^N$  and Related Entropy Inequalities.*  
 (265) **Eric Carlen**, Georgia Institute of Technology, **Elliott Lieb**, Princeton University, and **Michael Loss\***, Georgia Institute of Technology (998-81-391)
- 5:30PM *Ferromagnetic ordering of energy levels.*  
 ▶ (266) **Bruno Nachtergaele**, University of California, Davis, **Wolfgang Spitzer\***, University of British Columbia, and **Shannon Starr**, McGill University (998-82-89)
- 6:00PM *An Integrable Hierarchy and Its Exact Solution.*  
 ▶ (267) Preliminary report.  
**Zhijun Qiao**, Los Alamos National Laboratory (998-35-57)

### Special Session on Designing Frames and Wavelets: From Theory to Digitization, III

- 3:30 PM – 6:20 PM **Sandalwood, 4th Floor, Hyatt**
- Organizers: **Peter R. Massopust**, Tuboscope Pipeline Services  
**Manos I. Papadakis**, University of Houston
- 3:30PM *Finite frame sigma-delta quantization.* Preliminary report.  
 (268) **John J Benedetto\***, University of Maryland, **Alexander M Powell**, Princeton University, and **Ozgur Yilmaz**, University of Maryland (998-42-19)

- 4:00PM *Symmetric MRA Tight Wavelet Frames With Three Generators and High Vanishing Moments.* Preliminary report.  
**Bin Han\*** and **Qun Mo**, University of Alberta (998-42-29)
- 4:30PM *On the role of the Zak transform in wavelet construction and design.*  
 ▶ (270) **Jeffrey A Hogan\***, University of Arkansas, and **Joseph D Lakey**, New Mexico State University (998-42-36)
- 5:00PM *Frames with specified norms and rank-one decomposition of operators.*  
 (271) **Keri A Kornelson\*** and **David R. Larson**, Texas A&M University (998-42-31)
- 5:30PM *BMO and affine frame operators.*  
 (272) **Joseph D Lakey\***, New Mexico State University, **John E Gilbert**, The University of Texas at Austin, and **Jeffrey A Hogan**, University of Arkansas (998-42-17)
- 6:00PM *Constructing Equiangular Tight Frames via Alternating Projection.*  
 (273) **Joel A Tropp\***, **Inderjit S Dhillon**, **Robert W Heath**, UT-Austin, and **Thomas Strohmer**, UC-Davis (998-52-48)

### Special Session on Mathematical Problems in the Analysis of Synchronous States in Networks, II

3:30 PM – 5:50 PM Live Oak, 4th Floor, Hyatt

Organizers: **Kresimir Josic**, University of Houston  
**Valentin Afraimovich**, IICO-UASLP

- 3:30PM *Analysis of synchronization in networks of weakly nonlinear oscillators using normal forms.*  
 ▶ (274) **Kresimir Josic**, University of Houston (998-37-88)
- 4:00PM *Synchronization and suppression of oscillations in an ensemble of genetic relaxation oscillators.*  
 ▶ (275) **Alexey Kuznetsov\***, **Mads Kaern** and **Nancy Kopell**, Boston University (998-34-67)
- 4:30PM *Filtering chaotic maps.* Preliminary report.  
 (276) **Irasema Gordillo** and **Jesus Urias\***, IICO/UASLP (998-37-114)
- 5:00PM *Synchronization of Biochemical Cell Dynamics in Embryogenesis.* Preliminary report.  
 (277) **Jose Diaz** and **Gustavo Martinez-Mekler\***, Centro de Ciencias Fisicas, UNAM, Cuernavaca (998-92-423)
- 5:30PM *Directional entropies in weakly coupled systems.*  
 (278) **Antonio Morante**, Universidad Autónoma de San Luis Potosí (998-37-302)

### Special Session on Curvature and Geodesics, II

3:30 PM – 5:10 PM Raintree, 4th Floor, Hyatt

Organizers: **David D. W. Bao**, University of Houston  
**Lilia Del Riego**, Universidad Autónoma San Luis Potosí

- 3:30PM *Conjugate Loci of pseudoRiemannian 2-step Nilpotent Lie Groups with Nondegenerate Center.*  
 (279) **Phillip E. Parker\***, Wichita State University, and **Changrim Jang**, University of Ulsan (998-53-138)
- 4:30PM *Perelman's Work on the Formation of Singularities in Ricci Flow.*  
 ▶ (280) **Yu Ding**, University of California, Irvine (998-58-233)

### Special Session on Representations of Algebras, III

3:30 PM – 5:50 PM Cottonwood, 3rd Floor, Hyatt

Organizers: **Rita Esther Zuazua Vega**, UNAM  
**Gordana G. Todorov**, Northeastern University

- 3:30PM *Root forms.*  
 (281) **Michael S Barot\*** and **José Antonio de la Peña**, Instituto de Matemáticas, UNAM (998-16-350)
- 4:00PM *The Torsion-Torsion Free Theory arising from an abelian exact subcategory closed under predecessors.* Preliminary report.  
 (282) **Ron S. Gentle**, Eastern Washington University (998-16-377)
- 4:30PM *Extensions of an algebra by a representation-finite algebra.* Preliminary report.  
 (283) **José Antonio De la Peña** and **Bertha Tomé\***, Universidad Nacional Autónoma de México (998-16-194)
- 5:00PM *Recognizing cluster algebras of finite type.* Preliminary report.  
 (284) **Ahmet Seven**, Northeastern University (998-05-294)
- 5:30PM *On the representation dimension of certain algebras.* Preliminary report.  
 (285) **Thomas Brüstle**, Bishop's and Université de Sherbrooke (998-16-123)

### Special Session on Harmonic and Functional Analysis, III

3:30 PM – 6:20 PM Redbud, 3rd Floor, Hyatt

Organizers: **Salvador Pérez-Esteva**, UNAM-Cuernavaca  
**Carlos Bosch**, ITAM  
**Josefina Alvarez**, New Mexico State University

- 3:30PM *Hilbert transform along curves with rational components.*  
 (286) **Magali Folch-Gabayet\***, UNAM, and **James Wright**, University of Edinburgh (998-43-282)
- 4:00PM *Marcinkiewicz multipliers in quotients of products of Heisenberg groups.*  
 (287) **Ricardo A Saenz**, Universidad de Colima (998-43-315)
- 4:30PM *The Monogenic Radon-Nikodym Property for Clifford Modules.* Preliminary report.  
 (288) **Emilio Marmolejo-Olea\*** and **Salvador Perez-Esteva**, IMUNAM-Cuernavaca (998-46-238)
- 5:00PM *Multi-layer Spline-Wavelet Transforms and its Application in Image Processing.*  
 (289) **Jianzhong Wang**, Sam Houston State University (998-94-220)
- 5:30PM *The uniqueness of shift-generated duals for frames in shift-invariant subspaces.* Preliminary report.  
 (290) **Ataollah Askari Hemmat**, Vali-Asr University, and **Jean-Pierre Gabardo\***, McMaster University (998-42-218)
- 6:00PM *Finite abelian groups, wavelets, and all that.* Preliminary report.  
 (291) **John E. Gilbert\*** and **Zeimowit Rzeszotnik**, University of Texas at Austin (998-42-424)

### Special Session on Nonlinear Analysis, II

3:30 PM – 6:20 PM Dogwood, 3rd Floor, Hyatt

Organizers: **Mónica Clapp**, UNAM

- Alfonso Castro**, University of Texas at San Antonio
- 3:30PM (292) *Computation of the Equivariant 1-Stem for Arbitrary Compact Lie Groups.*  
**Waclaw Marzantowicz**, University of Poznan, Poland, and **Carlos Prieto\***, UNAM, Mexico (998-55-355)
- 4:00PM (293) *A formula for the Maslov index and its application for semi-Riemannian geodesics.*  
**Alessandro Portaluri**, Univeristy of Turin, Italy (998-58-274)
- 4:30PM (294) *Asymptotic behavior of solutions to the 2D Quasi Geostrophic equations.*  
**Maria E Schonbek\***, University of California Santa Cruz, and **Tomas P Schonbek**, Florida Atlantic University (998-35-232)
- 5:00PM (295) *Constructive solvability for semilinear wave equations.*  
**Dan D. Pascali**, Courant Institute, New York University (998-47-267)
- 5:30PM (296) *Null controllability of a semilinear parabolic-hyperbolic cascade system.*  
**Enrique Fernández-Cara**, **Manuel González-Burgos**, Universidad de Sevilla, Spain, and **Luz de Teresa\***, UNAM (998-35-131)
- 6:00PM Discussion

### Special Session on Associative Rings, III

3:30 PM – 5:50 PM Magnolia, 3rd Floor, Hyatt

Organizers: **José Ríos Montes**, UNAM  
**Mária-José Arroyo**, UAM-Iztapalapa  
**Sergio R. López-Permouth**, Ohio University

- 3:30PM (297) *(Sigma-)Cotorsion Modules and Pure-Injectivity in Locally Finitely Presented Additive Categories.*  
**Pedro Antonio Guil Asensio\***, University of Murcia, and **Ivo Herzog**, Ohio State University (998-16-111)
- 4:00PM (298) *Complete dimension theory of nonsingular injective modules.*  
**K R Goodearl\***, University of California at Santa Barbara, and **F Wehrung**, Universite de Caen (998-16-264)
- 4:30PM (299) *On rings with many uniform one-sided ideals.*  
**Hai Quang Dinh**, North Dakota State University (998-16-318)
- 5:00PM (300) *On some ring hulls.* Preliminary report.  
**Gary F. Birkenmeier**, University of Louisiana at Lafayette, **Jae Keol Park**, Busan National University, and **S. Tariq Rizvi\***, The Ohio State University at Lima (998-16-292)
- 5:30PM (301) *Module Hulls.* Preliminary report.  
**Gary F. Birkenmeier\***, University of Louisiana at Lafayette, **Jae Keol Park**, Busan National University, and **S. Tariq Rizvi**, Ohio State University at Lima (998-16-197)

### Special Session on Continuum Theory and General Topology (in Honor of David Bellamy's 60th Birthday), III

3:30 PM – 6:20 PM Regency Room, 2nd Floor, Hyatt

Organizers: **Janusz J. Charatonik**, UNAM  
**Charles L. Hagopian**, California State University, Sacramento  
**Sergio Macias**, UNAM

- 3:30PM (302) *n-fold Hyperspaces of Finite Graphs.*  
**Verónica Martínez de la Vega**, California State University, Sacramento (998-54-296)
- 4:00PM (303) *Choosing A Sheltered Middle Path.*  
**Piotr Minc**, Auburn University (998-54-189)
- 5:00PM (304) *Generalized Inverse Limits.*  
**Antonio Pelaez**, UNAM (998-54-130)
- 5:30PM (305) *Almost continuous retracts and plane continua.* Preliminary report.  
**B. D. Garrett**, Fort Worth, Texas (998-54-413)
- 6:00PM (306) *Local Planarity in One-Dimensional Continua.*  
**Brian Raines**, Baylor University (998-54-272)

### Special Session on Homological Algebra of Commutative Rings, III

4:00 PM – 6:20 PM Mesquite, 3rd Floor, Hyatt

Organizers: **Srikanth Iyengar**, University of Nebraska  
**Graham J. Leuschke**, University of Toronto

- 4:00PM (307) *Observations on the F-signature of local rings of characteristic p.* Preliminary report.  
**Yongwei Yao**, University of Michigan (998-13-99)
- 4:30PM (308) *Some properties of graded local cohomology modules.* Preliminary report.  
**Liana M Segal\*** and **Christel Rotthaus**, Michigan State University (998-13-337)
- 5:00PM (309) *Torsion-free ranks of indecomposable modules.* Preliminary report.  
**Ryan Karr\*** and **Lee Klingler**, Florida Atlantic University (998-13-247)
- 5:30PM (310) *Adjoint functors and Gorenstein Dimensions.*  
**Lars Winther Christensen**, **Anders Frankild\*** and **Henrik Holm**, University of Copenhagen (998-18-286)
- 6:00PM (311) *G-dimension of Almost Finite Modules.* Preliminary report.  
**Lars Winther Christensen\***, University of Copenhagen, and **Srikanth Iyengar**, University of Missouri (998-13-251)

## Saturday, May 15

### Joint Meetings Registration

8:00 AM – NOON Exhibit Hall, Lower Level, Hyatt

### Exhibit and Book Sale

8:00 AM – NOON Exhibit Hall, Lower Level, Hyatt

### Special Session on Complex Analysis and Operator Theory, II

8:30 AM – 11:20 AM Ponderosa, 4th Floor, Hyatt

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

- 8:30AM (312) *Commutative  $C^*$ -algebras of Toeplitz operators, Berezin quantization, and geometry.*  
**Nikolai Vasilevski**, CINVESTAV del I.P.N., Mexico (998-47-72)

- 9:00AM (313) *On the algebra generated by a poly-Bergman projection and a composition operator.*  
**Josue Ramirez\***, Universidad Autonoma Metropolitana, and **Ilya M. Spitkowsky**, The College of William and Mary (998-47-369)
- 9:30AM (314) *On the algebra generated by the harmonic projection and operators of multiplication by piecewise continuous functions.*  
**Maribel Loaiza**, UNAM (998-47-208)
- 10:00AM (315) *Relation between singular integral operators with a linear fractional reversing involution and a linear fractional preserving involution.*  
**Oleksandr Karelin**, Universidad Politecnica de Pachuca (998-47-155)
- 10:30AM (316) *Algebras of Bergman type operators with discontinuous coefficients.*  
**Yuri Karlovich**, Universidad Autónoma del Estado de Morelos (998-47-273)
- 11:00AM (317) *Spectral properties of Toeplitz operators.*  
**Sergey Grudsky**, CINVESTAV-IPN, Mexico (998-47-333)

### Special Session on Space and Time Decomposition Methods in Computational and Applied Mathematics, III

8:30 AM – 11:20 AM **Ebony, 4th Floor, Hyatt**

- Organizers: **Roland Glowinski**, University of Houston  
**Tsorng-Whay Pan**, University of Houston  
**L. Héctor Juárez V.**, UAM-Iztapalapa
- 8:30AM (318) *Error Bounds for Model Reduction of Second Order Dynamical Systems.*  
**D C Sorensen**, Rice University (998-65-237)
- 9:00AM (319) *Parallel Global Optimisation for Parameter Estimation.*  
**Susana Gomez\***, **Nelson Del Castillo**, National University of Mexico, **Olivier Gosselin** and **Tony Fincham**, GRC TOTAL E&P UK (998-65-152)
- 9:30AM (320) *Simulation of Twinned-Martensite as a PDE Optimization Problem.* Preliminary report.  
**Luis A. Melara** and **Anthony J. Kearsley\***, NIST (998-65-163)
- 10:00AM (321) *Laminar and turbulent natural convection in enclosures.*  
**Luis Miguel de la Cruz**, DGSCA-UNAM, **Eduardo Ramos\***, Centro de Investigacion en Energia-UNAM, and **Martin Salinas**, Instituto de Ingenieria-UNAM (998-76-176)
- 10:30AM (322) *An operator splitting algorithm for biodegradable transport in porous media.* Preliminary report.  
**M. Carmen Hernandez-Rendon**, Institute of Geophysics, UNAM (998-35-178)
- 11:00AM (323) *A Shape Preserving and Variation Diminishing Radial Quasi interpolant in Compact Domains.* Preliminary report.  
**Pedro Gonzalez-Casanova**, Universidad Nacional Autonoma de Mexico (998-65-191)

### Special Session on Mathematical Physics, III

8:30 AM – 11:20 AM **Pecan, 4th Floor, Hyatt**

- Organizers: **Carlos Villegas-Blas**, UNAM  
**Alejandro Uribe**, University of Michigan, Ann Arbor
- 8:30AM Discussion.

- 9:00AM (324) *Dynamics of an infinite elastic curve.*  
**Almut Burchard**, University of Virginia (998-35-362)
- 9:30AM (325) *Dynamical systems approach to resonant effects in pulsating one-dimensional resonators.*  
**Nikola P Petrov\***, University of Michigan, **Rafael de la Llave**, University of Texas, and **John A Vano**, University of Wisconsin (998-35-266)
- 10:00AM (326) *A blowing-up technique in Routh reduction and stability.* Preliminary report.  
**Antonio Hernandez-Garduño**, IIMAS-UNAM (998-70-354)
- 10:30AM (327) *Kepler's problem and Poincaré's half-plane.*  
**Fausto Ongay**, CIMAT (998-70-358)
- 11:00AM (328) *Physical solutions of the Hamilton-Jacobi equation.*  
**Renato Iturriaga**, Centro de Investigacion en Matematicas (998-35-73)

### Special Session on Coding Theory and Cryptography, IV

8:30 AM – 11:20 AM **Cedar, 4th Floor, Hyatt**

- Organizers: **Horacio Tapia-Recillas**, UAM-Iztapalapa  
**Neal I. Koblitz**, University of Washington
- 8:30AM (329) *Key escrow with elliptic curves.*  
**Edlyn E Teske**, University of Waterloo (998-94-23)
- 9:00AM (330) *Interleavers for Turbo Codes Constructed Using Dickson Polynomials.* Preliminary report.  
**Ivelisse M Rubio\*** and **Carlos J. Corrada-Bravo**, University of Puerto Rico (998-94-59)
- 9:30AM (331) *Structure and minimum Hamming weight of negacyclic codes over Galois rings.*  
**Hai Quang Dinh**, North Dakota State University (998-94-323)
- 10:00AM (332) *A Key Recovery System as Secure as Factoring.*  
**Adam L Young\***, Cigital, Inc., and **Moti M Yung**, Columbia University (998-68-44)
- 10:30AM (333) *Repeated-root p-cyclic codes.*  
**Horacio Tapia-Recillas**, UAM-I (998-94-214)
- 11:00AM (334) *Self-Dual Binary Codes of Length 104 and Minimum Distance 18.*  
**Vassil Y Yorgov**, Fayetteville State University (998-05-54)

### Special Session on Graph Theory and Combinatorics, IV

8:30 AM – 11:20 AM **Dogwood, 3rd Floor, Hyatt**

- Organizers: **Gelacio Salazar**, IICO, UASLP  
**Isidoro Gitler**, CINVESTAV  
**Nathaniel Dean**, Texas Southern University
- 8:30AM (335) *Kernels by monochromatic paths in tournaments and bipartite tournaments.*  
**Hortensia Galeana-Sánchez**, IMATE-UNAM (998-05-346)
- 9:30AM (336) *Minimal graphs of crossing number at least two.*  
**Bogdan Oporowski**, Louisiana State University (998-05-407)

- 10:00AM *Recent Progress on Turan's Brickyard Problem: Improved Lower Bounds for the Crossing Numbers of  $K_{m,n}$  and  $K_n$ .* (337)  
 ▶ **Etienne De Klerk**, University of Waterloo, **John Maharry**, The Ohio State University, **Dmitrii Pasechnik**, J.W. Goethe-Universität, Frankfurt, **Bruce Richter**, University of Waterloo, and **Gelasio Salazar\***, IICO-UASLP, Mexico (998-05-386)
- 10:30AM *A new proof of delta-wye reducibility of three terminal planar graphs.* (338)  
 Preliminary report. **Isidoro Gitler** and **Feliu Sagols\***, Centro de Investigación y de Estudios Avanzados del IPN (998-05-109)
- 11:00AM *On Hamiltonian decompositions of spherical vox-solids and characterizing minimal non-inductive vox-solids.* (339)  
**Isidoro Gitler\***, Cinvestav-IPN, **Maria de Luz Gasca**, Facultad de Ciencias, UNAM, and **Feliu Sagols**, Cinvestav-IPN (998-05-379)

- 9:30AM *Uniform estimates of ultraspherical polynomials of large order and applications.* Preliminary report. (348)  
 ▶ **Laura De Carli**, Florida International Univ. (998-42-201)
- 10:00AM *Besov space estimates on Fourier integral operators.* Preliminary report. (349)  
**Svetlana Roudenko\*** and **A Comech**, Duke University (998-42-415)
- 10:30AM *Extensions of a theorem of B. Dahlberg.* (350)  
**Jorge Rivera-Noriega**, University of Illinois at Urbana-Champaign (998-42-168)
- 11:00AM *Weighted Sobolev Spaces and Boundary Value Problems in exterior non-smooth Domains.* (351)  
 ▶ **O. Mendez\***, University of Texas- El Paso, and **J. Lang**, Ohio State University (998-35-382)

**Special Session on Differential Geometry, III**

- 8:30 AM – 11:20 AM **Raintree, 4th Floor, Hyatt**  
 Organizers: **Raul Quiroga Barranco**, CINVESTAV **Alberto Candel**, California State University, Northridge
- 8:30AM *Real hypersurfaces of low Chen-type in non-flat complex space forms.* Preliminary report. (340)  
**Ivko M Dimitric**, Pennsylvania State University (998-53-55)
- 9:00AM *On Geodesic Right-power alternative Loops.* Preliminary report. (341)  
**Liudmila Sabinina Soboleva**, Facultad de Ciencias, UAEM (998-53-58)
- 9:30AM *The Existence of Nilsoliton Metrics.* (342)  
**Tracy L Payne**, Idaho State University (998-53-209)
- 10:00AM *Isometric splitting for actions of simple Lie groups on pseudo-Riemannian manifolds.* (343)  
**Francisco Gabriel Hernández-Zamora**, Universidad del Istmo (998-53-116)
- 10:30AM *PseudoRiemannian manifolds with a simple group of isometries.* Preliminary report. (344)  
**Raul Quiroga-Barranco**, CINVESTAV-IPN (998-53-405)
- 11:00AM *Minimal surfaces and laminations in hyperbolic space.* Preliminary report. (345)  
**Alberto Candel**, CSUN (998-53-422)

**Special Session on Harmonic and Functional Analysis, IV**

- 8:30 AM – 11:20 AM **Redbud, 3rd Floor, Hyatt**  
 Organizers: **Salvador Pérez-Esteva**, UNAM-Cuernavaca **Carlos Bosch**, ITAM **Josefina Alvarez**, New Mexico State University
- 8:30AM *Harmonic functions with boundary values in spaces of weighted integrable distributions.* (346)  
**Martha Guzman-Partida\***, Universidad de Sonora, **Josefina Alvarez**, New Mexico State University, and **Salvador Perez-Esteva**, UNAM (998-42-103)
- 9:00AM *Subexponential Decay of Heat Kernels and Brownian Motion.* (347)  
**Robert G. Smits**, New Mexico State University (998-35-84)

**Special Session on Low Dimensional Topology, IV**

- 8:30 AM – 11:20 AM **Magnolia, 3rd Floor, Hyatt**  
 Organizers: **Victor Núñez**, CIMAT **Luis G. Valdez**, University of Texas, El Paso
- 8:30AM *Automorphisms of 3-manifolds.* Preliminary report. (352)  
**Leonardo Navarro Carvalho**, Campinas University, and **Ulrich Oertel\***, Rutgers University (998-57-330)
- 9:00AM *Virtually Haken fillings of knot complements.* Preliminary report. (353)  
**Daryl Cooper**, UC Santa Barbara, and **Genevieve Walsh\***, UT Austin (998-57-314)
- 9:30AM *Universal Montesinos knots.* (354)  
**Víctor Núñez**, CIMAT (998-57-328)
- 10:00AM *Relative Heegaard genus of Haken 3-manifolds.* Preliminary report. (355)  
**Jennifer Schultens**, UC Davis (998-57-321)
- 10:30AM *Seifert Klein bottles for knots in the 3-sphere.* Preliminary report. (356)  
**Luis G Valdez-Sanchez**, University of Texas at El Paso (998-57-351)
- 11:00AM *Knot width is unlikely to be nearly additive.* Preliminary report. (357)  
**Martin Scharlemann\***, U. C. Santa Barbara, and **Abigail Thompson**, U. C. Davis (998-57-338)

**Special Session on Algebraic Geometry, III**

- 9:00 AM – 11:20 AM **Mesquite, 3rd Floor, Hyatt**  
 Organizers: **Pedro Luis Del Angel R.**, CIMAT **Emma Previato**, Boston University **Frank Sottile**, University of Massachusetts, Amherst **Isidro Nieto**, Universidad de San Nicolas Hidalgo
- 9:00AM *Representing twisted algebraic K-theory with generalized Grassmannians.* Preliminary report. (358)  
**Pedro F. dos Santos**, Instituto Técnico Superior, and **Paulo Lima-Filho\***, Texas A&M University (998-14-234)
- 9:30AM *Computations on a conjecture of BSD type for elliptic curves of rank 1.* Preliminary report. (359)  
**Francisco Portillo**, University of Texas (998-14-291)
- 10:00AM *The stringy Chow ring with integer coefficients of a toric Deligne-Mumford stack.* Preliminary report. (360)  
**James E Spencer**, Rice University (998-14-370)

- 10:30AM *The Chow groups of the Fulton MacPherson configuration spaces.* Preliminary report.  
(361) **Angela C. Gibney\***, Yale University and University of Pennsylvania, **Linda Chen**, Columbia University, and **Daniel R. Krashen**, Yale University (998-14-385)
- 11:00AM *The Cox ring for normal projective varieties.*  
(362) **E. Javier Elizondo\***, UNAM, **Kazuhiko Kurano**, Meiji University, and **Kei-ichi Watanabe**, Nihon University (998-14-311)

**Special Session on Nonlinear Analysis, III**

9:00 AM – 11:20 AM Sandalwood, 4th Floor, Hyatt

Organizers: **Mónica Clapp**, UNAM**Alfonso Castro**, University of Texas at San Antonio

- 9:00AM *Nonradial solutions to superlinear elliptic equations.* Preliminary report.  
(363) **Alfonso Castro**, Harvey Mudd College (998-35-361)
- 9:30AM *Strongly indefinite functionals with perturbed symmetries and multiple solutions of nonsymmetric elliptic systems.*  
(364) **Sergio Hernandez-Linares**, UNAM and UAM-I (998-35-365)
- 10:00AM *Partial symmetry of nodal solutions to some variational problems.*  
(365) **Thomas Bartsch**, Universitaet Giessen, **Tobias Weth\***, University of Minnesota, and **Michel Willem**, Institut de Mathematiques Pure et Appliquee (998-35-223)
- 10:30AM *Antisymmetry properties of changing-sign solutions of semilinear elliptic equations.*  
(366) **Pablo Padilla\***, IIMAS, UNAM, **Henri Berestycki**, IHES, France., and **Jerome Busca**, Universite de Paris, Dauphine (998-35-290)
- 11:00AM *Multiple solutions for the Brezis-Nirenberg problem.* Preliminary report.  
(367) **Monica Clapp\***, UNAM, and **Tobias Weth**, Universitaet Giessen (998-35-126)

**Special Session on Associative Rings, IV**

9:00 AM – 11:20 AM Cottonwood, 3rd Floor, Hyatt

Organizers: **José Ríos Montes**, UNAM**Mária-José Arroyo**, UAM-Iztapalapa  
**Sergio R. López-Permouth**, Ohio University

- 9:00AM *Infinitely generated tilting and cotilting modules.*  
(368) **Jan Trlifaj**, Katedra algebry MFF, Univerzita Karlova, Praha (998-16-113)
- 9:30AM *Fractional skew monoid rings.*  
(369) **P. Ara\***, Universitat Autònoma de Barcelona, **M. A. Gonzalez-Barroso**, Universidad de Cadiz, **K. R. Goodearl**, University of California at Santa Barbara, and **E. Pardo**, Universidad de Cadiz (998-16-76)
- 10:00AM *Prime ideals in ultraproducts of commutative rings.*  
(370) **Bruce M Olberding**, New Mexico State University, and **Jay Shapiro\***, George Mason University (998-13-127)
- 10:30AM *Nonsingular CS-rings are tight.*  
(371) **K. I. Beidar**, National Cheng-Kung University, **S. K. Jain**, Ohio University, and **Pramod Kanwar\***, Ohio University-Zanesville (998-16-177)

- 11:00AM *On the exactness of the Gelfand-Kirillov dimension for modules over noetherian algebras and related questions.* Preliminary report.  
(372) **Guenter Krause**, University of Manitoba (998-16-399)

**Special Session on Continuum Theory and General Topology (in Honor of David Bellamy's 60th Birthday), IV**

9:30 AM – 11:20 AM Regency Room, 2nd Floor, Hyatt

Organizers: **Janusz J. Charatonik**, UNAM**Charles L. Hagopian**, California State University, Sacramento**Sergio Macias**, UNAM

- 9:30AM *Classes of circle-like continua which are C-determined.*  
(373) **Gerardo Acosta**, UNAM (998-54-140)
- 10:00AM *Homogeneity, arcwise-connectedness, and David Bellamy.*  
(374) **James T Rogers**, Tulane University (998-54-253)
- 10:30AM *Whitney Preserving Maps onto Decomposition Spaces.*  
(375) **Benjamin Espinoza**, University of Pittsburgh at Greensburg (998-54-160)
- 11:00AM *A weakly chainable uniquely arcwise connected continuum without fixed point property.*  
(376) **Mirosław Sobolewski**, Warsaw University (998-54-213)

**Invited Address**

11:30 AM – 12:20 PM Regency Room, 2nd Floor, Hyatt

- (377) *Knots, fibered links, and singularities.*  
**Jose Seade**, UNAM (998-53-05)

**Erdős Memorial Lecture**

2:30 PM – 3:20 PM Regency Room, 2nd Floor, Hyatt

- (378) *Tropical geometry.*  
**Bernd Sturmfels**, University of California Berkeley (998-52-07)

**Special Session on Complex Analysis and Operator Theory, III**

3:30 PM – 6:20 PM Ponderosa, 4th Floor, Hyatt

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

- 3:30PM *Commuting Toeplitz operators on the Bergman space of the polydisk.*  
(379) **Young Joo Lee\***, Mokpo National University, **Boo Rim Choe** and **Hyungwoon Koo**, Korea University (998-32-70)
- 4:00PM *The Bargmann Transform and Spaces of Holomorphic Functions on Quadrics.* Preliminary report.  
(380) **Carlos Villegas-Blas**, Cuernavaca, UNAM (998-81-310)
- 4:30PM *Numerical conformal mapping of horocycle domains.* Preliminary report.  
(381) **R. Michael Porter**, CINVESTAV del I.P.n. (998-30-304)

- 5:00PM *On rational quaternionic functions and their applications to operator theory.*  
 ▶ (382) **Michael Shapiro**, Instituto Politécnico Nacional, México City (998-30-91)
- 5:30PM *On the norms of quaternionic extensions of real operators.*  
 ▶ (383) **M.E. Luna-Elizarrarás\*** and **Michael Shapiro**, Instituto Politécnico Nacional, Mexico City (998-46-92)
- 6:00PM *On a Class of Generators of One-parameter  $C_0$ -Semigroup of Operators.*  
 (384) **Ganna Tarasenko**, Autonomous University of Hidalgo State (998-47-117)

**Special Session on Algebraic Topology, IV**

- 3:30 PM – 6:20 PM **Pecan, 4th Floor, Hyatt**  
 Organizers: **Miguel A. Xicoténcatl**, CINVESTAV  
**Frederick R. Cohen**, University of Rochester
- 3:30PM *The Bloch invariant and classifying spaces for families of isotropy subgroups.*  
 (385) **Jose Luis Cisneros-Molina**, UNAM, Unidad Cuernavaca (998-55-122)
- 4:30PM *A controlled approach to the isomorphism conjecture.* Preliminary report.  
 (386) **Daniel Juan-Pineda\***, IMUNAM-Morelia, and **Efstratios Prassidis**, Canisius College (998-55-156)
- 5:30PM *The homology of invariant group chains.*  
 (387) **Kevin P. Knudson**, Mississippi State University (998-20-115)
- 6:00PM *Homotopy Triangulations of a manifold triple.* Preliminary report.  
 (388) **Rolando Jimenez\***, UNAM, and **Yuri Muranov**, Vitebsk Institute of Modern Knowledge (998-55-56)

**Special Session on Designing Frames and Wavelets: From Theory to Digitization, IV**

- 3:30 PM – 6:20 PM **Sandalwood, 4th Floor, Hyatt**  
 Organizers: **Peter R. Massopust**, Tuboscope Pipeline Services  
**Manos I. Papadakis**, University of Houston
- 3:30PM *Hermite Distributed Approximating Functionals as Almost-Ideal Low-Pass Filters.*  
 ▶ (389) **Bernhard G. Bodmann\***, **Donald J. Kouri**, **Manos Papadakis**, University of Houston, **David K. Hoffman**, Iowa State University, and **Mark Arnold**, University of Arkansas (998-33-42)
- 4:00PM *Applications of frames to speech recognition technology.* Preliminary report.  
 (390) **Peter G. Casazza\***, **M.C. Leon**, **D. Edidin**, University of Missouri, and **R. Balan**, Siemens Corporate Research (998-46-16)
- 4:30PM *Frames in Communications and Biomedicine.*  
 (391) **Jelena Kovacevic**, Carnegie Mellon University (998-94-46)
- 5:00PM *Frames as Codes.* Preliminary report.  
 ▶ (392) **Vern I. Paulsen**, University of Houston (998-15-41)
- 5:30PM *Interplay between moments problems and average sampling theory.* Preliminary report.  
 ▶ (393) **M Zuhair Nashed**, University of Central Florida (998-41-297)

- 6:00PM *Average Sampling and Calderon Resolution of the Identity in Shift-Invariant Spaces.* Preliminary report.  
 (394) **Akram Aldroubi**, Vanderbilt University, **Qiyu Sun\***, University of Central Florida, and **Wai-Shing Tang**, National University of Singapore (998-42-37)

**Special Session on Algebraic Geometry, IV**

- 3:30 PM – 4:50 PM **Redbud, 3rd Floor, Hyatt**  
 Organizers: **Pedro Luis Del Angel R.**, CIMAT  
**Emma Previato**, Boston University  
**Frank Sottile**, University of Massachusetts, Amherst  
**Isidro Nieto**, Universidad de San Nicolas Hidalgo
- 3:30PM *An Algebraic Formula for Indices of Vector Fields on Singular Varieties.* Preliminary report.  
 (395) **Xavier Gomez-Mont**, CIMAT (998-14-289)
- 4:00PM *Deformations of complex hypersurfaces of a cyclic cover of a Grassmann manifold.* Preliminary report.  
 ▶ (396) **Herbert Kanarek**, UNAM (998-14-376)
- 4:30PM *Differential Systems associated to families of Algebraic Cycles.* Preliminary report.  
 (397) **Pedro L Del Angel\***, CIMAT, and **Stefan Müller-Stach**, University of Mainz (998-14-284)

**Special Session on Homological Algebra of Commutative Rings, IV**

- 3:30 PM – 5:20 PM **Mesquite, 3rd Floor, Hyatt**  
 Organizers: **Srikanth Iyengar**, University of Nebraska  
**Graham J. Leuschke**, University of Toronto
- 3:30PM *Cartan-Eilenberg Homology, André-Quillen Homology, and Cartan Resolutions.*  
 (398) **James M Turner**, Calvin College (998-18-306)
- 4:00PM *Free resolutions for multigraded modules.*  
 (399) **Alexandre Tchernev**, University at Albany, SUNY (998-13-298)
- 4:30PM *Relative Ext for complexes.* Preliminary report.  
 (400) **Anders Frankild**, **Henrik Holm**, University of Copenhagen, and **Sean Sather-Wagstaff\***, University of Illinois (998-13-222)
- 5:00PM *Derived DG categories and resolutions over complete intersections.* Preliminary report.  
 (401) **Luchezar L Avramov**, University of Nebraska, and **David A Jorgensen\***, University of Texas at Arlington (998-13-258)

**Special Session on Curvature and Geodesics, III**

- 3:30 PM – 5:10 PM **Raintree, 4th Floor, Hyatt**  
 Organizers: **David D. W. Bao**, University of Houston  
**Lilia Del Riego**, Universidad Autónoma San Luis Potosi
- 3:30PM *Curvature, Geodesics and Differential Equations.*  
 ▶ (402) Preliminary report.  
**Alvaro Perez Raposo**, Facultad de Ciencias, Universidad Autonoma de San Luis Potosi (998-53-371)

- 4:30PM (403) *Universal connection and curvature for statistical manifold geometry.*  
**Khadiga Arwini**, University of Manchester Institute of Science and Technology, **Lilia Del Riego\***, Universidad Autonoma de San Luis Potosi, and **C TJ Dodson**, University of Manchester Institute of Science and Technology (998-53-112)

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### ***Special Session on Representations of Algebras, IV***

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3:30 PM – 6:20 PM Cottonwood, 3rd Floor, Hyatt

- Organizers: **Rita Esther Zuazua Vega**, UNAM  
**Gordana G. Todorov**, Northeastern University
- 3:30PM (404) *Auslander-Reiten components of a Krull-Schmidt category.* Preliminary report.  
**Shiping Liu**, University of Sherbrooke (998-16-256)
- 4:00PM (405) *Lift categories and objects with space of selfextensions of dimension one.* Preliminary report.  
**Efrén Pérez Terrazas**, Universidad Autónoma de Coahuila (998-16-192)
- 4:30PM (406) *On the depth of rings of invariants.* Preliminary report.  
**Mara D Neusel**, Texas Tech University (998-13-261)
- 5:00PM (407) *On Auslander-Reiten triangles for derived tame algebras.* Preliminary report.  
**Raymundo Bautista**, UNAM (Morelia ) (998-16-334)
- 5:30PM (408) *Subgroup Categories of Wild Representation Type.*  
**Claus M. Ringel**, Bielefeld University, Germany, and **Markus Schmidmeier\***, Florida Atlantic University (998-16-295)
- 6:00PM (409) *Grothendieck Residues, Hochschild Cohomology, and the Centre of the Derived Category.* Preliminary report.  
**Ragnar-Olaf Buchweitz**, Univ. of Toronto (998-18-332)

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### ***Special Session on Nonlinear Analysis, IV***

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3:30 PM – 5:50 PM Dogwood, 3rd Floor, Hyatt

- Organizers: **Mónica Clapp**, UNAM  
**Alfonso Castro**, University of Texas at San Antonio
- 3:30PM (410) *Effect of aggregation on population recovery modeled by a forward-backward pseudoparabolic equation.*  
**Victor Padron**, Universidad de Los Andes, Merida, Venezuela (998-35-275)
- 4:00PM (411) *On the behavior of weak convergence under nonlinearities and applications.*  
**Diego R. Moreira\*** and **Eduardo V. Teixeira**, University of Texas at Austin (998-46-12)
- 4:30PM (412) *Strong solutions for differential equations in dual spaces.*  
**Eduardo V. Teixeira**, University of Texas at Austin (998-45-11)
- 5:00PM (413) *Global Existence for a Class of Strongly Coupled Parabolic Systems.*  
**Dung Le**, University of Texas at San Antonio (998-35-235)
- 5:30PM (414) *Degenerate Parabolic Equations With Localized Nonlinear Reactions.* Preliminary report.  
**C. Y. Chan**, University of Louisiana at Lafayette (998-35-210)

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### ***Special Session on Continuum Theory and General Topology (in Honor of David Bellamy's 60th Birthday), V***

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3:30 PM – 6:10 PM Regency Room, 2nd Floor, Hyatt

Organizers: **Janusz J. Charatonik**, UNAM  
**Charles L. Hagopian**, California State University, Sacramento  
**Sergio Macias**, UNAM

- 3:30PM (415) *Models for  $C_p(X)$  for atriodic continua*  
**Jorge M. Martínez-Montejano**, West Virginia University (998-54-270)
- 4:00PM (416) *Positive Entropy on Nonautonomous Interval Maps and the Topology of the Inverse Limit Space.*  
**Christopher G. Mouron**, Rhodes College (998-54-359)
- 5:00PM (417) *Inverse Limits on Projective Spaces and the Fixed Point Property.* Preliminary report.  
**M M Marsh**, California State University, Sacramento (998-54-305)
- 5:30PM (418) *Problems, in and out of context.*  
**David P. Bellamy**, University of Delaware (998-54-230)

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### ***Closing Ceremonies and Banquet***

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6:30 PM – 10:00 PM Imperial Ballroom West, 3rd Floor, Hyatt

**John L. Bryant**  
Associate Secretary  
Tallahassee, Florida