



Center for Mathematical Analysis, Geometry, and Dynamical Systems

Report 2003

April 2004

TABLE OF CONTENTS

1. Research Report for 2003.....	2
1.1 DISTINGUISHED VISITORS-----	2
1.2 SEMINARS-----	4
1.3 CONFERENCES AND SHORT COURSES-----	11
1.4 POSTDOCTORAL PROGRAM-----	18
1.5 SPECIAL EVENTS-----	19
1.6 PUBLICATIONS IN 2003 -----	19
1.6.1 Publications which appeared in 2003 -----	19
1.6.2 Publications submitted or accepted in 2003 -----	21

1. Research Report for 2003

1.1 *Distinguished Visitors*

The following researchers visited the Center in 2003:

- J. Agapito, University of California, Santa Cruz, USA, 2-20.9.03.
R. Albuquerque, Universidade de Évora, Portugal, 21.1.03.
C. Barbaroise, Universidade de Lisboa, Portugal, 20.11.03.
A. Beauville, Université de Nice, France, 10-14.3.03.
F. Borceux, Université Catholique de Louvain, Belgium, 30.4.03.
R. Brown, University of Wales, Bangor, UK, 24.1.03.
R. Carles, Université Bordeaux I, France and Centro de Matemática e Aplicações Fundamentais, Lisbon, Portugal, 2.12.03.
J. Chabrowski, The University of Queensland, Australia, 1-28.2.03.
V. Chernov, Dartmouth College, USA, 16-17.7.03.
J. Costeira, Instituto Superior Técnico, Lisbon, Portugal, 5.12.03.
I. Cruz, Universidade do Porto, Portugal, 18.2.03.
A. Davydov, Vladimir State University, Russia, 18.3.03.
R. de la Llave, University of Texas, Austin, USA, 8-19.1.03.
A. Dias, Universidade do Porto, Portugal, 30.9.03.
P. Didier, Université Paris-Sud, Orsay, France, 11.2.03 and 5.5.03.
P. Doutor, Universidade Nova de Lisboa, Portugal, 7.4.03.
O. Dragulete, École Polytechnique Fédérale de Lausanne, Switzerland, 31.11-8.12.03.
C. Earles, Rice University, Houston, USA, 8-12.6.03.
M. Edmundo, Centro de Matemática e Aplicações Fundamentais, Lisbon, Portugal, 17.6.03.
D. Evans, Cardiff University, UK, 20-30.7.03.
F. Ferrari, Université de Neuchâtel, Switzerland, 5-8.2.03.
P. Filho, Texas A&M University, College Station, USA, 13-27.7.03
D. Forge, Laboratoire Recherche en Informatique, Orsay, France, 8-19.9.03.
H. Frid, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil e Centro de Matemática e Aplicações Fundamentais, Lisbon, Portugal, 1.7.03.
G. Fusco, Università degli Studi di L'Aquila, Italy, 18-28.6.03.
E. Gasparin, New Mexico State University, USA, 3.6.03.
F. Gazzola, Università degli Studi del Piemonte Orientale, Italy, 5-13.7.03.
K. Gelfert, Max-Planck-Institut für Physik komplexer systeme, Dresden, Germany, 22.2-8.3.03 and 12-16.7.03.
M. Grinfeld, The University of Strathclyde in Glasgow, UK, 4-10.9.03.
J. Hale, Georgia Institute of Technology, Atlanta, USA, 15-20.1.03.

C. Ionescu, Institute of Mathematics, Romanian Academy, Bucharest, Romania, 12-28.6.03.

R. Iturriaga, Centro de Investigaciones in Matematica, Guanajuato, Mexico, 31.5-7.6.03.

J. Kedra, University of Szczecin, Poland, 13-20.7.03.

M. Keel, University of Minnesota, USA, 14-22.12.03.

D. Kinderlehrer, Carnegie Mellon University, USA, 22-24.6.03.

N. Kitchloo, Johns Hopkins University, USA, 1-15.7.03.

J. Koiller, Fundação Getúlio Vargas, Rio de Janeiro, Brazil, 21-27.6.03.

P. Lima-Filho, Texas A&M University, College Station, USA, 13-27.7.03.

M. Lemos, Universidade Federal de Pernambuco, Brazil, 18-25.9.03.

Y. Lozano, Universidad de Oviedo, Spain, 20-23.3.03.

L. Macarini, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil, 20.7-9.8.03.

M. Mackaay, Universidade do Algarve, Faro, Portugal, 14.5.03.

D. Mamone, Scuola Internazionale Superiore di Studi Avanzati, Trieste, Italy, 5-8.3.03.

L. Mascarenhas, Universidade de Lisboa, Portugal, 31.10.03.

M. Mendes Lopes, Centro de Matemática e Aplicações Fundamentais, Lisbon, Portugal, 18.3.03.

S. Minwalla, Harvard University, USA, 26-29.3.03.

P. Monnier, Centro de Análise Matemática, Geometria e Sistemas Dinâmicos, Lisbon, Portugal, 4.2.03. G. Morais, Instituto Superior de Engenharia de Lisboa, Portugal, 10.3.03.

P. Negrini, Università di Roma I, Italy, 19-27.6.03.

P. Newstead, University of Liverpool, UK, 7-14.7.03.

R. Oliver, Université Paris 13, France, 11-19.10.03.

M. Pacífico, Universidade Federal do Rio de Janeiro, Brazil, 13-14.7.03.

R. Pandharipande, Princeton University, USA, 22-28.11.03.

A. Pereira, Universidade de São Paulo, Brazil, 1.12.02-28.2.03.

F. Pioli, Universidade Autónoma de Madrid, Spain, 7-13.4.03.

C. Santa-Clara, Universidade de Lisboa, Portugal, 26.3.03.

B. Saussol, Université de Picardie Jules Verne, Amiens, France, 25-28.1.03.

T. Schmäh, University of Warwick, UK, 6-12.4.03.

R. Silva, Universidade Nova de Lisboa, Portugal, 17.3.03.

A.-M. Toader, Universidade de Lisboa, Portugal, 14.11.03.

S. Vacaru, Instituto Superior Técnico, Lisbon, Portugal, 21.3.03.

E. Valdinoci, Università degli Studi di Roma Tor Vergata, Italy, 12-22.1.03.

C. Valls, Università di Roma I, Italy, 19-30.5.03 and 18.7-1.8.03.

P. Vanhaecke, Université de Poitiers, France, 11-19.9.03.

J. Wattis, University of Nottingham, UK, 23.3-6.4.03.

C. Wolf, Wichita State University, USA, 14-24.7.03.

J. Xavier, Instituto Superior Técnico, Lisbon, Portugal, 7.11.03.

S. Zarzuela, Universitat de Barcelona, Spain, 31.3-11.4.03.

N. Zung, Université Paul Sabatier, Toulouse, France, 17-22.5.03.

1.2 Seminars

➤ *Mathematical Analysis, Geometry, and Dynamical Systems Seminar*

This is the main seminar of the Center. It included the following talks in 2003:

- Markus Keel (University of Minnesota)
Global Rough Solutions for Nonlinear Dispersive Equations, 16/12/03.
- Fernando Pestana da Costa (Instituto Superior Técnico)
Invariant regions and self-similarity in a coagulation model, 9/12/03.
- Rémi Carles (Université Bordeaux I e Centro de Matemática e Aplicações Fundamentais)
On the role of quadratic oscillations in nonlinear Schrödinger equations, 2/12/03.
- Nuno Martins (Instituto Superior Técnico)
 C^* -algebras arising from interval maps, 25/11/03.
- Hui Li (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos)
Semi-free Hamiltonian circle actions on 6-dimensional symplectic manifolds, 18/11/03.
- Amílcar Sernadas (Instituto Superior Técnico)
Combining logic systems: Why, how, what for?, 11/11/03.
- Paulo Pinto (Instituto Superior Técnico)
Classification of Modular Invariants and Subfactors, 4/11/03.
- Nara Jung (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos)
Continuity properties of $\det D^2u$ in BV^2 with strict convergence, 21/10/03.
- Robert Oliver (Université Paris 13)
Homotopy equivalences between completed classifying spaces of finite groups, 14/10/03.
- João Paulo Santos (Instituto Superior Técnico)
Dirac operator, instantons and holomorphic bundles, 7/10/03.
- Ana Paula Dias (Universidade do Porto)
Symmetry groupoids, synchrony, and coupled cell networks, 30/9/03.
- Joana Ventura (Instituto Superior Técnico)
Homological algebra for the representation Green functor for Abelian groups, 23/9/03.
- Michael Grinfeld (The University of Strathclyde in Glasgow)
Multiplicity of periodic solutions in mean-field theories of magnetisation, 9/9/03.
- Leonardo Macarini (IMPA, Rio de Janeiro)
Hofer-Zehnder sensitive capacity of cotangent bundles and symplectic submanifolds, 29/7/03.
- Christian Wolf (Wichita State University)
Measures of maximal dimension for hyperbolic diffeomorphisms, 22/7/03.

- Katrin Gelfert (Max-Planck-Institut für Physik komplexer Systeme, Dresden)
Dimension estimates in nonconformal dynamical systems, 15/7/03.
- Maria José Pacífico (Universidade Federal do Rio de Janeiro)
Lorentz attractor versus singular hyperbolic attractor, 14/7/03.
- Filippo Gazzola (Università degli Studi del Piemonte Orientale)
Existence and nonexistence results for anisotropic quasilinear elliptic equations, 8/7/03.
- Hermano Frid (Instituto de Matemática Pura e Aplicada, Rio de Janeiro e Centro de Matemática e Aplicações Fundamentais)
Soluções espacialmente periódicas para as equações de Euler em dinâmica dos gases relativística, 1/7/03.
- Waldyr Oliva (CAMGSD and ISR - IST)
Non-holonomic Systems and the Geometry of Constraints, 26/6/03.
- Jair Koiller (Fundação Getúlio Vargas, Rio de Janeiro)
Flagelar Locomotion Via Geometric Mechanics, 26/6/03.
- Matthew Perlmutter (CAMGSD - IST)
Gauged Poisson Structures, 26/6/03.
- Giorgio Fusco (Università degli Studi di L'Aquila)
Three Time Scales in the Steepest Descent Dynamics of a Regularized Nonconvex Functional of the Gradient, 26/6/03.
- Piero Negrini (Università di Roma I - La Sapienza)
Integrability, Nonintegrability and Chaos in a System Related to the Riemann Ellipsoid Problem, 26/6/03.
- David Kinderlehrer (Carnegie Mellon University)
Remarks about diffusion mediated transport, 23/6/03.
- Cristodor Ionescu (Institute of Mathematics, Romanian Academy, Bucharest)
Some remarks on evolutions, 17/6/03.
- Christopher Earles (Rice University, Houston)
Residue Theorems and Lie Algebroid Invariants, 12/6/03.
- Renato Iturriaga (CIMAT, Guanajuato)
Convergence of viscosity solutions of random Hamilton Jacobi equations, 3/6/03.
- Miguel Rodríguez Olmos (Instituto Superior Técnico)
The topology of symplectic quotients for cotangent bundles, 27/5/03.
- Claudia Valls (Università di Roma)
Weak KAM Theory for multidimensional maps, 20/5/03.
- Gianluigi Del Magno (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos)
Ergodic semifocusing billiards, 13/5/03.
- Rui Loja Fernandes (Instituto Superior Técnico)
Linearization of Poisson Brackets, 6/5/03.
- Luis Barreira (Instituto Superior Técnico)
Poincaré recurrence, geodesic flows, hyperbolic geometry, 29/4/03.

- Tanya Schmah (University of Warwick)
The local geometry of symmetric Hamiltonian systems on cotangent bundles, 8/4/03.
- Jonathan Wattis (University of Nottingham)
A Coarse-graining approximation for the Becker-Doring equations, 1/4/03.
- Waldyr Oliva (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos e Instituto de Sistemas e Robótica)
On the dimension and smoothness of attractors, 25/3/03.
- Alexei Davydov (Vladimir State University, Russia)
Optimal strategies of time averaged optimization of cyclic motion, 18/3/03.
- David Krejcirik (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos)
Bound States in Curved Quantum Layers, 11/3/03.
- Katrin Gelfert (Max-Planck-Institut für Physik komplexer Systeme, Dresden)
Lower bounds of the topological entropy, 25/2/03.
- Jan Chabrowski (The University of Queensland)
The Neumann Problem with Critical Sobolev Exponent, 18/2/03.
- Philippe Didier (Université Paris-Sud, Orsay)
Partial hyperbolicity, accessibility and stable ergodicity, 11/2/03.
- Antônio Luiz Pereira (IME, Universidade de São Paulo)
Continuity of attractors varying the domain, 4/2/03.
- Benoît Saussol (Université de Picardie Jules Verne, Amiens)
Multifractal analysis of recurrence for smooth dynamical systems, 28/1/03.
- Enrico Valdinoci (Università degli Studi di Roma Tor Vergata)
Elliptic tori, periodic solutions and the three body-problem, 21/1/03.
- Jack Hale (Georgia Institute of Technology)
Coupled oscillators on a circle, 16/1/03.
- Rafael de la Llave (University of Texas, Austin)
Rigidity properties of hyperbolic systems preserving conformal structures on the invariant distributions, 9/1/03.

➤ *Geometria em Lisboa Seminar*

This is a joint seminar with CMAF-UL. It included the following talks in 2003:

- Oana Dragulete (École Polytechnique Fédérale de Lausanne).
Cosphere bundle reduction in contact geometry, 2/12/03.
- Rahul Pandharipande (Princeton University).
Gromov-Witten theory and Donaldson-Thomas theory, 25/11/03.
- José Agapito (U. C. Santa Cruz).
A weighted version of quantization commutes with reduction principle for a toric manifold, 16/9/03.

- Jaroslaw Kedra (University of Szczecin).
Groups of symplectomorphisms have complicated topology, 15/7/03.
- Peter Newstead (University of Liverpool).
Coherent Systems on Algebraic Curves, 10/7/03.
- Nitya Kitchloo (Johns Hopkins University).
On lifting isometries, 8/7/03.
- Mário Edmundo (CMAF, Universidade de Lisboa).
O-minimal singular (co)homology and real etale cohomology, 17/6/03.
- Elizabeth Gasparim (New Mexico State University).
Two applications of instanton numbers, 3/6/03.
- Nguyen Tien Zung (Université Paul Sabatier - Toulouse).
Proper groupoids and intrinsic convexity of momentum maps, 20/5/03.
- Gustavo Granja (Instituto Superior Técnico).
A homotopy decomposition for a group of symplectomorphisms of $S^2 \times S^2$, 15/4/03.
- José Natário (Instituto Superior Técnico).
Warp Drive, 1/4/03.
- Margarida Mendes Lopes (CMAF).
Surfaces with no global 1-forms and 2-forms, 18/3/03.
- Inês Cruz (Universidade do Porto).
Estrutura de Poisson transversa a uma folha simpléctica, 18/2/03.
- Philippe Monnier (Instituto Superior Técnico).
Levi decompositions of Poisson structures, 4/2/03.
- Rui Albuquerque (Universidade de Évora).
On Twistor Spaces, 21/1/03.

➤ *Algebra Seminar*

This is a joint seminar with CLC-IST. It included the following talks in 2003:

- Paulo Lima-Filho (Texas A&M University)
The bigger Brauer group, twisted algebraic K-theory and motives, 16/7/03.
- Marco Mackaay (Universidade do Algarve)
Representações categóricas, 14/5/03.
- Francis Borceux (Université Catholique de Louvain)
Operações de Mal'cev e álgebra homológica não comutativa, 30/4/03.
- Catarina Santa-Clara (Centro de Álgebra da Universidade de Lisboa)
Dimensões em teoria de módulos, 26/3/03.
- Gonçalo Rodrigues (Instituto Superior Técnico)
QFT's and state-sum models, 29/1/03.

➤ *Partial Differential Equations Seminar*

It included the following talks in 2003:

- Maria Carlota Rebelo Gonçalves (CMAF/Universidade de Lisboa).
O teorema de Poincaré-Birkhoff e soluções periódicas de sistemas hamiltonianos planos, 19/12/03.
- Markus Keel (University of Minnesota).
Global in Time Existence and Scattering for the Critical Defocusing Nonlinear Schroedinger Equation, 18/12/03.
- Nara Jung (IST).
A variational problem involving the determinant of the Hessian, 28/11/03.
- Cristian Barbarosie (CMAF/Universidade de Lisboa).
Bounds on homogenized coefficients for mixtures of several materials, 20/11/03.
- Anca-Maria Toader (CMAF/Universidade de Lisboa).
Scale convergence and applications. A numerical method to approach Young measures, 14/11/03.
- Luísa Mascarenhas (CMAF/Universidade de Lisboa).
Bending moment in membrane theory, 31/10/03.
- José Matias (Departamento de Matemática, IST).
Some remarks on a Lusin type theorem for differential forms, 24/10/03.
- Diogo Gomes (IST).
Variational Formulations for Fluid Equations, 17/10/03.
- David Krejcirik (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
The nature of the essential spectrum in curved tubes, 10/10/03.
- Pedro Silva Santos (Instituto Superior Técnico).
A-quasi convexity with variable coefficients, 3/10/03.
- Juha Videman (Instituto Superior Técnico).
A modified Reynolds equation for thin viscous flows, 5/6/03.
- João Paulo Teixeira (Instituto Superior Técnico).
The hyperfinite approach to a nonlinear elliptic system, 29/5/03.
- João Palhoto Matos (Instituto Superior Técnico).
On imposing equality between solid and boundary averages of functions, 22/5/03.
- Pedro Freitas (Instituto Superior Técnico).
À procura da instabilidade perdida, 15/5/03.
- Fernando Pestana da Costa (Instituto Superior Técnico).
The kinetic of cluster growth, 8/5/03.
- Gabriel Pires (Instituto Superior Técnico).
Local Interactions Generate Curvature, 10/4/03.

- Jorge Silva (Instituto Superior Técnico).
Conjugation of Pseudodifferential Operators by Fourier Integral Operators using Weyl Calculus, 3/4/03.
- José Matias (Instituto Superior Técnico).
Necessary and sufficient conditions for existence of solutions of a variational problem involving the curl, 27/3/03.
- Pedro Girão (Instituto Superior Técnico).
Sign changing solutions for elliptic equations with critical growth in cylinder type domains, 20/3/03.
- Diogo Gomes (Instituto Superior Técnico).
Programação linear e equações diferenciais parciais não lineares, 12/3/03.

➤ *Mathematical Physics Seminar*

This is a working seminar. It included the following talks in 2003:

- João Pimentel Nunes (Instituto Superior Técnico).
An introduction to Lax equations, 17/12/03.
- Carlos Florentino (Instituto Superior Técnico).
Riemann surfaces, jacobians and moduli spaces of flat connections, 10/12/03.
- Patrícia Engrácia (Instituto Superior Técnico).
Apresentação de TFC: Universo de Gödel, 20/11/03.
- Rui Loja Fernandes (Instituto Superior Técnico).
Integrability and Galois groups II, 19/11/03.
- Rui Loja Fernandes (Instituto Superior Técnico).
Integrability and Galois groups, 5/11/03.
- Pedro Ferreira dos Santos (Instituto Superior Técnico).
Differential Galois Theory, 22/10/03.
- Leonor Godinho (Instituto Superior Técnico).
Action-Angle Variables, 8/10/03.
- José Natário (Instituto Superior Técnico).
Introduction to Integrable Systems, 1/10/03.
- Pol Vanhaecke (Université de Poitiers).
An introduction to algebraically completely integrable systems, 17/9/03.
- Vladimir Chernov (Dartmouth College).
Affine linking and winding numbers and the study of front propagation, 17/7/03.

➤ *Ergodic Theory and Dynamical Systems Seminar*

This is a working seminar. It included the following talks in 2003:

- Katrin Gelfert (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Dimension and dissipative dynamics, 15/12/03.
- Vitor Saraiva (Instituto Superior Técnico).
Multifractal rigidity, 24/11/03.
- Diogo Gomes (Instituto Superior Técnico).
Linear programming and dynamical systems, 17/11/03.
- Roman Hric (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Entropy conjecture, 10/11/03.
- Vitor Saraiva (Instituto Superior Técnico).
Multifractal analysis and multifractal rigidity, 27/10/03.
- João Lopes Dias (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Renormalization and differentiable conjugacies, 20/10/03.
- Luis Barreira (Instituto Superior Técnico).
Continued fractions and dynamical systems, 13/10/03.
- Sílvia Guerra (Instituto Superior Técnico).
Fluxos geodésicos e ergodicidade, 2/6/03.
- Gianluigi Del Magno (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Local ergodicity, 26/5/03.
- Lucian Radu (Instituto Superior Técnico).
Variational principle for the entropy, 19/5/03.
- Luis Barreira (Instituto Superior Técnico).
Nonuniformly hyperbolic dynamical systems, 12/5/03.
- Philippe Didier (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Ergodicity and Hopf's argument, 5/5/03.
- Gianluigi Del Magno (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Ergodicity and billiards, 28/4/03.
- Vitor Saraiva (Instituto Superior Técnico).
Densidade média de repulsores, 14/4/03.
- Paulo Doutor (Universidade Nova de Lisboa).
Propriedades variacionais em teoria de dimensão, 7/4/03.
- Roman Hric (Centro de Análise Matemática, Geometria e Sistemas Dinâmicos).
Topological entropy, 31/3/03.
- Luis Barreira (Instituto Superior Técnico).
Ergodic theory and stability in dynamical systems, 24/3/03.

- Raquel Silva (Universidade Nova de Lisboa).
Estabilidade em equações diferenciais não-autónomas, 17/3/03.
- Gonçalo Morais (Instituto Superior de Engenharia de Lisboa).
Análise multifractal e teoria dos números, 10/3/03.
- Luis Barreira (Instituto Superior Técnico).
Topics of dynamical systems: recurrence, hyperbolicity, and dimension, 24/2/03.

➤ *Colloquium*

This is the Colloquium of the Department of Mathematics of Instituto Superior Técnico, jointly supported with CEMAT-IST AND CLC-IST. It included the following talks in 2003:

- Hugo Beirão da Veiga (Università di Pisa).
Alguns resultados sobre as equações de Stokes e de Navier-Stokes com condições de não-aderência na fronteira, 10/7/03.
- Olga A. Ladyzhenskaya (Steklov Institute of Mathematics, St. Petersburg, Russia).
On the mathematical problems for viscous fluids of various types, 18/6/03.
- Ronnie Brown (University of Wales, Bangor).
What we have tried to do in the popularisation of mathematics, 24/1/03.

1.3 *Conferences and Short Courses*

The following Conferences and Short Courses were organized or co-organized by members of the Center in 2003:

- Winter School on Nonlinear Partial Differential Equations, January 13-17, 2003.
<http://www.math.ist.utl.pt/~dgomes/winter/winter.html>

Invited speakers:

Darya Apushkinskaya (St. Petersburg State University)

Italo Capuzzo Dolcetta (Università di Roma I)

Rafael de la Llave (University of Texas at Austin)

Sandro Salsa (Politecnico de Milano)

Henrik Shahgholian (KTH, Sweden)

Juan Luis Vazquez (Universidad Autónoma de Madrid)

- Mini Workshop on Discrete Dynamical Systems: Triangular Maps, February 14, 2003.
<http://www.math.ist.utl.pt/~sramos/sdd03.html>

Invited speakers:

Francisco Balibrea (Universidad de Murcia)

Juan Luis García Guirao (Universidad de Castilla - La Mancha)

Diana A. Mendes (Instituto Superior de Ciências do Trabalho e da Empresa)

J. Sousa Ramos (Instituto Superior Técnico)

J. Leonel Rocha (Instituto Superior de Engenharia de Lisboa)

- 4th IST Lecture Series in Algebraic Geometry & Physics, Vector Bundles on Curves and Generalized Theta Functions, March 10-14, 2003.
<http://www.math.ist.utl.pt/~jmourao/ISTAGP/ISTAGP4>

Lecturer:

Arnaud Beauville (Laboratoire J. A. Dieudonné, Université de Nice)

- One-day meeting: discrete dynamical systems, pde, and countable state Markov shifts, May 9, 2003. <http://www.math.ist.utl.pt/~sramos/onedaymeet03.html>

Invited speakers:

Nuno Martins (Instituto Superior Técnico)

C. Correia Ramos (Univ. Évora)

Ricardo Severino (Univ. Minho)

Alexander N. Sharkovsky (National Academy of Sciences of Ukraine, Kiev)

Sandra Vinagre (Univ. Évora)

- Lisbon Conference on Commutative Algebra, June 23-27, 2003.
<http://www.math.ist.utl.pt/lcca/>

Invited speakers:

Ian Aberbach (University of Missouri)

Alejandro Adem (University of Wisconsin)

Luchezar Avramov (University of Nebraska at Lincoln)

José I. Burgos Gil (Universitat de Barcelona)

Aldo Conca (Università di Genova)

Alberto Corso (University of Kentucky)

Emanuela De Negri (Università di Genova)

Philippe Gimenez (Universidad de Valladolid)

Shiro Goto (Meiji University)

David J. Green (Bergische Universität Wuppertal)

Jürgen Herzog (Universität GH-Essen)

Srikanth Iyengar (University of Missouri)

Dikran Karagueuzian (Binghamton University)

Ana Jeremías López (Universidade de Santiago de Compostela)

Daniel Katz (University of Kansas)

Mordechai Katzman (University of Sheffield)
Gennady Lyubeznik (University of Minnesota)
Margarida Mendes Lopes (Universidade de Lisboa)
Marcel Morales (Université Joseph Fourier, Grenoble)
Francesc Planas Vilanova (Universitat Politècnica de Catalunya)
Claudia Polini (University of Notre Dame)
Sorin Popescu (State University of New York at Stony Brook)
Maria Evelina Rossi (Università di Genova)
R. Y. Sharp (University of Sheffield)
Aron Simis (Universidade Federal de Pernambuco)
Hema Srinivasan (University of Missouri)
Apostolos Thoma (University of Ioannina)
Ngô Viêt Trung (Institute of Mathematics, Hanoi)
Bernd Ulrich (Purdue University)
Wolmer V. Vasconcelos (Rutgers University)
Rafael Villarreal (Instituto Politécnico Nacional, Mexico)
Sylvia Wiegand (The National Science Foundation and the University of Nebraska)
Yuji Yoshino (Okayama University)

- Mathematical Problems in Quantum Mechanics.
<http://www.math.ist.utl.pt/~pfreitas/mpqm/>

Invited speakers:

J. Avron (Haifa),
V. Bach (Mainz),
F. Bentosela (Marseille),
S. Chanillo (Rutgers),
J. Dereziński (Warsaw),
D. Elton (Heriot-Watt),
L. Erdős (Atlanta),
V. Geyler (Saransk),
C. Gordon (Dartmouth),
A. Henrot (Nancy),
T. Ichinose (Kanazawa),
N. Nadirashvili (Chicago),
O. Post (Aachen),
G. Raikov (Santiago),

T. O. Sorensen (Aalborg),

J. Yngvason (Vienna)

- Young Researchers Symposium on Mathematical Physics. <http://icmp2003.net/yrs/>

Invited speakers:

M. Aizenman, Princeton

J. Baez, Riverside

T. Gannon, Alberta

V.F.R. Jones, Berkeley

M. Loss, Atlanta

M. Mariño, CERN

Y.G. Sinai, Princeton

Henri Poincaré special plenary lectures

H. Araki, Kyoto

E. Lieb, Princeton

O. Schramm, Microsoft

Paraller sessions

S. Cherkis, Princeton, USA

R. Costa-Santos, Utrecht, Netherlands

N. L. Harshman, Washington, DC, USA

A. Hahn, Bonn, Germany

T. Kuna, Bielefeld, Germany

N. Reis, Lyon, France

L. Rey-Bellet, Amherst, MA, USA

J. Baptista, Cambridge, UK

A. Hernández-Garduño, Mexico City, Mexico

D. Krejcirik, Lisbon, Portugal

G. Morsella, Göttingen, Germany

G. Perelman, Paris, France

O. Post, Aachen, Germany

N. Romão, Leipzig, Germany

- XIV International Congress on Mathematical Physics. <http://icmp2003.net/>

Invited speakers:

E. Carlen, Atlanta
A. Chenciner, Paris
M.J. Esteban, Paris
K. Fredenhagen, Hamburg
K. Gawedzki, Lyon
I. Krichever, New York
R.V. Moody, Edmonton
S. Smirnov, Stockholm
J. P. Solojev, Copenhagen
V. Schomerus, Potsdam
C. Villani, Lyon
D. Voiculescu, Berkeley

Condensed matter physics

A. Elgart, New York
J. Feldman, Vancouver
G. M. Graf, Zürich
M. Salmhofer, Leipzig
R. Seiringer, Princeton
S. Teufel, TU München, Germany

Dynamical systems

J. Bochi, IMPA, Rio de Janeiro
D. Dolgopyat, Maryland
H. Eliasson, Paris - Jussieu
J. Mather, Princeton
W. Schlag, Caltech
M. Shub, IBM and Toronto

Equilibrium statistical mechanics

L. Chayes, UCLA
F. Guerra, Rome
J. Imbrie, Charlottesville
D. Ioffe, Haifa
H. Knoerr, Zürich
G. F. Lawler, Cornell

Fluid dynamics and nonlinear PDEs

D. Bambusi, Milano
M. Hairer, Warwick
V. Kaloshin, Princeton
G. Schneider, Karlsruhe
A. Shirikyan, Orsay

General relativity

P. Bizon, Cracow
H. Bray, MIT
P. Chrusciel, Tours
H. Ringstrom, Max Planck
I. Rodnianski, Princeton
E. Seidel, Max Planck

Integrable systems and random matrix theory

J. Baik, Michigan
P. Dorey, Durham, UK
J.-M. Maillet, Lyon
K. McLaughlin, North Carolina
A. Nakayashiki, Kyushu
A. Okounkov, Princeton

Nonequilibrium statistical mechanics

L. Barreira, Lisbon
L. Bertini, Roma 1
C. Forster, Vienna
P. Gaspard, Bruxelles
F. Golse, Paris
J. Lebowitz, Rutgers
L. Rey-Bellet, Amherst
D. Ueltschi, University of Arizona
H. T. Yau, New York

Operator algebras and quantum information

F. Benatti, University of Trieste

I. Bjelakovic, Technische Universität Berlin

D. E. Evans, Cardiff University

Y. Kawahigashi, Tokyo

C. King, Northeast University

A. Wassermann, CNRS, Luminy

Path integrals and stochastic analysis

R. Leandre, Nancy

T. Levy, Strasbourg

S. Mazzuchi, Trento

H. Owhadi, Marseille

M. Roeckner, Bielefeld

A. Sengupta, Baton Rouge

Quantum field theory

D. Bernard, Saclay

J. Dimock, Buffalo

C. J. Fewster, York, UK

R. Longo, Rome

J. Teschner, Berlin

T. Thiemann, Waterloo

Quantum mechanics and spectral theory

T. Chen, New York

P. Exner, Prague

T. Ichinose, Kanazawa

V. Kostrykin, Aachen

E. Skibsted, Aarhus

G. Stolz, Birmingham, USA

D. Yafaev, Rennes

V.A. Zagrebnoy, Marseille

String and M theory

M. Douglas, Rutgers and I.H.E.S.

J. Gomis, Caltech

B. Julia, Paris

M. Marino, CERN

N. Nekrasov, IHES

P. Townsend, Cambridge

- EMS Mathematical Weekend. <http://www.math.ist.utl.pt/ems/>

Invited speakers:

Michèle Audin (Strasbourg)

Jean-Michel Bismut (Orsay)

Bernard Dacorogna (Lausanne)

Hans Föllmer (Berlin)

Gilles Lebeau (Nice)

SESSION ON SYMPLECTIC AND RELATED GEOMETRIES

Oscar Garcia-Prada (Madrid)

Emmanuel Giroux (Lyon)

François Laudenbach (Nantes)

Francisco Presas (Stanford)

Sébastien Racanière (London)

SESSION ON ANALYSIS AND GEOMETRY

A. Alekseev (Genève)

F. Barthe (Marne-la Vallée)

S. Bauer (Bielefeld)

D. Gaboriau (Lyon)

S. Goette (Regensburg)

F. Labourie (Orsay)

K. Mohnke (Berlin)

P. Piazza (Rome I)

L. Polterovich (Tel-Aviv)

D. Salamon (Zürich)
A. Szenes (Budapest)

SESSION ON CALCULUS OF
VARIATIONS

E. Mascolo (Firenze)
N. Fusco (Napoli)
J. Kristensen (Heriot-Watt)
P. Marcellini (Firenze)
P. Marechal (Montpellier)
L. Mascarenhas (Lisbon)
J. Matias (Lisbon)
G. Mingione (Parma)
Terry Lyons (Oxford)

SESSION ON STOCHASTIC
ANALYSIS AND
MATHEMATICAL FINANCE

Peter Bank (Berlin)
Nicole El Karoui (Paris)
Marco Frittelli (Florence)

Peter Imkeller (Berlin)
Monique Jeanblanc (Paris)
Yuri Kabanov (Besançon)
Bernt Oksendal (Oslo)
Thorsten Rheinlaender (Zürich)
Chris Rogers (Cambridge)
Walter Schachermayer (Vienna)
Josef Teichmann (Vienna)

SESSION ON NON-LINEAR
EVOLUTION EQUATIONS

Serge Alinhac (Orsay)
Piero D'Ancona (Roma)
Jean-Marc Delort (Paris-Nord)
João Paulo Dias (Lisbon)
Emmanuel Grenier (Lyon)
Sergiu Klainerman (Princeton)
Frank Merle (Cergy-Pointoise)
Benoit Perthame (ENS-Paris)
Michael Struwe (Zurich)
Georgio Velo (Bologna)

- Combinatorics in Oporto. <http://www.fc.up.pt/mp/comb03/>

Invited speakers:

Manoel Lemos (Univ. Fed. Pernambuco, Brazil):
Ulrich Brehm (Tech. Univ. Dresden, Germany):
Juergen Bokowski (Tech. Univ. Darmstadt, Germany)
Alexandre Borovik (UMIST, Manchester, U. Kingdom)
Ulrich Brehm (Tech. Univ. Dresden, Germany)
José Dias da Silva (Univ. Lisboa, Portugal)
David Larman (U.C.L., U. Kingdom)
Michel Las Vergnas (CNRS, Paris, France)
Manoel Lemos (Univ. Fed. Pernambuco, Brazil)
Marc Noy (Univ. Politècnica Catalunya, Spain)
Vera Sós (Hungarian Academy of Sciences, Hungary)
Jayme Szwarcfiter (Univ. Fed. Rio de Janeiro, Brazil)

Details on the programs can be found at the webpages.

1.4 Postdoctoral Program

The Center started a postdoctoral program in the academic year 1998/99. Positions are for one year, with the possibility of extension for a second year upon mutual agreement. Applicants must have earned a Ph.D. in mathematics preferably within a 2 year period before the date of the opening of the position. To be selected an applicant must show very strong research promise in one of the areas in which the members of the Center are currently active. There are no teaching duties associated with these positions. They are announced internationally including in Notices and in the Data Base of the American Mathematical Society.

- Postdocs 03/04:
 - G. Del Magno, PhD in Mathematics, Georgia Institute of Technology, Atlanta, USA, 2002. Research areas: dynamical systems.
 - N. Jung, PhD in Mathematics, University of Illinois, Urbana-Champaign, USA, 2003. Research areas: nonlinear analysis.
 - H. Li, PhD in Mathematics, University of Illinois, Urbana-Champaign, USA, 2003. Research areas: symplectic geometry.
 - P. Monnier, PhD in Mathematics, University of Montpellier, France, 2001. Research areas: Poisson geometry, singularities.
- Postdocs 02/03:
 - G. Del Magno, PhD in Mathematics, Georgia Institute of Technology, Atlanta, USA, 2002. Research areas: dynamical systems.
 - R. Hric, PhD in Mathematics, Comenius University, Bratislava, Slovakia, 1999. Support: FCT grant. Research areas: dynamical systems.
 - P. Monnier, PhD in Mathematics, University of Montpellier, France, 2001. Research areas: Poisson geometry, singularities.
 - M. Perlmutter, PhD in Mathematics, University of California, Berkeley, USA, 1999. Support: FCT grant. Research areas: geometric mechanics, symplectic and Poisson geometry, geometric integrators.
- Postdocs 01/02:
 - G. Farkas, PhD in Mathematics, Technical University of Budapest, Hungary, 2001. Support: Project FCT POCTI/32931/MAT/2000. Research areas: dynamical systems, numerical dynamics.
 - R. Hric, PhD in Mathematics, Comenius University, Bratislava, Slovakia, 1999. Research areas: dynamical systems.
 - C. Wolf, PhD in Mathematics, Technical University of Munich, Germany, 1999. Research areas: dynamical systems, dimension theory, ergodic theory, complex analysis.
 - M. Perlmutter, PhD in Mathematics, University of California, Berkeley, USA, 1999. Research areas: geometric mechanics, symplectic and Poisson geometry, geometric integrators.
- Postdocs 00/01:
 - H. Spielberg, Docteur en Mathématiques, Université Louis Pasteur, Strasbourg, France, 1999. Research areas: algebraic geometry, symplectic geometry and topology.
- Postdocs 99/00:

S. Anisov, PhD in Mathematics, Independent University of Moscow, Russia, 1998. Research Areas: singularities, geometry and topology.

Y. Koo, PhD in Mathematics, University of Minnesota, USA, 1998. Research Areas: partial differential equations, geometric measure theory.

B. Saussol, Doctor in Mathematics, Université de Toulon et du Var, France, 1998. Research Areas: dynamical systems, ergodic theory.

- Postdocs 98/99:

S. Lillywhite, PhD in Mathematics, University of Maryland, USA, 1998. Research Areas: differential and symplectic geometry and topology.

B. Saussol, Doctor in Mathematics, Université de Toulon et du Var, France, 1998. Research Areas: dynamical systems, ergodic theory.

1.5 *Special Events*

For the sixth time, the Center was involved in the program “Ciência Viva nas Férias”, organized this year by the Department of Mathematics. This program is directed at students finishing the 11th grade of High school, and has the purpose of attracting towards Mathematics young students interested in Science and Technology. At the same time, it helps increasing the visibility of the Center among the junior population in the Lisbon area. During two weeks in July, 5 students were involved in a program entitled “Caos e Ordem”.

1.6 *Publications in 2003*

1.6.1 **Publications which appeared in 2003**

Books

Bifurcation, Symmetry and Patterns, Trends in Mathematics (J. Buescu, S. Castro and A. P. S. Dias, eds.), Birkhäuser, Basileia, 2003.

A. Cannas da Silva, Introduction to Symplectic and Hamiltonian Geometry, Publicações Matemáticas do IMPA, Rio de Janeiro, 2003.

Articles in International Journals with referees

J. F. Alves and J. Sousa Ramos, One-dimensional semiconjugacy revisited, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1657-1663.

F. Balibrea, R. Hric and L. Snoha, Minimal sets on graphs and dendrites, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1721-1725.

L. Barreira, Dimension estimates in nonconformal hyperbolic dynamics, *Nonlinearity* 16 (2003), 1657-1672.

L. Barreira and C. Wolf, Measures of maximal dimension for hyperbolic diffeomorphisms, *Comm. Math. Phys.* 239 (2003), 93-113.

R. Cordovil and D. Forge, Diagonal bases in Orlik-Solomon type algebras, *Ann. Comb.* 7 (2003), 247-257.

R. Cordovil and D. Forge, A note on Tutte polynomials and Orlik-Solomon algebras, *European J. Combin.* 24 (2003), 1081-1087.

R. Cordovil and D. Forge, Quadratic Orlik-Solomon algebras of graphic matroids, *Matemática*

Contemporânea 25 (2003), 25-32.

D. G. Costa and P. Girão, Existence and nonexistence of least energy solutions of the Neumann problem for a semilinear elliptic equation with critical Sobolev exponent and a critical lower-order perturbation, *J. Differential Equations* 188 (2003), 164-202.

M. Crainic and R. Loja Fernandes, Integrability of Lie brackets, *Ann. of Math. (2)* 157 (2003), 575-620.

G. Del Magno and R. Markarian, Bernoulli elliptical stadia, *Comm. Math. Phys.* 233 (2003), 211-230.

J. Duarte and J. Sousa Ramos, Topological entropy as a measure of chaos in forced excitable systems, *Int. J. Pure Appl. Math.* 4 (2003), 165-181.

D. Evans and P. Pinto, Subfactor realisation of modular invariants, *Comm. Math. Phys.* 237 (2003), 309-363.

R. Loja Fernandes, Invariants of Lie algebroids, *Differential Geom. Appl.* 19 (2003), 223-243.

J. M. Ferreira and S. Pinelas, Oscillatory retarded functional systems, *J. Math. Anal. Appl.* 285 (2003), 506-527.

C. Florentino, J. M. Mourão and J. Nunes, Coherent state transforms and vector bundles on elliptic curves, *J. Funct. Anal.* 204 (2003), 355-398.

D. Gomes, Perturbation theory for viscosity solutions of Hamilton-Jacobi equations and stability of Aubry-Mather sets, *SIAM J. Math. Anal.* 35 (2003), 135-147.

D. Gomes, Regularity theory for Hamilton-Jacobi equations, *J. Differential Equations* 187 (2003), 359-374.

C. Grácio and J. Sousa Ramos, Boundary maps and Fenchel-Nielsen-Maskit coordinates, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1949-1958.

M. Kobayashi and W. Oliva, On the Birkhoff approach to classical mechanics, *Resenhas IME-USP* 6 (2003), 1-71.

H. Li, π_1 of hamiltonian S^1 manifolds, *Proc. Amer. Math. Soc.* 131 (2003), 3579-3582.

H. Li, Semi-free hamiltonian circle actions on 6-dimensional symplectic manifolds, *Trans. Amer. Math. Soc.* 355 (2003), 4543-4568.

N. Martins, R. Severino and J. Sousa Ramos, Bowen-Franks groups for bimodal matrices, *J. Difference Equ. Appl.* 9 (2003), 423-433.

N. Martins, R. Severino and J. Sousa Ramos, Isentropic real cubic maps, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1701-1709.

N. Martins, R. Severino and J. Sousa Ramos, K-theory for Cuntz-Krieger algebras arising from real quadratic maps, *Internat. J. Math. Sci.* 34 (2003), 2139-2146.

N. Martins and J. Sousa Ramos, Bowen-Franks groups associated with linear mod one transformations, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1997-2004.

H. Oliveira and J. Sousa Ramos, Symbolic dynamics of the tangent map, *Int. J. Pure Appl. Math.* 8 (2003), 183-208.

H. Oliveira and J. Sousa Ramos, On iterated positive Schwarzian derivative maps. Dynamical systems and functional equations (Murcia, 2000), *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1673-1681.

C. C. Ramos and J. Sousa Ramos, Kleinian groups and holomorphic dynamics, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1957-1967.

J. L. Rocha and J. Sousa Ramos, On iterated maps of the interval with holes, *J. Difference Equ. Appl.* 9 (2003), 319-335.

J. L. Rocha and J. Sousa Ramos, Tilings described by iterated maps, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1923-1935.

P. M. Rodrigues and J. Sousa Ramos, Symbolic representations and T^n automorphisms, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 2005-2010.

A. Serra, Interpolating sequences in harmonically weighted Dirichlet spaces, *Proc. Amer. Math. Soc.* 131 (2003), 2809-2917.

L. Silva and J. Sousa Ramos, A unified renormalization scheme for two-piecewise monotonous maps of the interval, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 13 (2003), 1711-1719.

Communications in Proceedings with referees

M. Abreu, Kähler geometry of toric manifolds in symplectic coordinates, "Symplectic and Contact Topology: Interactions and Perspectives", (Y. Eliashberg, B. Khesin and F. Lalonde, eds), Fields Institute Communications 35, American Mathematical Society, 2003.

D. Evans and P. Pinto, Modular invariants and fusion rules, "Advances in Quantum Dynamics", (G. Price et al. eds.), American Mathematical Society, 2003.

H. Oliveira and J. Sousa Ramos, Dynamics of the tangent map, "New Progress in Difference Equations", Proceedings of the 6th ICDEA in Augsburg (S. Elaydi, B. Aulbach and G. Ladas, eds.), Taylor & Francis, 2003.

1.6.2 Publications submitted or accepted in 2003

J. Almeida and J. Teixeira, The space of state vectors: a hyperfinite approach, preprint.

G. E. Andrews and P. Freitas, Extension of Abel's lemma with q-series implications, preprint.

S. Anjos and G. Granja, Homotopy decomposition of a group of symplectomorphisms of $S^2 \times S^2$, to appear in *Topology*.

J. F. Alves, R. Hric and J. Sousa Ramos, The Artin-Mazur zeta function for graph maps, to appear in *Proceedings ECIT'02*.

L. Barreira, Poincaré recurrence: old and new, preprint.

A. Barroso and J. Matias, Necessary and sufficient conditions for existence of solutions of a variational problem involving the curl, to appear in *Disc. Cont. Dyn. Sys.*

F. Bogomolov and B. Oliveira, Convexity of coverings of projective varieties and vanishing theorems, preprint.

J. Buescu, Positive integral operators in unbounded domains, preprint.

J. Buescu, F. Garcia, A. Paixão and I. Lourtie, Positive-definiteness, integral equations and Fourier transforms, to appear in *J. Int. Eq. Appl.*

J. Buescu and A. Paixão, Eigenvalues of positive definite kernels on unbounded domains, preprint.

J. Cerdeira and R. Cordovil, A note on mixed graphs and matroids, preprint.

J. Chabrowski and P. Girão, On the exterior Neumann problem involving the critical Sobolev exponent, to appear in *Topological Methods in Nonlinear Analysis*.

B. Chenaud, P. Duclos, P. Freitas and D. Krejcirik, Geometrically induced discrete spectrum in curved tubes, preprint.

R. Cordovil and D. Forge, Gröbner and diagonal bases in Orlik-Solomon type algebras, to appear in *Cubo Journal*.

M. Crainic and R. Loja Fernandes, Integrability of Poisson brackets, to appear in *J. Differential Geometry*.

- M. Crainic and R. Loja Fernandes, Secondary characteristic classes of Lie algebroids, to appear in Lecture Notes in Physics, Springer-Verlag.
- B. Fiedler, C. Rocha and M. Wolfrum, Heteroclinic orbits between rotating waves of semilinear parabolic equations on the circle, to appear in J. Differential Equations.
- C. Florentino, J. M. Mourão and J. Nunes, Coherent state transforms and theta functions, preprint.
- P. Freitas, Integrals of polylogarithmic functions, recurrence relations, and associated Euler sums, preprint.
- P. Freitas and A. Henrot, On the first twisted Dirichlet eigenvalue, preprint.
- D. Gomes, Aubry-Mather theory for multi-dimensional maps, preprint.
- D. Gomes, Hamilton-Jacobi methods for vakonomic mechanics, preprint.
- D. Gomes and E. Valdinoci, Lack of integrability via viscosity solution methods, to appear in Indiana Univ. Math. J..
- D. Gomes and C. Valls, Weak KAM theory for multidimensional maps, preprint.
- G. Granja, Self maps of HP^n via the unstable Adams spectral sequence, preprint.
- R. L. Jerrard and N. Jung, On strict convergence in BV, preprint.
- D. Karagueuzian, B. Oliver and J. Ventura, The components of a variety of matrices with square zero and submaximal rank, preprint.
- M. Kobayashi and W. Oliva, A note on the conservation of energy and volume in the setting of nonholonomic mechanical systems, to appear in Qual. Th. Dyn. Sys. J..
- D. Krejcirik and J. Kriz, On the spectrum of curved quantum waveguides, preprint.
- H. Li, On the construction of certain 6-dimensional symplectic manifolds with Hamiltonian circle actions, to appear in Trans. Amer. Math. Soc..
- H. Li, π_1 of symplectic manifolds with hamiltonian $SU(2)$ or $SO(3)$ actions, preprint.
- L. Loura, A space of generalized distributions, preprint.
- N. Martins, R. Severino and J. Sousa Ramos, Bowen-Franks groups associated with iterated maps on the interval, to appear in Proceedings ECIT'02.
- P. Martins Rodrigues and J. Sousa Ramos, Bowen-Franks groups as conjugacy invariants for T^n automorphisms, preprint.
- J. Natário and P. Tod, Linking, legendrian linking and causality, to appear in Proc. London Math Soc..
- B. Oliveira, Complex cobordism and embeddability of CR-manifolds, to appear in Math. Res. Letters.
- M. Perlmutter, M. Rodríguez-Olmos and E. Sousa Dias, On the geometry of reduced cotangent bundles at zero momentum, preprint.
- C. C. Ramos, N. Martins and J. Sousa Ramos, Noncommutative dimension associated with limit sets of Fuchsian groups, to appear in Proceedings ECIT'02.
- M. Ramos, C. C. Ramos, R. Severino and J. Sousa Ramos, Topological invariants of a chaotic pendulum, to appear in Int. J. Pure Appl. Math..
- C. Rocha, Transversality in semilinear parabolic equations on the circle, to appear in Proc. Equadiff 2003.
- J. L. Rocha and J. Sousa Ramos, Weighted kneading theory of unidimensional maps with holes, preprint.
- J. Santos, Blowups of surfaces and moduli of holomorphic vector bundles, preprint.

- J. Santos, Dirac operator coupled to instantons on positive definite 4 manifolds, preprint.
- J. Santos, Framed holomorphic bundles on rational surfaces, preprint.
- J. Ventura, Homological algebra for the representation Green functor for abelian groups, preprint.