



Research Report 2001

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Preface

In the eleventh year of the publication of this report we reassert its original goals:

The Department of Mathematics regards the annual publication of this research report as an important instrument of scientific policy. The report fulfills simultaneously two complementary purposes. Internally, it highlights the research publications by department members and their involvement in international scientific exchange as a public statement of the importance we attach to them. Externally, it provides information to interested people outside the department about our current research work. Reflecting the scientific activity developed by its members, the research report is a helpful way of assessing the level of achievement of the objectives embraced by the department. These include the pursuit of internationalization as a way to achieve recognition as a mathematics research department.

The Department of Mathematics has at present 84 members holding Ph.D. degrees and is one of the largest mathematics departments in the country and a major mathematics research center. All information regarding the department and its own graduate and undergraduate programs is available through the Internet.

In 1996 and in 1999, the research activities of the department were subjected to an external international review within the overall Research Units Assessment carried out by the Ministry of Science and Technology. For the second time, the research units related to our department received very high ratings from this board acknowledging the international value of the research conducted.

We intend to pursue our development as a research department and recall our own assessment of this evolution:

The department experienced a fast development since it embraced the goal of becoming a research department. The number of members holding a Ph.D. degree and the predominant youth of its faculty is appropriate for the creation and conduction of innovative projects. The number and quality of international activities already announced is an indication that the department has accepted the challenge of achieving a significant position among the international mathematics research centers.

I would like to thank everyone who was involved in the organization of this issue, especially Professor Luis Barreira, who coordinated the production of the report. I am also grateful to Florbela Carvalho for her work in the preparatory word processing of this issue.

Lisbon, April 2002

The Department Chairman,

Prof. Francisco Sepúlveda Teixeira

Research Areas

The main areas of research in the Department of Mathematics of Instituto Superior Técnico are the following:

Dynamical Systems and Differential Equations

The dominant research in this area falls within the general field of mathematical analysis with an emphasis on nonlinear problems whose interest in applications is well known. The activities cover the following subjects: dynamical systems and ergodic theory, ordinary, partial and functional differential equations, calculus of variations and optimization, geometric, topological and algebraic methods in nonlinear analysis, control theory and mechanics of continuous media. The research follows five lines of work: qualitative theory of dynamical systems; geometric mechanics and Hamiltonian systems; methods of nonlinear analysis in mechanics of continuous media; methods of nonlinear systems analysis in control theory; ergodic theory and dynamical systems.

Geometry and Topology

The work in this area is mostly concerned with problems spanning geometry, topology, algebra and analysis, namely questions related to the connection of some classical topics — differential geometry, mathematical physics, dynamical systems, symplectic geometry — with modern developments, including infinite-dimensional and discrete problems, for which Lie groups, K-theory, von Neumann algebras, noncommutative geometry, and combinatorics are essential tools.

Operator Theory and Integral Equations

The work in this area is focused on singular integral operators and other related classes of linear operators like Toeplitz, Carleman-shift and pseudo-differential operators. The motivation for the work comes mainly from problems of diffraction theory and other applications leading to elliptic boundary-value problems. These problems are formulated in appropriate Sobolev spaces and treated by operator theory methods. The emphasis is on linear operator theory and Banach algebras and their connections with complex analysis, in particular Hardy spaces. Current problems under investigation include factorization of (semi)-almost periodic matrix-valued symbols, diffraction problems with approximate boundary conditions of arbitrary order, operator relations, normalization problems, and finite section methods for singular equations.

Probability, Statistics and Applications

The research in this general area has focused on queuing theory and quality control, multivariate analysis, stochastic optimization, categorical data analysis and statistical inference. In queuing theory and quality control interest is concentrated on order relations, transient behavior, threshold problems, and on control charts. In the area of multivariate analysis, topics of interest are factor analysis and related models, multidimensional scaling and discriminant analysis. Particular attention is given to the study of the robustness of these methods. In categorical data analysis and statistical inference, emphasis has been given to incomplete data and statistical theory advanced topics relying on measure and integration.

Numerical Analysis and Mathematical Analysis in Fluid Dynamics

The research on numerical methods for differential and integral equations is mainly directed towards: i) convergence acceleration techniques for ordinary differential equations with singularities and also for integral equations with singular kernels; ii) integral equation methods applied to problems in material science (elasticity and effective properties of composite materials); iii) spline collocation methods for Volterra integral equations with singular kernels; iv) boundary integral equations methods in acoustic and elastic scattering and related inverse scattering problems. The research on fluid dynamics is concerned with the questions of existence, uniqueness and asymptotic behavior of solutions to the equations modeling the flow of incompressible non-Newtonian fluids of differential type. Situations such as flows in bounded and exterior domains and flows in domains with unbounded boundaries (channels, pipes, aperture domains) have been studied. The numerical study of the Stokes and Navier-Stokes equations by boundary and finite element methods as well as by domain decomposition methods has also been addressed.

Logic and Computation

Research in this area is concentrated on three main topics: i) abstract deductive systems, with emphasis on modal logic, paraconsistent logic, categorical logic and the combination of logic systems, with applications in knowledge representation, software engineering and security; ii) algebraic and geometric models of concurrent computing, including algebras of mobile distributed computation, as well as quantales and links between quantale theory and noncommutative geometry; iii) computability and complexity in digital, analog and hybrid computational systems.

Other Areas

There are also some individual members of the department working in other areas, including mathematical physics, operations research, and theory of distributions.

Research Seminars

During 2001 the Department of Mathematics at Instituto Superior Técnico ran regular sessions of the following seminars:

- Seminar on Algebra (23 sessions).
Organizers: Pedro Ferreira dos Santos, Pedro Resende and Maria Vaz Pinto.
- Seminar on Analysis, Geometry, and Dynamical Systems (47 sessions).
Organizer: Luis Barreira.
- Seminar on Applied Mathematics and Numerical Analysis (16 sessions).
Organizer: Adélia Sequeira.
- Seminar on Functional Analysis and Applications (16 sessions).
Organizer: Frank-Olme Speck.
- Seminar on Mathematical Physics (7 sessions).
Organizers: João Nunes and José Natário.
- Seminar on Theory of Computation (33 sessions).
Organizer: Amílcar Sernadas.
- Topological Quantum Field Theory Club (20 sessions).
Organizers: José Mourão and Roger Picken.

During 2001 regular sessions also ran of the following seminars, in collaboration with other institutions:

- Seminar Geometria em Lisboa, in collaboration with Universidade de Lisboa.
Organizers: Rui Loja Fernandes and Margarida Mendes Lopes (Universidade de Lisboa).
- Seminar on Mathematical Logic, in collaboration with Universidade de Lisboa.
Organizers: Fernando Ferreira (Universidade de Lisboa) and Narciso Garcia.

Colloquium: the department also runs a Colloquium, jointly sponsored by the Applied Mathematics Centre, the Center for Logic and Computation, and the Center for Mathematical Analysis, Geometry, and Dynamical Systems, with 11 sessions in 2001 (see §4 below for detailed information). The organizers were Luis Barreira and Frank-Olme Speck until October 2001, and Pedro Resende since then.

1 Publications

1.1 Publications appeared in 2001

1.1.1 Books (authored or edited)

Algebra and Mathematical Analysis

A. Cannas da Silva, *Lectures on Symplectic Geometry*, Lect. Notes in Math. 1764, Springer Verlag, 2001.

T. Faria and P. Freitas Eds, *Topics in Functional Differential and Difference Equations*, Conference on Functional Differential and Difference Equations (July 26-30, 1999), Lisbon, Portugal, Fields Inst. Comm. 29, American Mathematical Society, 2001.

Applied Mathematics and Numerical Analysis

Š. Necasová, H. Petzeltová, M. Pokorný and A. Sequeira Eds, *To the 70th birthday of Prof. Necas*, Proceedings of Partial Differential Equations and Applications (1999), Olomouc, Czech Republic, *Math. Bohem.* **126** (2001), no. 2.

1.1.2 Articles in International Journals and Serials

Algebra and Mathematical Analysis

M. Abreu, *Kähler metrics on toric orbifolds*, J. Differential Geom. **58** (2001), 151-187.

L. Barreira, *Variational properties of multifractal spectra*, Nonlinearity **14** (2001), 259-274.

L. Barreira and B. Saussol, *Hausdorff dimension of measures via Poincaré recurrence*, Comm. Math. Phys. **219** (2001), 443-463.

L. Barreira and B. Saussol, *Variational principles and mixed multifractal spectra*, Trans. Amer. Math. Soc. **353** (2001), 3919-3944.

M. C. Câmara, A. F. dos Santos and N. Manojlovic, *Generalized factorization for $N \times N$ Daniele-Khrapkov matrix functions*, Math. Methods Appl. Sci. **24** (2001), 993-1020.

H. Castro, M. Kobayashi and W. M. Oliva, *Partially hyperbolic Σ -geodesic flows*, J. Differential Equations, Special issue in celebration of Jack K. Hale's 70th birthday (Atlanta, GA/Lisbon, 1998) **169** (2001), 142-168.

- J. Chabrowski and P. M. Girão, *The nonlinear Neumann problem and sharp weighted Sobolev inequalities*, Colloq. Math. **88** (2001), 193-213.
- R. Cordovil and G. Etienne, *A note on the Orlik–Solomon algebra*, European J. Combin. **22** (2001), 165-170.
- F. P. da Costa, M. Grinfeld and J. B. McLeod, *Unimodality of steady size distributions of growing cell populations*, J. Evol. Equ. **1** (2001), 405-409.
- L. C. Evans and D. Gomes, *Effective Hamiltonians and averaging for Hamiltonian dynamics*, Arch. Ration. Mech. Anal. **157** (2001), 1-33.
- R. Loja Fernandes and P. Vanhaecke, *Hyperelliptic Prym varieties and integrable systems*, Comm. Math. Phys. **221** (2001), 169-196.
- J. M. Ferreira, *Oscillations and nonoscillations in retarded equation*, Port. Math. **58** (2001), 127-138.
- J. M. Ferreira and A. M. Pedro, *Oscillations of differential-difference systems of neutral type*, J. Math. Anal. Appl. **253** (2001), 274-285.
- C. Florentino, *Schottky uniformization and vector bundles over Riemann surfaces*, Manuscripta Math. **105** (2001), 69-83.
- P. Freitas, *On minimal eigenvalues of Schrödinger operators on manifolds*, Comm. Math. Phys. **217** (2001), 375-382.
- P. Freitas and C. Rocha, *Lyapunov functionals and stability for FitzHugh–Nagumo systems*, J. Differential Equations, Special issue in celebration of Jack K. Hale's 70th birthday (Atlanta, GA/Lisbon, 1998) **169** (2001), 208-227.
- F. Garcia, I. Lourtie and J. Buescu, *$L^2(\mathbb{R})$ nonstationary processes and the sampling theorem*, IEEE Sign. Proc. Lett. **8** (2001), 117-119.
- L. Godinho, *Blowing up symplectic orbifolds*, Ann. Global Anal. Geom. **20** (2001), 117-162.
- Yu. I. Karlovich and A. B. Lebre, *Algebra of singular integral operators with a Carleman backward slowly oscillating shift*, Integral Equations Operator Theory **41** (2001), 288-323.
- V. G. Kravchenko, A. B. Lebre and G. S. Litvinchuck, *Spectrum problems for singular integral operators with Carleman shift*, Math. Nach. **226** (2001), 129-151.
- I. Kupka and W. M. Oliva, *The non-holonomic mechanics*, J. Differential Equations, Special issue in celebration of Jack K. Hale's 70th birthday (Atlanta, GA/Lisbon, 1998) **169** (2001), 169-189.
- J. T. Pinto, *Slow motion manifolds far from the attractor in multistable reaction-diffusion equations*, J. Differential Equations **174** (2001), 101-132.
- P. A. Santos, *Spline approximation methods with uniform meshes in algebras of multiplication and convolution operators*, Math. Nach. **232** (2001), 95-127.

Statistics and Applications

- A. Gómez-Corral and M. F. Ramalhoto, *On the waiting time distribution and the busy period of a retrial queue with constant retrial rate*, Stochastic Modelling and Applications **3** (2001), 37-47.
- P. Mateus, A. Pacheco, J. Pinto, A. Sernadas and C. Sernadas, *Probabilistic situation calculus*, Ann. Math. Artificial Intelligence **32** (2001), 393-431.

- M. C. Morais and A. Pacheco, *Some stochastic properties of upper one-sided \bar{X} and EWMA charts for μ in the presence of shifts in σ* , *Sequential Anal.* **20** (2001), 1-12.
- P. Soares and C. D. Paulino, *Incomplete categorical data analysis: a Bayesian perspective*, *J. Statist. Comp. and Simulation* **69** (2001), 157-170.

Applied Mathematics and Numerical Analysis

- C. J. S. Alves and H. Ammari, *Boundary integral formulae for the reconstruction of imperfections of small diameter in an elastic medium*, *SIAM J. Appl. Math.* **62** (2001), 94-106.
- A.-B. Cruzeiro, P. Malliavin and S. Taniguchi, *Ground state estimations in gauge theory*, *Bull. Sci. Math.* **125** (2001), 623-640.
- A. L. Dyshko, M. P. Carpentier, N. B. Konyukhova and P. M. Lima, *Singular problems for Emden-Fowler-type second-order nonlinear ordinary differential equations*, *Comput. Math. Math. Phys.* **41** (2001), 557-580.
- S. Nazarov, A. Sequeira and J. H. Videman, *Steady flows of Jeffrey-Hamel type from the half plane into an infinite channel 1. Linearization on an antisymmetric solution*, *J. Math. Pures Appl.* **80** (2001), 1069-1098.
- J. M. Urbano and J. H. Videman, *Unidirectional steady flow of a viscoelastic fluid with a free surface*, *Interfaces Free Bound.* **3** (2001), 447-463.

Computer Science

- C. Caleiro, P. Mateus, J. Ramos and A. Sernadas, *Combining logics: parchments revisited*, in *Recent Trends in Algebraic Development Techniques - Selected Papers*, M. Cerioli and G. Reggio Eds, *Lect. Notes in Comput. Sci.* 2267, Springer Verlag, 2001, pp. 48-70.
- J. F. Costa, *Hypercomputation in the limits of classical physical reality. Review of Neural Networks and Analog Computation - Beyond the Turing Limit*, by H. Siegelmann, Birkhäuser, 1999, *ACM Comput. Reviews* **41** (2000), 343-345.
- J. F. Costa and H. Lourenço, *Canonical institutions of behaviour*, in *Recent Trends in Algebraic Development Techniques - Selected Papers*, M. Cerioli and G. Reggio Eds, *Lect. Notes in Comput. Sci.* 2267, Springer Verlag, 2001, pp. 71-84.
- C. Hermida, *From coherent structures to universal properties*, *J. Pure Appl. Algebra* **165** (2001), 7-61.
- C. Hermida, M. Makkai and P. Power, *On the definition of weak higher-dimensional categories I, part II*, *J. Pure Appl. Algebra* **157** (2001), 247-277.
- P. Mateus, A. Pacheco, J. Pinto, A. Sernadas and C. Sernadas, *Probabilistic situation calculus*, *Ann. Math. Artificial Intelligence* **32** (2001), 393-431.
- P. Resende, *Quantales, finite observations and strong bisimulation*, *Theoret. Comput. Sci.* **254** (2001), 95-149.
- P. Rodrigues, J. F. Costa and H. T. Siegelmann, *Verifying properties of neural networks*, in *Connectionist Models of Neurons, Learning Processes and Artificial Intelligence*, *Proceedings of the 6th International Work-Conference on Artificial and Natural Neural Networks IWANN 2001* (June 13-15, 2001), Granada, Spain, J. Mira and A. Prieto Eds, *Lect. Notes in Comput. Sci.* 2084, Springer Verlag, 2001, pp. 158-165.

A. Zanardo, A. Sernadas and C. Sernadas, *Fibring: completeness preservation*, J. Symbolic Logic **66** (2001), 414-439.

1.1.3 Articles/Communications in Proceedings of International Conferences

Algebra and Mathematical Analysis

L. Barreira and Ya. Pesin, *Lectures on Lyapunov exponents and smooth ergodic theory*, in Smooth Ergodic Theory and Its Applications (August 1999), Seattle, USA, A. Katok, R. de la Llave, Ya. Pesin and H. Weiss Eds, Proc. Symposia Pure Math. 69, Amer. Math. Soc., 2001, pp. 3-89.

L. Fichmann and W. M. Oliva, *Collision of global orbits in C^∞ retarded functional differential equations*, in Topics in Functional Differential and Difference Equations, Conference on Functional Differential and Difference Equations (July 26-30, 1999), Lisbon, Portugal, T. Faria and P. Freitas Eds, Fields Inst. Comm. 29, American Mathematical Society, 2001, pp. 105-112.

L. Fichmann and W. M. Oliva, *One-to-oneness and hyperbolicity*, in Topics in Functional Differential and Difference Equations, Conference on Functional Differential and Difference Equations (July 26-30, 1999), Lisbon, Portugal, T. Faria and P. Freitas Eds, Fields Inst. Comm. 29, American Mathematical Society, 2001, pp. 113-131.

W. M. Oliva, *Mechanics on Riemannian manifolds*, in Non-Linear Analysis and its Applications to Differential Equations (1998), Lisbon, Portugal, M. R. Grossinho, M. Ramos, C. Rebelo and L. Sanchez Eds, Progr. Nonlinear Differential Equations Appl. 43, Birkhäuser, 2001, pp. 65-84.

Statistics and Applications

M. A. Amaral Turkman and G. L. Silva, *Bayesian analysis of an additive frailty model*, in Proceedings of the VIII Spanish Biometric Conference, M. D. Ugarte and A. F. Militino Eds, Universidad Pública de Navarra, Pamplona, Spain, 2001, pp. 51-58.

N. Antunes, A. Pacheco and R. Rocha, *Modelling and performance evaluation of a broadband wireless network*, in Proceedings of the 23rd European Meeting of Statisticians (August 13-18, 2001), Tecnopolo Funchal, Madeira, Portugal, vol. 2, 2001, pp. 37-38.

M. C. Morais and A. Pacheco, *Assessing the impact of correlation in the performance of residual schemes: a stochastic ordering approach*, in Proceedings of the VIIth International Workshop on Intelligent Statistical Quality Control (September 5-7, 2001), Waterloo, Canada, 2001, pp. 334-348.

M. C. Morais and A. Pacheco, *Evaluating the impact of misleading signals in joint schemes for μ and σ* , in Proceedings of the 23rd European Meeting of Statisticians (August 13-18, 2001), Tecnopolo Funchal, Madeira, Portugal, Revista de Estatística, vol. 2, 2001, pp. 285-286.

M. F. Ramalhoto, *Some R&D issues in safety, risk, reliability and maintenance: a transdisciplinary approach*, in Proceedings of the European Safety & Reliability International Conference ESREL 2001 (September 16-20, 2001), Torino, Italy, E. Zio, M. Demichela and N. Piccinini Eds, Politecnico di Torino Press, 2001, vol. 2, pp. 1123-1130.

Applied Mathematics and Numerical Analysis

C. J. S. Alves, *Numerical experiments on the near and far field of acoustic and elastic waves scattered by cracks*, in Proceedings of the International Conference in Computational Engineering & Science ICES'01 (August 19-25, 2001), Puerto Vallarta, Mexico, Tech Science Press, 2001, in CD-ROM.

C. J. S. Alves and C. Chen, *The method of fundamental solutions adapted for a non homogeneous equation*, in Proceedings of the International Conference in Computational Engineering & Science ICES'01 (August 19-25, 2001), Puerto Vallarta, Mexico, Tech Science Press, 2001, in CD-ROM.

Computer Science

C. Caleiro and J. Marcos, *Non-truth-functional fibred semantics*, in Proceedings of the International Conference on Artificial Intelligence (IC-AI'2001), vol. II, H. R. Arabnia Ed, Athens, USA, CSREA Press, 2001, pp. 841-847.

1.1.4 Other Publications

Algebra and Mathematical Analysis

J. Buescu, *O Mistério do Bilhete de Identidade e Outras Histórias*, Ciência Aberta, Gradiva, 2001.

Statistics and Applications

M. C. Morais and A. Pacheco, *Misleading signals em esquemas conjuntos para μ e σ* , in Um Olhar Sobre a Estatística, Actas do 7º Congresso Anual da Sociedade Portuguesa de Estatística, P. Oliveira and E. Athayde Eds, Edições SPE, 2001, pp. 334-348.

M. C. Morais and A. Pacheco, *Comparação estocástica de tempos de primeira passagem: uma aplicação a controlo de qualidade, fiabilidade e filas de espera*, in A Estatística em Movimento, Actas do 8º Congresso Anual da Sociedade Portuguesa de Estatística, M. M. Neves, J. Cadima, M. J. Martins and F. Rosado Eds, Edições SPE, 2001, pp. 247-260.

S. Nóbrega and C. D. Paulino, *Quality control in cancer registry: a new approach for ROR-Sul*, Revista de Estatística 3 (2001), 7-31.

N. Sepúlveda and C. D. Paulino, *Comparação por métodos exactos de técnicas serológicas de diagnóstico da esquistossomíase*, in A Estatística em Movimento, Actas do 8º Congresso Anual da Sociedade Portuguesa de Estatística, M. M. Neves, J. Cadima, M. J. Martins and F. Rosado Eds, Edições SPE, 2001, pp. 395-400.

C. D. Paulino, *Modelação e análise de dados Poisson sob censura não informativa. Parte I – modelação e ajustamento de modelos de censura*, in Um Olhar Sobre a Estatística, Actas do 7º Congresso Anual da Sociedade Portuguesa de Estatística, P. Oliveira and E. Athayde Eds, Edições SPE, 2001, pp. 349-356.

C. D. Paulino and P. Soares, *Modelação e análise de dados Poisson sob censura não informativa. Parte II – ajustamento de modelos estruturais para as taxas e aplicações*, in Um Olhar Sobre a Estatística, Actas do 7º Congresso Anual da Sociedade Portuguesa de Estatística, P. Oliveira and E. Athayde Eds, Edições SPE, 2001, pp. 357-367.

C. M. Santos-Pereira and A. M. Pires, *Classificação supervisionada com dúvidas: compromisso erro/rejeição*, in *A Estatística em Movimento*, Actas do 8º Congresso Anual da Sociedade Portuguesa de Estatística, M. M. Neves, J. Cadima, M. J. Martins and F. Rosado Eds, Edições SPE, 2001, pp. 313-322.

A. M. Pires, *Intervalos de confiança para uma proporção*, in *A Estatística em Movimento*, Actas do 8º Congresso Anual da Sociedade Portuguesa de Estatística, M. M. Neves, J. Cadima, M. J. Martins and F. Rosado Eds, Edições SPE, 2001, pp. 357-372.

1.2 Publications accepted or submitted in 2001

Algebra and Mathematical Analysis

M. Abreu and P. Freitas, *On the invariant spectrum of S^1 -invariant metrics on S^2* , preprint, to appear in Proc. London Math. Soc. (3).

J. Almeida and L. Barreira, *Hausdorff dimension in convex bornological spaces*, preprint, to appear in J. Math. Anal. Appl..

J. F. Alves and J. Sousa Ramos, *One-dimensional semiconjugacy revisited*, Preprint 8/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..

J. F. Alves and J. Sousa Ramos, *Variations and Semiconjugacy*, Preprint 43/00, to appear in Differential Equations and Dynamical Systems, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..

S. Anjos, *Homotopy type of symplectomorphism groups of $S^2 \times S^2$* , preprint.

L. Barreira and Ya. Pesin, *Lyapunov Exponents and Smooth Ergodic Theory*, to be published in University Lecture Series, Amer. Math. Soc..

L. Barreira and B. Saussol, *Product structure of Poincaré recurrence*, Preprint 19/00, to appear in Ergodic Theory Dynam. Systems.

L. Barreira and B. Saussol, *Variational principles for hyperbolic flows*, preprint, to appear in Differential Equations and Dynamical Systems, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..

L. Barreira, B. Saussol and J. Schmeling, *Distribution of frequencies of digits via multifractal analysis*, preprint, to appear in J. Number Theory.

L. Barreira, B. Saussol and J. Schmeling, *Higher-dimensional multifractal analysis*, Preprint 41/00, to appear in J. Math. Pures Appl..

A. C. Barroso and J. Matias, *On a volume constrained variational problem in $SBV^2(\Omega)$* , Preprint 13/00, to appear in ESAIM Control Optim. Calc. Var..

M. A. Bastos, A. Bravo and Yu. Karlovich, *Singular integral operators with piecewise almost periodic coefficients and Carleman shift*, Preprint 16/01, to appear in Proceedings of International Workshop on Operator Theory and Applications IWOTA-Portugal 2000.

M. A. Bastos, Yu. Karlovich and A. F. dos Santos, *Oscillatory Riemann–Hilbert problems and the corona theorem*, Preprint 1/99, to appear in J. Funct. Anal..

- A. Cannas da Silva, *Symplectic toric manifolds*, to appear in Advanced Courses in Mathematics CRM Barcelona, Birkhäuser.
- R. P. Carpentier, *Topological notions for Kauffman and Vogel's polynomial*, preprint, to appear in J. Knot Theory Ramifications.
- L. Castro, R. Duduchava and F.-O. Speck, *Singular integral equations on piecewise smooth curves in spaces of smooth functions*, Preprint 30/01, to appear in the "Silbermann volume", Operator Theory: Advances and Applications, A. Böttcher et al. Eds, Birkhäuser.
- J. Chabrowski and P. M. Girão, *Symmetric solutions of the Neumann problem involving a critical Sobolev exponent*, preprint, to appear in Topol. Methods Nonlinear Anal..
- A. Conceição, V. Kravchenko, F. S. Teixeira, *Factorization of matrix functions and the resolvent of certain operators*, preprint, to appear in Proceedings of International Workshop on Operator Theory and Applications IWOTA-Portugal 2000.
- R. Cordovil, *A commutative algebra for oriented matroids*, preprint, to appear in Discrete Comput. Geom..
- R. Cordovil and D. Forge, *Quadratic Orlik–Solomon algebras of graphic matroids*, preprint.
- C. Correia Ramos and J. Sousa Ramos, *Kleinian groups and holomorphic dynamics*, Preprint 13/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- D. G. Costa and P. M. 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*, preprint.
- M. Crainic and R. Loja Fernandes, *Integrability of Lie brackets*, preprint, to appear in Ann. of Math. (2).
- F. P. da Costa, M. Grinfeld, J. A. D. Wattis, *A hierarchical cluster system based on Horton–Strahler rules for river networks*, Preprint 33/01, to appear in Stud. Appl. Math..
- P. Damianou and R. Loja Fernandes, *From the Toda lattice to the Volterra lattice and back*, preprint.
- P. F. dos Santos and P. Lima-Filho, *Quaternionic algebraic cycles and reality*, preprint.
- B. R. Duffy, P. Freitas and M. Grinfeld, *Memory driven instability in a diffusion process*, Preprint 21/01, to appear in SIAM J. Math. Anal..
- T. Ehrhardt and F.-O. Speck, *Transformation techniques towards the factorization of non-rational 2×2 matrix functions*, Preprint 29/01, to appear in Linear Algebra and Appl..
- L. C. Evans and D. Gomes, *Effective Hamiltonians and averaging for Hamiltonian dynamics II – time dependent Hamiltonians*, preprint, to appear in Arch. Rational Mech. Anal..
- R. Loja Fernandes, *Invariants of Lie algebroids*, preprint.
- R. Loja Fernandes, *Lie algebroids, holonomy and characteristic classes*, preprint, to appear in Adv. Math..
- J. M. Ferreira, *On the stability and oscillatory behavior of a retarded equation*, preprint, to appear in Differential Equations and Dynamical Systems, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..
- J. M. Ferreira and A. M. Pedro, *Oscillatory behavior in linear functional differential systems of neutral type*, preprint, to appear in J. Math. Anal. Appl..

B. Fiedler, C. Rocha, D. Salazar and J. Solà-Morales, *Dynamics of piecewise-autonomous bistable parabolic equations*, Preprint 2/01, to appear in *Differential Equations and Dynamical Systems*, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..

C. Florentino, J. Mourão and J. P. Nunes, *Coherent state transforms and Abelian varieties*, Preprint 3/01, to appear in *J. Funct. Anal.*

P. Freitas, *Closed nodal lines and interior hotspots of the second eigenfunction of the Laplacian on surfaces*, Preprint 21/00, to appear in *Indiana Univ. Math. J.*

P. Freitas and J. P. Matos, *Characterization of harmonic and subharmonic functions via mean-value properties*, Preprint 24/01.

A. Galves, J. K. Hale and C. Rocha Eds, *Differential Equations and Dynamical Systems*, to be published in *Fields Inst. Comm.*, Amer. Math. Soc..

F. Garcia, I. Lourtie and J. Buescu, *Local stationarity of $L^2(\mathbb{R})$ processes*, Preprint 37/00, to appear in *ICASSP Conference Proceedings*.

P. M. Girão, *A family of sharp inequalities for Sobolev functions*, preprint.

P. M. Girão, *A sharp inequality for Sobolev functions*, preprint, to appear in *C. R. Acad. Sci. Paris, Sér. I Math.*

P. M. Girão and M. Ramos, *Sign changing solutions for elliptic equations with critical growth in cylinder type domains*, preprint, to appear in *ESAIM Control Optim. Calc. Var.*

D. Gomes, *Regularity theory for Hamilton–Jacobi equations*, preprint.

D. Gomes, *Stability of rotating liquid films*, preprint, to appear in *Quart. J. Mech. Appl. Math.*

D. Gomes, *A stochastic analog of Aubry–Mather theory*, preprint, to appear in *Nonlinearity*.

D. Gomes, *Viscosity solutions of Hamilton–Jacobi equations and asymptotics for Hamiltonian systems*, preprint, to appear in *Calc. Var. Partial Differential Equations*.

C. Grácio and J. Sousa Ramos, *Boundary maps and Fenchel–Nielsen coordinates*, Preprint 14/01, to appear in *Internat. J. Bifur. Chaos Appl. Sci. Engrg.*

J. K. Hale, L. T. Magalhães and W. M. Oliva, *Dynamics in Infinite Dimensions*, to be published by Springer Verlag.

A. Karlovich, Yu. I. Karlovich and A. B. Lebre, *Invertibility of functional operators with slowly oscillating non-Carleman shift*, Preprint 23/01, to appear in *Proceedings of International Workshop on Operator Theory and Applications IWOTA-Portugal 2000*.

V. G. Kravchenko, A. B. Lebre and J. S. Rodríguez, *Factorization of singular integral operators with a Carleman shift via factorization of matrix functions*, preprint, to appear in *Proceedings of International Workshop on Operator Theory and Applications IWOTA-Portugal 2000*.

V. G. Kravchenko, A. B. Lebre and J. S. Rodríguez, *Factorization of singular integral operators with a Carleman shift and spectral problems*, preprint, to appear in *J. Integral Equations Appl.*

P. Lopes, *Quandles at finite temperatures I*, Preprint 22/01, to appear in *J. Knot Theory Ramifications*.

M. Mackaay and R. F. Picken, *2-Categories, 4d state-sum models and gerbes*, preprint, to appear in *Proceedings of the III Fórum Jovens Investigadores, Universidade do Algarve*.

- M. Mackaay and R. F. Picken, *Holonomy and parallel transport for Abelian gerbes*, preprint, to appear in Adv. Math..
- N. Martins, R. Severino and J. Sousa Ramos, *Isentropic real cubic maps*, Preprint 26/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- N. Martins and J. Sousa Ramos, *Bowen–Franks groups associated with linear mod one transformations*, Preprint 7/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- N. Martins and J. Sousa Ramos, *Cuntz–Krieger algebras arising from linear mod one transformations*, Preprint 42/00, to appear in Differential Equations and Dynamical Systems, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..
- P. Martins Rodrigues and J. Sousa Ramos, *Bowen–Franks groups as conjugacy invariants for T^n automorphisms*, Preprint 19/01.
- P. Martins Rodrigues and J. Sousa Ramos, *Symbolic representations and T^n automorphisms*, Preprint 12/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- M. Mercês Ramos, C. Correia Ramos and J. Sousa Ramos, *Entropy of a chaotic pendulum*, preprint.
- A. Mikovic and R. F. Picken, *Super Chern–Simons theory and flat super connections on a torus*, Preprint 16/00, to appear in Adv. Theor. Math. Phys..
- J. Natário, *Linking and causality in (2+1)-dimensional static spacetimes*, preprint.
- J. Natário, *Warp drive with zero expansion*, preprint, to appear in Classical Quantum Gravity.
- J. E. Nelson and R. F. Picken, *Parametrization of the moduli space of flat $SL(2, \mathbb{R})$ connections on the torus*, Preprint 20/01, to appear in Lett. Math. Phys..
- W. M. Oliva, *Morse–Smale semiflows. Openess and A-stability*, preprint, to appear in Differential Equations and Dynamical Systems, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..
- H. Oliveira and J. Sousa Ramos, *Dynamics of the tangent map*, preprint.
- H. Oliveira and J. Sousa Ramos, *On iterated positive Schwarzian derivative maps*, Preprint 11/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- L. Oliveira, *On the structure of inner ideals of nest algebras*, preprint.
- L. Oliveira, *Weak*-closed Jordan ideas of nest algebras*, preprint.
- L. Rocha and J. Sousa Ramos, *Tilings described by iterated maps*, Preprint 9/01, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- G. Rodrigues, *Homotopy quantum field theories and the homotopy cobordism category in dimension 1+1*, preprint.
- P. A. Santos and B. Silbermann, *An axiomatic approach to stability of approximation sequences*, preprint, to appear in Proceedings of International Workshop on Operator Theory and Applications IWOTA-Portugal 2000.
- R. Severino, N. Martins and J. Sousa Ramos, *Isentropic real cubic maps*, preprint, to appear in Internat. J. Bifur. Chaos Appl. Sci. Engrg..
- R. Severino, N. Martins and J. Sousa Ramos, *K_0 -theory for Cuntz–Krieger algebras arising from real quadratic maps*, Preprint 25/01.

R. Severino and J. Sousa Ramos, *Symbolic dynamics in nonlinear boundary values for PDE*, Preprint 6/01, to appear in *Differential Equations and Dynamical Systems*, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..

L. Silva and J. Sousa Ramos, *A genealogy for kneading sequences of two-piecewise monotonous of the interval*, Preprint 44/00, to appear in *Differential Equations and Dynamical Systems*, A. Galves, J. Hale and C. Rocha Eds, Fields Inst. Comm., Amer. Math. Soc..

L. Silva and J. Sousa Ramos, *Topological invariants and renormalization of Lorenz maps*, Preprint 27/01, to appear in *Phys. D*.

L. Silva and J. Sousa Ramos, *A unified renormalization scheme for two-piecewise monotonous maps of the interval*, Preprint 10/01, to appear in *Internat. J. Bifur. Chaos Appl. Sci. Engrg.*

M. E. Sousa Dias, *Pseudo-rigid bodies: a geometric Lagrangian approach*, Preprint 18/01, to appear in *Acta Appl. Math.*

H. Spielberg, *Counting generic genus-0 curves on Hirzebruch surfaces*, preprint, to appear in *Proc. Amer. Math. Soc.*

Statistics and Applications

N. Antunes, A. Pacheco and R. Rocha, *An integrated traffic model for multimedia wireless networks*, preprint, to appear in *Comput. Networks*.

N. Antunes, A. Pacheco and R. Rocha, *A Markov renewal based model for wireless networks*, preprint, to appear in *Queueing Systems Theory Appl.*

G. Boente, A. M. Pires and I. M. Rodrigues, *Influence functions and outlier detection under the common principal components model*, preprint, to appear in *Biometrika*.

P. Mateus, M. Cabral Morais, C. Nunes, A. Pacheco, A. Sernadas and C. Sernadas, *Randomly timed automata*, preprint.

P. Mateus, A. Pacheco and J. Pinto, *Observations and the probabilistic situation calculus*, preprint, to appear in *KR Conference Proceedings Series*, M. Kaufmann Ed.

M. C. Morais and A. Pacheco, *Assessing the impact of correlation in the performance of residual schemes: a stochastic ordering approach*, preprint.

C. Nunes and A. Pacheco, *Sojourn and passage times in Markov chains*, preprint, to appear in *Proceedings of the 4th Matrix Analytic Methods Conference*, P. J. Taylor and G. Latouche Eds.

C. D. Paulino and P. Soares, *Analysis of rates in incomplete Poisson data*, Preprint 31/00.

A. M. Pires, *Robust discriminant analysis and the projection pursuit approach, practical aspects*, preprint, to appear in *Proceedings of ICORS 2001*.

A. M. Pires and J. A. Branco, *Partial influence functions*, Preprint 23/00, to appear in *J. Multivariate Anal.*

A. M. Pires, J. A. Branco, A. M. Picado and E. Mendonça, *Models for the estimation of a 'no effect concentration'*, Preprint 22/00, to appear in *Environmetrics*.

P. Salvador, R. Valadas and A. Pacheco, *Modeling IP traffic: joint characterization of packet arrivals and packet arrivals using BMAPs*, Research Report, Institute of Telecommunications.

P. Salvador, R. Valadas and A. Pacheco, *Multiscale fitting procedure for Markov modulated Poisson processes*, Research Report, Institute of Telecommunications.

G. L. Silva and M. A. Turkman, *Bayesian analysis of an additive survival model with frailty*, preprint.

Applied Mathematics and Numerical Analysis

C. J. S. Alves, J. Ben Abdallah and M. Jaoua, *Recovery of cracks using a reciprocity gap function*, preprint.

C. J. S. Alves, C. Chen and B. Saler, *The method of fundamental solutions for solving Poisson's problems*, preprint.

C. J. S. Alves, A. El Badia and T. Ha Duong, *On the determination of elastic point sources*, preprint.

C. J. S. Alves and R. Kress, *On the far field operator in elastic obstacle scattering*, preprint, to appear in IMA J. Appl. Math..

C. J. S. Alves, B. Pereira and P. Serranho, *Scattering by cracks: numerical simulations using a boundary finite element method*, preprint.

A. L. Brinca, F. J. Romeiras and L. Gomberoff, *On the stability of perpendicular particle drifts in cold magnetoplasmas*, preprint, to appear in J. Geophys. Res. - Space Physics.

T. Diogo and P. M. Lima, *Comparative study of numerical methods for a class of integral equations with weakly singular kernel*, preprint, to appear in Proceedings of the 5th Hellenic European Conference on Computer Methods and its Applications HERCMA 2001.

T. Diogo and P. M. Lima, *Numerical solution of a non-uniquely solvable Volterra integral equation using extrapolation methods*, preprint, to appear in J. Comput. Appl. Math..

M. M. Graça, *Updates for a standard accelerator of neutral fixed point iteration maps*, Preprint 1/01.

N. Konyukhova, P. Lima and M. Carpentier, *Asymptotic and numerical approximation of a nonlinear singular boundary value problem*, Preprint 31/01, to appear in Selecta do XXIV Congresso Nacional de Matemática Aplicada e Computacional (September 10-13, 2001), Belo Horizonte, Brazil.

S. Nazarov, A. Sequeira and J. Videman, *Steady flows of Jeffrey–Hamel type from the half plane into an infinite channel - 2. Linearization on a Symmetric Solution*, Preprint 28/01, to appear in J. Math. Pures Appl..

A. L. Silvestre, *On the slow motion of a self-propelled rigid body in viscous liquid*, preprint, to appear in J. Math. Anal. Appl..

A. L. Silvestre, *On the unsteady self-propelled motion of a rigid body in a viscous incompressible fluid and the attainability of symmetric steady motions*, preprint, to appear in J. Math. Fluid Mech..

Computer Science

M. Campagnolo, C. Moore and J. F. Costa, *An analog characterization of the subrecursive functions*, preprint, to appear in J. Complexity.

M. E. Coniglio, *Categorical combination of logics: completeness preservation*, preprint.

D. Kruml, J. W. Pelletier, P. Resende and J. Rosicky, *On quantales and spectra of C*-algebras*, Preprint 32/01.

- A. Lopes, J. F. Costa and D. Montesi, *Process semantics of control structures in prolog*, preprint.
- J. P. Neto, J. F. Costa, P. Carreira and M. Rosa, *A compiler and simulator for partial recursive functions over neural networks*, preprint.
- J. P. Neto, H. T. Siegelmann and J. F. Costa, *Symbolic processing in neural networks*, preprint, to appear in J. Braz. Comp. Soc..
- P. Mateus, M. Cabral Morais, C. Nunes, A. Pacheco, A. Sernadas and C. Sernadas, *Categorical foundations for randomly timed automata*, preprint.
- P. Mateus, A. Pacheco and J. Pinto, *Observations and the probabilistic situation calculus*, preprint, to appear in Proceedings of the Eighth International Conference on Principles of Knowledge Representation and Reasoning (KR2002), D. Fensel, D. McGuinness and M.-A. Williams Eds, Morgan Kaufmann.
- J. Rasga, A. Sernadas, C. Sernadas and L. Viganò, *Fibring labelled deduction systems*, preprint, to appear in J. Logic Comput..
- J. Rasga, A. Sernadas, C. Sernadas and L. Viganò, *Labelled deduction over algebras of truth values*, preprint, to appear in Frontiers of Combining Systems 4, A. Armando Ed, Lect. Notes in Artificial Intelligence, Springer Verlag.
- A. Ravara, A. G. Matos, V. T. Vasconcelos and L. Lopes, *A lexically scoped distributed pi-calculus*, preprint.
- P. Resende and S. Vickers, *Localic sup-lattices and tropological systems*, preprint, to appear in Theoret. Comput. Sci..
- P. Resende, *Tropological systems are points of quantales*, Preprint 4/01, to appear in J. Pure Appl. Algebra.
- A. Sernadas, C. Sernadas and A. Zanardo, *Fibring modal first-order logics: completeness preservation*, preprint.
- C. Sernadas, J. Rasga and W. A. Carnielli, *Modulated fibring and the collapsing problem*, preprint.
- L. Schröder and P. Mateus, *Universal aspects of probabilistic automata*, preprint, to appear in Math. Structures Comput. Sci..

2 Academic Degrees awarded in 2001

2.1 Agregações

L. Barreira, Agregação em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 19.6.01.

P. Freitas, Agregação em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 29.5.01.

A. Sequeira, Agregação em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 16.1.01.

2.2 Doutoramentos/Ph.D.'s

N. Antunes, Doutoramento em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 20.12.01. *Thesis:* Modeling and Analysis of Wireless Networks. *Supervisors:* A. Pacheco and R. Rocha.

J. Fachada, Doutoramento em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 22.6.01. *Thesis:* Interpretação Combinatória da Monodromia de Tranças. *Supervisor:* R. Cordovil.

A. Marques Fernandes, Doutoramento em Matemática, Faculdade de Ciências, Universidade de Lisboa, Portugal, 18.7.01. *Thesis:* Investigações em Sistemas de Análise Exequível. *Supervisor:* F. Ferreira.

P. Mateus, Doutoramento em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 12.1.01. *Thesis:* Interconnection of Probabilistic Systems. *Supervisors:* A. Sernadas and C. Sernadas.

G. L. Silva, Doutoramento em Matemática, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 17.7.01. *Thesis:* Análise Bayesiana de Modelos de Sobrevivência com Fragilidade. *Supervisor:* M. A. Amaral Turkman.

J. D. Silva, Ph. D. In Applied and Computational Mathematics, Princeton University, USA, 1.01. *Thesis:* Conjugation of Pseudodifferential Operators by Fourier Integral Operators Using Ideas from the Weyl Calculus. *Supervisor:* C. L. Fefferman.

2.3 Mestrados/M.A.'s/M.Sc.'s

R. Carpentier, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 28.2.01. *Thesis*: Um Estudo sobre o Polinómio de Kauffman–Vogel para Grafos Mergulhados. *Supervisor*: R. Picken.

A. Casimiro, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 15.2.01. *Thesis*: Propriedades Geométricas e Topológicas dos Espaços de Brill–Noether para Fibrados Vectoriais sobre Curvas Algébricas. *Supervisor*: C. Florentino.

J. Duarte, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 23.7.01. *Thesis*: Soluções Harmónicas e Caos no Sistema de FitzHugh–Nagumo Submetido a um Estímulo. *Supervisor*: J. Sousa Ramos.

S. Francisco, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 17.7.01. *Thesis*: Curvas Pseudo-Holomorfas em Variedades Simpléticas Dobradas. *Supervisor*: A. Cannas da Silva.

C. Januário, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 7.6.01. *Thesis*: Sistemas Dinâmicos Discretos e Aplicações à Economia. *Supervisor*: J. Sousa Ramos.

L. Pessoa, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 16.3.01. *Thesis*: Espaços de Bergman e Operadores de Toeplitz em Espaços de Bergman. *Supervisor*: M. A. Bastos.

C. Ramos, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 23.7.01. *Thesis*: C^* Álgebras e Grupos Fuchsianos. *Supervisor*: P. Almeida.

T. Sousa, Mestrado em Matemática Aplicada, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal, 8.02.01. *Thesis*: Grafos Cohen–Macaulay. *Supervisor*: M. Vaz Pinto.

3 Research Lectures by Department Members

3.1 Invited Lectures

Algebra and Mathematical Analysis

M. Abreu,

- *Topology of symplectomorphism groups*, Colloquium, University of Toronto, Canada, 1.01, Special Colloquium, University of Maryland, College Park, USA, 1.01 and Cornell Topology Festival, Cornell University, Ithaca, USA, 5.01.
- *Kähler metrics on toric orbifolds*, Symplectic/Complex Geometry Seminar, University of Notre Dame, South Bend, USA, 4.01, Differentialgeometrie im Grossen, Mathematisches Forschungsinstitut Oberwolfach, Germany, 6.01, Workshop on Symplectic and Contact Topology, Quantum Cohomology, Symplectic Field Theory and Higher-Dimensional Gauge Theory, CRM and Fields Institute, Montreal and Toronto, Canada, 4.01 and Séminaire Arthur L. Besse, Centre de Mathématiques, Ecole Polytechnique, Paris, France, 12.01.
- *Kähler geometry of toric orbifolds and $U(n)$ -invariant extremal metrics*, Workshop on Hamiltonian Group Actions and Quantization, Fields Institute, Toronto, Canada, 6.01.

L. Barreira,

- *Quantitative recurrence, product structure, and number theory*, Recent Trends in Dynamics II, Universidade do Porto, Portugal, 7-11.5.01.
- *Caos e sistemas dinâmicos*, Culturgest, Lisbon, Portugal, 16.5.01.
- *Sistemas dinâmicos, teoria ergódica, teoria dos números: novas direcções*, Seminário de Análise Funcional e Equações Diferenciais, Universidade de Lisboa, Portugal, 31.5.01.

J. Buescu, *Atractores muito estranhos: bacias emaranhadas*, Departamento de Física, Universidade de Coimbra, Portugal, 9.01.

A. Cannas da Silva,

- *Fibrés tangents pliés*, Seminaire de Géométrie Symplectique et Applications, Université de Strasbourg, France, 8.3.01.
- *Formes symplectiques pliés*, Seminaire de Géométrie Symplectique et Applications, Université de Strasbourg, France, 23.3.01.
- *Variétés symplectiques pliés*, Seminaire de Géométrie et Analyse, Université de Nice, France, 11.6.01.

- *Folded symplectic forms*, Gauge Theory Seminar, Max-Planck Institut für Mathematik, Bonn, Germany, 31.8.01, Rutgers Topology/Geometry Seminar, Rutgers University, New Brunswick, USA, 30.10.01 and Geometry and Mathematical Physics Seminar, Pennsylvania State University, University Park, USA, 14.11.01.
- *Geometry of folded symplectic manifolds*, Post-doc Seminar, Institute for Advanced Study, Princeton, USA, 26.9.01.
- *Existence of folded symplectic forms*, Symplectic Geometry Seminar, Institute for Advanced Study, Princeton, USA, 20.11.01.

F. P. da Costa, *A hierarchical cluster system based on Strahler's rules for river networks*, Mini-workshop in stochastic models for coagulation processes, Mathematisches Forschungsinstitut, Oberwolfach, Germany, 19-25.8.01.

P. F. dos Santos, *Ciclos algébricos e topologia algébrica*, Universidade do Minho, Braga, Portugal, 24.1.01.

R. Loja Fernandes,

- *Topological invariants and Lie algebroids*, University of Utrecht, Netherlands, 2.01.
- *Integrability of Lie brackets*, ETH Zurich, Switzerland, 6.01.
- *New invariants of Poisson manifolds*, Geometric Analysis Seminar, University of Minnesota, USA, 11.01.

C. Florentino,

- *Heat kernels on Abelian varieties and theta functions*, Seminar of Complex Analysis, University of Potsdam, Germany, 4.4.01.
- *Theta functions and the heat equation on a compact Lie group*, Seminar of Differential Geometry and Spectral Theory, Humboldt Universität, Berlin, Germany, 2.10.01.
- *Theta functions, the heat equation, and vector bundles over an elliptic curve*, Algebraic Geometry Seminar, Humboldt Universität, Berlin, Germany, 20.11.01.

P. Freitas,

- *Minimal eigenvalues for Schrödinger operators on compact manifolds*, Technische Universität Wien, Austria, 4.01.
- *Valores próprios mínimos de operadores de Schrödinger em variedades compactas*, Universidade de Coimbra, Portugal, 5.01.

G. Granja,

- *The transfer*, Seminari de Topologia, Universitat Autònoma de Barcelona, Spain, 3.01.
- *Uma introdução a álgebra homotópica*, Seminário de Álgebra, Universidade de Lisboa, Portugal, 11.01.

P. Lopes,

- *Quandle cohomology and invariants of embeddings of codimension two*, Quantum Topology Seminar, University of Illinois at Chicago, USA, 10.4.01 and Colloquium, University of South Alabama, USA, 17.4.01.
- *Quandles and knot theory*, Seminário Matemática Quântica, Pontifícia Universidade Católica, Rio de Janeiro, Brazil, 11.9.01.

N. Martins,

- *K_0 -groups for Cuntz–Krieger algebras arising from linear mod one transformations*, Operator algebras Seminar, University of Copenhagen, Denmark, 7.2.01.
- *K -teoria das álgebras de Cuntz–Krieger associadas a aplicações iteradas no intervalo*, Functional Analysis and Differential Equations Seminar, Centro de Matemática e Aplicações Fundamentais, Universidade de Lisboa, Portugal, 22.11.01.

J. Matias, *Sobre um problema variacional com restrições de volume*, Centro de Matemática e Aplicações Fundamentais, Universidade de Lisboa, Portugal, 5.01.

J. Natário, *Mechanics in stationary spacetimes*, Geometry, Symmetry and Mechanics I, Instituto Superior Técnico, Lisbon, Portugal, 11-16.7.01.

W. M. Oliva,

- *Figures of relative equilibrium for a self-gravitating fluid mass*, Georgia Institute of Technology, Atlanta, Georgia, USA, 11.1.01.
- *On the Birkhoff approach to mechanics*, MASIE Conference Geometry, Symmetry and Mechanics I, Instituto Superior Técnico, Lisbon, Portugal, 13.7.01 and Instituto de Matemática e Estatística, Universidade de São Paulo, Brazil, 12.8.01 and Università degli studi di Aquila, Italy, 15.12.01.

R. F. Picken, *An approach to quantizing 2+1 gravity via quantum holonomy matrices*, Mathematical Physics Seminar, University of Nottingham, UK, 16.5.01.

C. Rocha, *Attractors for singular reaction-diffusion problems*, Mathematical Symposium on Partial Differential Equations, in honor of M. Vishik, Freie Universität Berlin, Germany, 17-20.12.01.

F.-O. Speck, *An operator theoretical concept for mixed linear boundary value problems*, The Functional Analysis Working Group Seminar, Universidade de Aveiro, Portugal, 30.11.01.

Statistics and Applications

M. F. Ramalhoto,

- *An Empirical Approach to quality and eliability improvement of the service industry queue*, INFORMS-Hawai International Conference, Hawai, Maui, USA, 17-20.6.01.
- *Some R&D Issues in safety, risk, reliability and maintenance: a transdisciplinary approach*, European Safety & Reliability International Conference ESREL 2001, Turin, Italy, 16-20.9.01.

N. Antunes, A. Pacheco and R. Rocha, *Traffic modeling of multimedia wireless networks*, Theoretical Computer Science Seminar, The University of Birmingham, UK, 23.11.01.

A. M. Pires,

- *Métodos Robustos em análise discriminante*, Seminário do Departamento de Matemática, Universidade de Aveiro, Portugal, 27.6.01.
- *Robust discriminant analysis and the projection pursuit approach*, International Conference on Robust Statistics ICORS2001, Vorau, Austria, 23-27.7.01.
- *Análise discriminante robusta e a abordagem PP*, Seminário da Sociedade Portuguesa de Estatística/Centro de Estatística e Aplicações, Universidade de Lisboa, Portugal, 5.12.01.

G. L. Silva, *Baeyesian analysis of an additive frailty model*, VII Spanish Biometric Conference, Pamplona, Spain, 28-30.3.01.

Applied Mathematics and Numerical Analysis

C. J. S. Alves,

- *Recovery cracks using a reciprocity gap function*, Workshop on Inverse Problems, University of Karlsruhe, Germany, 11.5.01.
- *On the method of fundamental solutions for the 3D Stokes equations*, Workshop on Fluid Mechanics, Universidade de Évora, Portugal, 6.01.

T. Diogo, *Numerical treatment of a non-standard singular Volterra integral equation*, Mathematics Seminar Day (of a series organized by the Chester-Manchester co-operative group on problems with memory and after-effect), Chester College, UK, 19.6.01.

P. M. Lima,

- *Asymptotic and numerical analysis of a nonlinear singular boundary-value problem*, International Conference on Differential Equations and Related Topics, dedicated to the centenary of I. Petrovskii, Moscow, Russia 22-27.5.01.
- *Asymptotic and numerical analysis of a singular boundary-value problem of Emden–Fowler type*, Czechoslovak International Conference on Differential Equations and their Applications Equadiff 10, Prague, Czech Republic, 27-31.8.01.
- *Análise numérica e assintótica de um problema de valores de fronteira singular*, XXIV Congresso Nacional de Matemática Aplicada e Computacional, Belo Horizonte, Brazil, 10-13.9.01.

A. Sequeira,

- *Análise de modelos de fluidos não-newtonianos viscoelásticos*, Centro de Matemática e Aplicações Fundamentais, Universidade de Lisboa, Portugal, 10.5.01.
- *Sedimentação de partículas em fluidos newtonianos e não-newtonianos: teoria matemática e aplicações*, CETEM, Universidade Federal do Rio de Janeiro, Brazil, 2.10.01.

J. H. Videman, *Comportamento assintótico de soluções estacionárias das equações de Navier–Stokes bidimensionais*, Centro de Matemática e Aplicações Fundamentais, Universidade de Lisboa, Portugal, 17.5.01.

Computer Science

C. Caleiro,

- *Lógica temporal distribuída*, Encontros de Quarta Feira, Universidade de Lisboa, Portugal, 25.1.01.
- *Distributed temporal logic*, Software Engineering Seminar, Institut für Informatik, University of Freiburg, Germany, 22.5.01.

J. F. Costa, *Analog computation in continuous-time*, Computational Logic Seminar, ILLC, University of Amsterdam, Netherlands, 23.2.01 and Computer Science Seminar, The School of Computer Science, University of Tel Aviv, Israel, 4.11.01.

F. M. Dionísio, *Sistemas computacionais para investigação, ensino e avaliação em matemática*, Jornadas de formação de professores de matemática do ensino secundário, Évora, Portugal, 31.7.01.

F. M. Dionísio and P. Gouveia, *Curso avançado de lógica computacional*, Universidade da Madeira, Portugal, 19-20.7.01.

A. Ravara,

- *Process mobility without migration primitives*, Marvel Project Meeting, INRIA, Sophia Antipolis, France, 5.2.01 and Computer Science Seminar, INP, Toulouse, France, 12.2.01.
- *Distributed pi-calculus revisited*, Computer Science Seminar, School of Cognitive and Computing Sciences, University of Sussex, UK, 2.3.01.
- *Cálculo pi distribuído*, Encontros de Quarta Feira, Universidade de Lisboa, Portugal, 28.3.01.
- *Typing non-uniform concurrent objects*, Seminário do Departamento de Ciência de Computadores, Universidade do Porto, Portugal, 21.9.01.

P. Resende,

- *Tropological points of quantales*, Department of Algebra and Geometry, Masaryk University, Brno, Czech Republic, 22.2.01.
- *Quantales, álgebras- C^* e computação*, Seminário de Reticulados, Álgebra Universal e Lógica Algébrica, Centro de Álgebra, Universidade de Lisboa, Portugal, 29.3.01.

3.2 Lectures at Conferences, Workshops, Meetings, etc.

Algebra and Mathematical Analysis

A. Cannas da Silva,

- *Folded symplectic manifolds*, Eighth Gökova Geometry/Topology Conference, Gökova, Turkey, 28.5-2.6.01.
- *Symplectic toric manifolds (5 sessions course)*, Summer School on Symplectic Geometry of Integrable Hamiltonian Systems, Centre de Recerca Matemàtica, Barcelona, Spain, 10-15.7.01.

P. F. dos Santos, *Lawson homology for real varieties*, Cycles algébriques, aspects ranscendants, École d'été de Mathématiques, Grenoble, France, 18.6-06.7.01.

R. Loja Fernandes,

- *Lie algebroids and characteristic classes*, Micro-course in the Meeting Geometry and Topology of Manifolds, Krynica, Poland, 4.01.
- *More on integrability of Lie brackets*, Workshop of the LMS, Manchester, UK, 7.01.
- *Integrability of Lie algebroids*, Groupoid Fest 2001, University of California, Berkeley, USA, 11.01.

C. Florentino, *Theta functions and the coherent state transform on a compact Lie group*, Workshop in Partial Differential Equations and Complex Analysis, University of Potsdam, Germany, 12-16.11.01.

P. M. Girão, *A sharp inequality for Sobolev functions*, Summer School on Nonlinear Partial Differential Equations, Instituto Superior Técnico, Lisbon, Portugal, 7.01.

L. Godinho,

- *Blowing up in symplectic orbifolds*, Third Meeting of the International Forum of Portuguese researchers, Campus de Gambelas, Universidade do Algarve, Faro, Portugal, 7-10.4.01.
- *Equivariant cohomology and Hamiltonian circle actions*, Workshop on Hamiltonian group actions and quantization, The Fields Institute for research in mathematical sciences, Toronto, Canada, 4-13.6.01

D. Gomes,

- *Partial differential equations and Hamiltonian systems*, Institute for Advanced Study Nonlinearity Seminar, Princeton University, USA, 2.01.
- *Partial differential equations methods for Hamiltonian systems* (short course), Instituto Superior Técnico, Lisbon, Portugal, 3.01.
- *Viscosity solution methods for Hamiltonian systems*, Workshop on Viscosity Solutions, Palma de Mallorca, 3.01.
- *Viscosity solution and Aubry–Mather theory solution of partial differential equations in periodic media*, University of Arkansas, Spring Lecture Series, 4.01.
- *Aubry–Mather theory and viscosity solutions* (short course), University of Texas at Austin, USA, 9.01.
- *Weak KAM theory*, University of Texas at Austin, USA, 9.01.
- *Perturbation theory for viscosity solutions*, University of Texas at Austin, USA, 10.01.

G. Granja, *The James construction*, Workshop on Nilpotence and Periodicity in stable homotopy theory, CIRM, Marseilles, France, 20-26.01.01.

P. Lopes, *Quandles at finite temperatures*, X^{th} Oporto Meeting on Geometry, Topology and Physics, Porto, Portugal, 22.9.01.

N. Martins, *C^* -algebras arising from iterated maps on the interval*, Conference Geometric Analysis and Index Theory, ICTP, Trieste, Italy, 19-23.3.01.

J. Matias, *On a volume constrained variational problem*, Summer School on Nonlinear Partial Differential Equations, Instituto Superior Técnico, 7.01.

R. F. Picken, *Holonomy of gerbes and TQFT*, XX^{th} Workshop on Geometric Methods in Physics, Bialowieza, Poland, 1-7.7.01.

A. M. Santos, F. M. Dionísio, P. Duarte and P. A. Santos,

- *A system for generating multiple-choice questions based on MATHEMATICA*, First Meeting on Iterative methods and Symbolic Computation, Lisbon, Portugal.
- *CAL-2000 - A system for generating multiple choice questions and delivering them by internet*, Electronic Media in Mathematics, Coimbra, Portugal, 13-15.9.01.

P. A. Santos and A. M. Santos, *Avaliação contínua intensiva. Uma solução para o sucesso?*, Terceiras Jornadas do III Simpósio Pedagogia na Universidade, Universidade Técnica de Lisboa, Portugal.

M. E. Sousa Dias, *Pseudo-rigid bodies*, A geometric Lagrangian approach, SPT2001 Conference, Sardinia, Italy, 6.5.01.

F.-O. Speck, *Minimal normalization of mixed boundary value problems*, 3rd International ISAAC Congress, Berlin, Germany, 20-25.8.01.

M. Vaz Pinto, *Funções de Hilbert monótonas*, Seminário de Álgebra, Centro de Álgebra, Universidade de Lisboa, Portugal, 11.01.

Statistics and Applications

C. Alvarrão, C. D. Paulino and Z. Mendes, *Análise log-linear da satisfação dos utentes com o Serviço Nacional de Farmácias*, 9^o Congresso Anual da Sociedade Portuguesa de Estatística, Ponta Delgada, Portugal, 4-7.11.01.

N. Antunes, A. Pacheco and R. Rocha,

- *An integrated traffic model for multimedia wireless networks*, 11th INFORMS Applied Probability Society Conference, New York City, USA, 25-27.7.01.
- *Modelling and performance evaluation of a broadband wireless network*, 23rd European Meeting of Statisticians, Tecnopolo Funchal, Madeira, Portugal, 13-18.8.01.

J. Branco and M. M. Souto de Miranda, *Criteria for the choice of tuning constants in robust regression*, 23rd European Meeting of Statisticians 2001, Tecnopolo Funchal, Madeira, Portugal, 13-19.8.01.

M. C. Morais and A. Pacheco, *Assessing the impact of correlation in the performance of residual schemes: a stochastic ordering approach*, in Proceedings of the VIIth International Workshop on Intelligent Statistical Quality Control, Waterloo, Canada, 5-7.9.01.

A. Pacheco and M. C. Morais,

- *Stochastic ordering in the assessment of the impact of misleading signals in joint schemes*, 11th INFORMS Applied Probability Society Conference, New York City, USA, 25-27.7.01.
- *Evaluating the impact of misleading signals in joint schemes for μ and σ* , 23rd European Meeting of Statisticians, Tecnopolo Funchal, Madeira, Portugal, 13-18.8.01.

C. D. Paulino, P. Soares and J. Neuhaus, *Regressão binomial com erros de classificação*, 9^o Congresso Anual da Sociedade Portuguesa de Estatística, Ponta Delgada, Portugal, 4-7.11.01.

A. M. Pires, *Agregação de estações de pesca efectuadas durante as campanhas de investigação do IPIMAR ao longo da vertente continental portuguesa: uma perspectiva espacial regionalizada* (poster, jointly with I. Figueiredo, R. Haedrich and F. Abrantes), IX Congresso Anual da Sociedade Portuguesa de Estatística, Ponta Delgada, 4-7.11.01.

M. F. Ramalhoto, *The transdisciplinary research area-stochastic for the quality movement as another way to acilitate the cooperation between industry and academia*, Workshop Statistic and Stochastic Models for Reliability, Maintenance and Quality Improvement, ESREL 2001, Turin, Italy, 19.9.01.

I. Rodrigues, *Influence functions and outlier detection in common principal components model* (poster). International Conference on Robust Statistics ICORS2001, Vorau, Austria, 23-27.7.01.

G. L. Silva,

- *Modelos de adopção com fragilidade*, IX Congresso Anual da Sociedade Portuguesa de Estatística, Ponta Delgada, Portugal, 3-7.11.01.

- *Frailty models for correlated data*, VII Latin American Congress of Probability and Mathematical Statistics, Havana, Cuba, 12-16.11.01.

P. Soares and C. D. Paulino, *New developments on the Bayesian analysis of incomplete categorical data*, VIII Latin-American Congress of Probability and Mathematical Statistics, Habana, Cuba, 12-16.11.01.

Applied Mathematics and Numerical Analysis

T. Diogo and P. M. Lima,

- *Numerical treatment of a certain Volterra integral equation with multiple solutions*, 19th Biennial Dundee Conference on Numerical Analysis, Dundee, UK, 26-29.6.01.
- *Comparative study of numerical methods for a class of integral equations with weakly singular kernel*, 5th Hellenic European Conference on Computer Methods and its Applications HERCMA, Athens, Greece, 20-22.9.01.

A. Sequeira,

- *On the constitutive modelling of blood flow*, International Conference on Contemporary Challenges in Applied Fluid Mechanics, Capo Miseno, Italy, 31.5-5.6.01.
- *Non-Newtonian modelling of microcirculation*, I Meeting on Numerical Analysis: Applied Mathematics for Flow Problems, Universidade de Évora, Portugal, 20-21.6.01.
- *Mathematical and numerical models in haemodynamics*, SMAI 2001, Fourth European Conference on Elliptic and Parabolic Problems: Theory – Applications, Gaeta, Italy, 24-28.9.01.
- *On the constitutive modelling of blood flow in microvessels*, Journnée Luso-Tunisienne en Mathématiques Appliquées, Applied Mathematics Centre, Instituto Superior Técnico, Lisbon, Portugal, 5.12.01.

A. L. Silvestre,

- *Attainability of steady self-propelled translational motion of a symmetric rigid body in a Navier–Stokes liquid*, International Conference on Contemporary Challenges in Applied Fluid Mechanics, Capo Miseno, Italy, 31.5-5.6.01.
- *Existence of weak solutions for the motion of a rigid body in a Navier–Stokes liquid under the action of external forces and torques*, I Meeting on Numerical Analysis: Applied Mathematics for Flow Problems, Universidade de Évora, Portugal, 20-21.6.01.
- *Attainability of steady self-propelled translational motion of a symmetric rigid body in a Navier–Stokes liquid*, Journnée Luso-Tunisienne en Mathématiques Appliquées, Applied Mathematics Centre, Instituto Superior Técnico, Lisbon, Portugal, 5.12.01.

J. H. Videman,

- *Um problema com fronteira livre para um fluido viscoelástico*, III Encontro do Fórum Internacional de Investigadores Portugueses, Universidade do Algarve, Faro, 7-10.4.01.
- *Steady flows of Jeffrey–Hamel type from the half-plane into an infinite channel*, International Conference on Differential Equations and Related Topics (Petrovskii Centenary Conference), Moscow, Russia, 22-27.5.01 and Fourth European Conference on Elliptic and Parabolic Problems, Rolduc, Netherlands, 18-22.6.01.

- *Steady flows of the Navier–Stokes fluid in an asymmetric aperture domain*, Workshop on Flow Problems, TU Darmstadt, Germany, 16.6.01.

Computer Science

C. Caleiro,

- *Combining logics - Parchments revisited*, 15th WADT (satellite event of ETAPS'01), Genova, Italy, 1-3.4.01.
- *Non-truth-functional fibred semantics*, International Conference on Artificial Intelligence (IC-AI'2001), Las Vegas NV, USA, 25-28.6.01.

J. F. Costa, *Canonical institutions of behaviour*, 15th WADT (satellite event of ETAPS'01), Genova, Italy, 1.3.01.

P. Resende, *On quantales and spectra of C^* -algebras*, IV Iberoamerican Conference on Topology and its Applications, Coimbra, Portugal, 18-21.4.01.

4 Guest Program

Algebra and Mathematical Analysis

G. Andrews, Pennsylvania State University, University Park, USA, 5-14.6.01. *Lectures:*

- Some things Ramanujan may have had up his sleeve - *Colloquium of the Department of Mathematics*, 7.6.01.
- An old algorithm in a new era: MacMahon's partition analysis, 12.6.01.

A. Araújo, Universidade de Lisboa, Portugal, 17.5.01. *Lecture:* Moduli spaces of germs of Legendrian curves.

F. Aroca, Universidade de Lisboa, Portugal, 8.3.01. *Lecture:* Parametrizações de espaços analíticos singulares: aplicações às equações diferenciais não lineares.

Z. Artstein, The Weizmann Institute of Science, Israel, 22.2.01. *Lectures:* Singularly perturbed ordinary differential equations: an overview I and II.

A. Barroso, Universidade de Lisboa, Portugal, 8.5.01. *Lecture:* Um resultado de relaxação no espaço das funções de deformação limitada.

J. Basto-Gonçalves, Universidade do Porto, Portugal, 6.11.01. *Lecture:* Linearization of resonant vector fields.

M. Bertelson, Max-Planck Institut für Mathematik, Bonn, Germany, 2-15.9.01 *Lecture:* Regular Poisson manifolds and their foliations, 13.9.01.

P. Bielavski, Université Libre de Bruxelles, Belgium, 2-15.9.01. *Lecture:* Non formal deformation quantizations and Lie group actions, 13.9.01.

G. Bordalo, Universidade de Lisboa, Portugal, 4.7.01. *Lecture:* Sistemas de fecho e completações estritas.

A. Brini, Università degli Studi di Bologna, Italy, 20-29.7.01. *Lectures:* An introduction to topological methods in the theory of posets

- I. Galois connections and a theorem of Quillen, 24.7.01.
- II. The Möbius function as an Euler characteristic, 26.7.01.

M. Bunge, McGill University, Montreal, Canada, 9.4.01. *Lecture:* Aspects of the symmetric monad.

L. F. Castro, Universidade de Aveiro, Portugal, 19-20.10.01. *Lecture:* Convolution type operators on finite intervals with transmission property, 19.10.01.

D. Costa, University of Nevada, Las Vegas, USA, 15.5-15.6.01. *Lectures:*

- Métodos variacionais em equações diferenciais, 17.5.01.
- Problemas não-lineares em ressonância, 24.5.01.

L. Crane, Kansas State University, USA, 1.1-31.8.01. *Lectures:*

- The categorical ladder, 25.1.01.
- Categorical duality, Poincaré duality and Hopf algebras, 8.3.01.

P. Cristiano, Universidade de Lisboa, Portugal, 9.10.01. *Lecture:* On a class of local systems associated to irreducible plane curves.

B. Dacorogna, Ecole Polytechnique Fédérale de Lausanne, Switzerland, 17-23.9.01. *Lecture:* On the existence and regularity of solutions of $du = f$, 18.9.01.

A. Descheemaeker, Centre de Recerca Matemàtica, Barcelona, Spain, 4.10.01. *Lecture:* Localizing virtually nilpotent groups and spaces.

R. Duduchava, A. Razmadze Mathematical Institute, Academy of Sciences, Tbilisi, Georgia, 17.5-18.7.01, *Lectures:*

- Cisotti formulae and conformal mapping of somains with peaks, 22.5.01.
- Boundary value problems and the Green formula - *Colloquium of the Department of Mathematics*, 5.7.01.

T. Ehrhardt, Technische Universität Chemnitz, Germany, 16.7-4.8.01. *Lecture:* On the factorization of Toeplitz plus Hankel operators, 20.7.01.

D. Evans, Cardiff University, UK, 31.9-6.10.01. *Lecture:* The irrational rotation algebra, 5.11.01.

G. Farkas, Center for Mathematical Analysis, Geometry, and Dynamical Systems, Lisbon, Portugal. *Lecture:* Discretizing delay equations with small delay, 23.10.01.

B. Fernandez, Centre de Physique Théorique, CNRS, Luminy, France, 2-9.11.01. *Lecture:* Dynamics of two coupled unimodal maps, 8.11.01.

R. Gaio, Universidade do Porto, Portugal, 20-23.6.01. *Lecture:* J -holomorphic curves, moment maps and adiabatic limits, 21.6.01.

A. Guedes de Oliveira, Universidade do Porto, Portugal, 18.12.01. *Lecture:* Intersecções e enlacs em matróides orientados.

P. Hébrard, Institut Elie Cartan et Ecole des Mines de Nancy, France, 21.3.01. *Lecture:* Optimal shape and location of the actuators for the stabilization of a string.

F. Lalonde, Université de Montréal, Canada, 19.7.01. *Lecture:* Geometry and dynamics: towards a L^∞ -theory - *Colloquium of the Department of Mathematics*.

P. Lima-Filho, Texas A&M University, USA, 6.7-1.8.01. *Lectures:*

- Twisted wreath constructions in representation theory and group cohomology, 18.7.01.
- Intersection products in algebraic geometry, 19.7.01.

A. Linero, Universidad de Murcia, Spain, 5-11.3.01. *Lecture:* On the periodic structure of σ -permutation maps on I^n and T^n , 8.3.01.

A. Karlovich, South Ukrainian Pedagogical University, Odessa, 1.1-31.12.01. *Lecture:* Invertibility of functional operators with slowly oscillating non-Carleman shifts, 8.6.01.

Yu. Karlovich, Centro de Investigación y de Estudios Avanzados del I.P.N., Mexico, 11-25.3.01 and 22.10-12.11.01. *Lectures:*

- Algebras of singular integral operators with finite groups of shifts on weighted Lebesgue spaces, 23.3.01.
- Local approach to algebras of singular integral operators with shifts, 9.11.01.

A. Katok, Pennsylvania State University, University Park, USA, 17-24.6.01. *Lecture:* Some new results and constructions in Liouvillean dynamics, 21.6.01.

D. Kinderlehrer, Carnegie Mellon University, USA, 28.3-1.4.01. *Lecture:* Remarks about diffusion mediated transport, 29.3.01.

Y. Kosmann-Schwarzbach, Ecole Polytechnique, Paris, France, 16-22.4.01. *Lecture:* Quasi-Poisson actions, 19.4.01.

T. Krajewski, ICTP, Trieste, Italy, 30.6-7.7.01. *Lecture:* Common algebraic structures in differential equations and renormalization, 5.7.01.

L. Maligranda, Lulea University of Technology, Sweden, 22-30.1.01. *Lecture:* Type, cotype and convexity properties of some Banach spaces, 26.1.01.

C. McCarthy, Murray State University, Kentucky, USA, 24.5-6.6.01, 22-23.6.01. *Lecture:* Optimal control of a chemotaxis system, 31.5.01.

M. Mendes Lopes, Universidade de Lisboa, Portugal, 17.10.01. *Lecture:* Superfícies nodais e códigos lineares.

A. Mikovic, Institute of Physics, Belgrade, Serbia, 1.1-31.3.01 and 14.11.01. *Lectures:*

- Transition amplitudes in spin networks, 1.2.01.
- Quantum field theory of spin networks, 1.3.01.
- Spin-foam state-sum models, 14.11.01.

P. Norbury, Adelaide University, Australia, 9-23.12.01. *Lectures:*

- Boundary algebras of hyperbolic monopoles, 18.12.01.
- Integrable systems and geometry, 11.12.01.

J.-P. Ortega, Ecole Polytechnique Fédérale de Lausanne, Switzerland, 14-20.7.01. *Lecture:* Singular dual pairs and optimal momentum maps, 17.7.01.

F. Pablos Romo, Universidade de Salamanca, Spain, 5-7.01. *Lectures:*

- Álgebra comutativa e aplicações: geometria algébrica e curvas algébricas (short course), 2-12.7.01.
- Local symbols on algebraic curves, 22.5.01.

Ya. Pesin, Pennsylvania State University, University Park, USA, 9-14.4.01. *Lecture:* On the existence of Bernoulli diffeomorphisms with nonzero Lyapunov exponents on compact smooth manifolds, 10.4.01.

H. Pfitzner, Université d'Orléans, France, 25-30.5.01. *Lecture:* Introductory remarks on M-ideals and L-embedded Banach spaces, 25.5.01.

R. Plymen, University of Manchester, UK, 10-16.7.01. *Lectures:* Noncommutative geometry and number theory I-III, 11.7.01, 12.7.01 and 13.7.01.

D. Roseman, University of Iowa, USA, 20-27.3.01. *Lectures:*

- How to roll in higher dimensions, 22.3.01.
- Understanding four dimensions with mathematics, visualization and computers, 23.3.01.

L. Sanchez, Universidade de Lisboa, Portugal, 24.4.01. *Lecture:* Heteroclínicas para uma equação de quarta ordem conservativa.

J. Scott Carter, University of South Alabama, USA, 16-30.7.01. *Lectures:*

- Revisiting the sphere eversion, 18.7.01.
- Knots, knotted surfaces, and quandles (short course) 19-26.7.01.

A. Sharkovsky, Institute of Mathematics, National Academy of Sciences of Ukraine, 25.2-14.3.01. *Lecture:* Boundary value problems and dynamical systems, 13.3.01.

L. Sigua, I. Javakhishvili Tbilisi State University, Georgia, 14.12.01. *Lecture:* Screen magnetic type problems for the vector Helmholtz equation.

B. Silbermann, Technische Universität Chemnitz, Germany, 1-29.9.01. *Lecture:* How to compute the kernel dimension of a Fredholm Toeplitz operator with matrix-valued generating function, 14.9.01.

L. Silva, Universidade de Évora, Portugal, 18.10.01. *Lecture:* Famílias de aplicações unidimensionais com descontinuidades.

T. Sousa, Universidade Nova de Lisboa, Portugal, 21.3.01. *Lecture:* Grafos de Cohen-Macaulay.

I. Spitkovsky, College of William and Mary, Williamsburg, Virginia, USA, 13-29.6.01. *Lecture:* Peculiarities of Toeplitz operators with semi-almost periodic symbols, 22.6.01.

B. Steinberg, Universidade do Porto, Portugal, 14.11.01. *Lecture:* The lifting and classification problems for subcoverings.

A. Tyurin, Steklov Institute of Mathematics, Russia, 30.1.01. *Lecture:* Deformation of algebraic geometry to special Lagrangian geometry.

R. Villarreal, Centro de Investigación y de Estudios Avanzados del I.P.N., Mexico, 5-9.2.01. *Lecture:* Normality of monomial algebras defined by unimodular matrices, 6.2.01.

M. Vishik, IITP, Russian Academy of Sciences, Russia, 26.3-26.4.01. *Lectures:*

- Attractors for non-autonomous evolution equations, 3.4.01.
- Global and trajectory attractors for evolution equations and their homogenization - *Colloquium of the Department of Mathematics*, 17.4.01.

C. Wolf, Indiana University, USA, 10-15.7.01. *Lecture:* On measures of maximal and full dimension for polynomial automorphisms of \mathbb{C}^2 , 10.7.01.

Statistics and Applications

G. Boente, Universidade de Buenos Aires, Argentina, 12-19.5.01. *Lecture:* Robust estimators in partly linear models, 16.5.01.

L. Carvalho, Universidade de Lisboa, Portugal, 16.3-15.7.01. *Lecture:* Models for life tables and branching processes.

D. Gamerman, Instituto de Matemática, Universidade do Rio de Janeiro, Brazil, 20.3.01. *Lecture:* Analysis of epidemiologic time series.

K. Pärna, Mathematical Statistics Institute, University of Tartu, Estonia, 2-3.4.01. *Lecture:* Correspondence analysis: an overview and some applications, 3.4.01.

R. Serfozo, Georgia Institute of Technology, USA, 17-23.12.01. *Lecture:* Travel times in Markov processes and queuing networks, 19.12.01.

S. Staleuskaya, Department of Mathematical Modeling and Data Analysis, Minsk, Belarus, 6.6.01. *Lecture:* Robust statistical modeling by econometric simultaneous equations models.

Applied Mathematics and Numerical Analysis

J. Baranger, Laboratoire MCS, Université de Lyon I, France, 24.4.01. *Lecture:* Sur la méthode des caractéristiques en éléments finis discontinus.

J. Ben Abdalaha, LAMSIN, Ecole Nationale d'Ingénieurs de Tunis, Tunisia, 26.11-10.12.01.

H. Chaker, LAMSIN, Ecole Nationale d'Ingénieurs de Tunis, Tunisia, 26.11-10.12.01.

C. S. Chen, University of Nevada, Las Vegas, USA, 12-18.6.01. *Lecture:* Meshless methods for the numerical solution of partial differential equations, 8.6.01.

A. Chorin, University of California, Berkeley, USA, 16-21.10.01. *Lecture:* Prediction from incomplete calculations - *Colloquium of the Department of Mathematics*, 18.10.01

R. Finn, Stanford University, USA, 5.4.01. *Lecture:* Five remarkable properties of capillary surfaces - *Colloquium of the Department of Mathematics*.

N. Ford, Chester College, UK, 5-10.11.01. *Lecture:* Numerical solution of Volterra equations undergoing bifurcations, 6.11.01

G. P. Galdi, University of Pittsburgh, Pennsylvania, USA, 10.6-3.7.01. *Lectures:*

- Fundamental problems in the sedimentation of particles in Newtonian and viscoelastic liquids - *Colloquium of the Department of Mathematics*, 18.6.01.
- On some open problems in the mathematical theory of Navier–Stokes equations, 27.6.01.

N. Gmati, LAMSIN, Ecole Nationale d'Ingénieurs de Tunis, Tunisia, 26.11-10.12.01.

M. Jaoua, LAMSIN, Ecole Nationale d'Ingénieurs de Tunis, Tunisia, 3-10.12.01.

S.-O. Londen, Helsinki University of Technology, Finland, 22-28.4.01, *Lecture:* On some fractional evolution equations, 24.4.01.

J. N. Lyness, Argonne National Laboratory, USA, 3-13.5.01. *Lectures:*

- Some recent work in extrapolation quadrature, 8.5.01.
- Remarks on cubature over triangles, 11.5.01.

A. Kirsch, University of Karlsruhe, Germany, 27.10-1.11.01. *Lecture:* The MUSIC-algorithm and Inverse Scattering Theory, 31.10.01

N. Konyukhova, Computing Center of RAS, Moscow, Russia, 3.2-3.3.01, *Lectures:*

- Multiple self similar solutions of the nonlinear wave equation in the inflationary cosmology, 16.2.01

- On some singular BVP's for autonomous systems of nonlinear ODE's arising from hydrodynamics, 23.2.01.

S. Nazarov, University of St. Petersburg, Russia, 26.6-30.7.01. *Lectures: Asymptotic Analysis of solutions to elliptic problems in thin domains*, 24.7.01 and 25.7.01.

P. Penel, University of Toulon-Var, France, 27.6-3.7.01. *Lecture: Three-dimensional incompressible Navier-Stokes Equations: Recent results on the local regularity of weak solutions*, 2.7.01.

A. Robertson, University of Pittsburgh, Pennsylvania, USA, 5-24.6.01. *Lectures:*

- A nonlinear, inelastic constitutive model for cerebral arterial tissue, with applications to intracranial aneurysms, 18.6.01.
- A constitutive modeling of viscoelastic fluids with applications to flow in curved pipes, 22.6.01.

V. Starovoitov, Lavrentiev Institute of Hydrodynamics, Novosibirsk, Russia, *Lecture: On a motion of rigid bodies in a viscous non-homogeneous fluid*, 8.3.01.

A. Vaydia, University of Pittsburgh, Pennsylvania, USA, 5.6-9.7.01. *Lecture: Sedimentation of symmetric bodies in non-Newtonian fluids*, 5.7.01.

L. Vicente, Departamento de Matemática, Universidade de Coimbra, Portugal, *Lecture: Métodos numéricos para otimização não linear. Aplicações e desafios*, 6.4.01.

Computer Science

J. Adamek, Technical University of Braunschweig, Germany, 8-12.1.01. *Lecture: Initial algebras, final coalgebras and specification of systems – Colloquium of the Department of Mathematics*, 11.1.01.

J. Bell, University Western Ontario, Canada, 24.5-1.6.01. *Lectures:*

- Distributive lattices, Boolean algebras, and Zorn's lemma in a constructive setting, 25.5.01.
- The rehabilitation of infinitesimals in mathematics and physics – *Colloquium of the Department of Mathematics*, 29.5.01.

G. Bordalo, Centro de Álgebra, Universidade de Lisboa, Portugal. *Lecture: Sistemas de fecho e completacões estritas*, 4.7.01.

M. Bunge, McGill University, Montreal, Canada. *Lecture: Aspects of the symmetric monad*, 9.4.01.

M. Campagnolo, Instituto Superior de Agronomia, Universidade Técnica de Lisboa, Portugal. *Lecture: Complexity of computational analog classes: From linear space to elementary space*, 27.4.01.

C. Cassandras, Boston University, USA, 4-6.4.01. *Lecture: Concurrent estimation/simulation methods for performance analysis and optimization of discrete event systems*, 6.4.01.

G. Janelidze, Universidade de Aveiro, Portugal. *Lecture: Categorical Galois theory*, 23.5.01.

D. Kruml, University Masaryk, Brno, Czech Republic, 29.5-6.6.01.

M. Kwiatkowska, University of Birmingham, UK, 28-31.3.01. *Lecture: Model checking of probabilistic timed automata*, 30.3.01.

J. Marcos, Universidade de Campinas, Brazil, 31.1-7.2.01. *Lecture: On inconsistency and undefinedness*, 2.2.01.

C. Mulvey, University of Sussex, UK, 4-12.2.01 and 31.5-18.6.01. *Lectures:*

- Quantales, C*-algebras, and computation – *Colloquium of the Department of Mathematics*, 8.2.01.
- Quantal spaces, 7.2.01.

J. Neto, Universidade de Lisboa, Portugal. *Lecture: Computação simbólica e subsimbólica com redes neuronais recorrentes*, 13.7.01.

J. Picado, Universidade de Coimbra, Portugal, 6.12.01.

J. Pinto, Bell Labs, USA, 16-30.6.01.

L. Polák, University Masaryk, Brno, Czech Republic, 29.5-2.6.01. *Lecture: Syntactic semiring of a language*, 30.5.01.

A. Rabinovich, Tel Aviv University, Israel, 1.2.01. *Lecture: From finite automata toward hybrid systems*.

J. Rosicky, University Masaryk, Brno, Czech Republic, 21-22.4.01.

D. Sangiorgi, INRIA, Sophia Antipolis, France, 20.4.01. *Lecture: Extensionality and intensionality of the ambient logic*.

S. Semenov, Institute of Physics and Technology, Moscow, Russia, 4.5.01. *Lecture: Mixing of spike patterns in discretized neuronal channel*.

D. Spreen, University of Siegen, Germany, 20-23.7.01. *Lecture: Safe weak minimization revisited*, 22.6.01.

U. Vazirani, University of California, Berkeley, USA, 9.4.01. *Lecture: Fourier transforms, quantum algorithms and complexity*.

L. Viganò, University of Freiburg, Germany, 31.3-8.4.01 and 1-9.9.01. *Lectures:*

- Towards an awareness-based semantics for security protocols, 6.4.01.
- Formal security architectures, 7.9.01.

P. Vitány, CWI, University of Amsterdam, Netherlands, 30.9-6.10.01. *Lecture: The quantum computing challenge – Colloquium of the Department of Mathematics*, 2.10.01.

B. Wegner, Technical University of Berlin, Germany, 15-18.3.01. *Lecture: New developments in electronic communication and information in Mathematics*, 16.3.01.

K. Worytkiewicz, EPFL Lausanne, Switzerland, 14.9.01. *Lecture: Simulations of imperative programs*.

5 Postdoctoral Fellows

Algebra and Mathematical Analysis

G. Farkas, Ph.D. in Mathematics, Technical University of Budapest, Hungria, 2001. Support: Project FCT POCTI/32931/MAT/2000. Center for Mathematical Analysis, Geometry, and Dynamical Systems, since 10.01. *Research areas:* dynamical systems, numerical dynamics.

D. Forge, Université Paris VI, France. DONET (European Union Contract ERBFMRX-CT98-0202) at Lisbon (with R. Cordovil). *Research areas:* combinatorics.

R. Hric, Ph.D. in Mathematics, Comenius University, Bratislava, 1999. Center for Mathematical Analysis, Geometry, and Dynamical Systems, since 12.01. *Research areas:* dynamical systems.

M. Perlmutter, Ph.D. in Mathematics, University of California, Berkeley, 1999. Center for Mathematical Analysis, Geometry, and Dynamical Systems, since 12.01. *Research areas:* geometric mechanics, symplectic and Poisson geometry, geometric integrators.

H. Spielberg, Docteur en Mathématique, Université Louis Pasteur, Strasbourg, France, 1999. Center for Mathematical Analysis, Geometry, and Dynamical Systems, 9.00-8.01. *Research areas:* algebraic geometry, symplectic geometry and topology.

C. Wolf, Ph.D. in Mathematics, Technical University of Munich, 1999. Center for Mathematical Analysis, Geometry, and Dynamical Systems, since 12.01. *Research areas:* dynamical systems, dimension theory, ergodic theory, complex analysis.

Applied Mathematics and Numerical Analysis

N. Arada, Docteur en Mathématiques, Université de Toulouse, France, 1999. Center for Applied Mathematics (with A. Sequeira), since 1.4.01. *Research areas:* control theory; mathematical fluid dynamics.

Computer Science

C. Hermida, Ph.D. in Mathematics, University of Edinburgh, Scotland, UK, 1993. Center for Logic and Computation (with A. Sernadas), since 2.12.99, *Research areas:* higher order category theory.

M. Coniglio, Ph.D. in Mathematics, Universidade de São Paulo, Brazil, 1997. Center for Logic and Computation (with A. Sernadas), since 7.01. *Research areas:* categorical logic.

6 Research Programs and Sponsorship

6.1 Research Units

The members of the Department participate in research units that receive grants under the “Financiamento Plurianual e Programático”, FCT-MCT:

Applied Mathematics Centre, coordinated by A. Sequeira, with the following research groups:

- Operator Theory, Integral Equations and Applications, Coordinated by A. F. dos Santos.
- Numerical Analysis and Applications in Fluid Mechanics, Coordinated by A. Sequeira.
- Statistics, Stochastic Processes and Applications, Coordinated by J. A. Branco.
- Mathematical Physics, Coordinated by R. Picken.

URL: <http://www.cs.math.ist.utl.pt/cma.www/>

Center for Logic and Computation, coordinated by A. Sernadas.

URL: <http://www.math.ist.utl.pt/clc/>

Center for Mathematical Analysis, Geometry, and Dynamical Systems, coordinated by C. Rocha.

URL: <http://www.math.ist.utl.pt/cam/>

Center for Plasma Physics, coordinated by J. T. Mendonça (Complexo Interdisciplinar).

Institute for Mechanical Engineering - IDMEC, Centro de Projecto Mecânico, coordinated by C. Mota Soares.

Research Unit for Naval Engineering and Technology, coordinated by C. G. Soares (Section of Naval Engineering, Instituto Superior Técnico), with the following research group:

- Research Line 3 - Queueing Systems and Quality Management, in the UETN (Marine Technology and Engineering Unit), coordinated by F. Ramalhoto

Research Unit LabMAC - Laboratory of Models and Computational Architectures, Faculdade de Ciências, Universidade de Lisboa, coordinated by H. Coelho.

6.2 Research Projects Coordinated by Department Members

M. Abreu, Invariants in Symplectic and Related Geometries, FCT POCTI/1999/MAT/33081, 1.01-12.02.

C. J. S. Alves,

- Inverse Problems and Numerical Analysis in Wave Scattering, FCT POCTI/MAT/34735/99.
- The method of fundamental solutions for non-homogeneous problems, NATO Collaborative Linkage Grant PST.CLG.977633, with C. S. Chen (USA) and S. Bozidar (Slovenia).

L. Barreira, Dynamical Systems, Convénio ICCTI/CNPq-2000, coordinator for Portugal, 2000. Coordinator for Brazil: M. Viana.

M. A. Bastos, Algebras of Operators of Non Local type and Factorization of Oscillatory Symbols, FCT/Sapiens 34222/99, 2000-2002.

J. F. Costa, COMBINA-Computação de Metáforas Biológicas, FCT PBIC/C/TIT/2527/95, 1997-30.11.01.

P. Freitas, Qualitative Theory of Differential Equations, FCT POCTI/32931/MAT/2000, 9.00-8.03.

J. Mourão, Functional Analysis and Quantum Field Theory, FCT/PRAXIS/2/2.1/FIS/286/94, 5.98-4.01.

J. P. Nunes, Moduli Spaces, Integrability and String Theory, FCT POCTI/MAT/33943/2000, 1.00-12.03.

R. Picken, Categorical Ideas in Gauge Theory and Applications in Low-Dimensional Topology, FCT POCTI/35175/MAT/2000, 1.7.00-30.6.03.

M. F. Ramalhoto, PRO-ENBIS - Contract No. G6RT/CT/2001/05059, accepted by the European Union in 2001, 2002-2006 (with Germany, Italy, Norway, Spain, Sweden, UK).

C. Rocha, Nonlinear Analysis and Dynamical Systems, FCT POCTI/MAT/199/94-20199 (2nd phase of Project Praxis XXI 2/2.1/MAT/199/94).

P. Resende, Quantaes, FCT POCTI/1999/MAT/33018, 10.00-9.02.

A. Sernadas, ProbLog: Probabilistic Methods in Logic of Reactive Systems, PRAXIS XXI Project PRAXIS/P/MAT/10002/1998: 3.99-5.01.

A. Sequeira,

- Mathematical and Numerical Modelling of the Cardiovascular System, FCT POCTI/41898/MAT/2001, 2002-2004.
- Mathematical Modelling in Haemodynamics- HaeMOdel, European Contract of the Fifth Framework Programme - Research Training Network, coordinator for Portugal, 2002-2004. Coordinator: A. Quarteroni.
- Numerical Simulation of Direct and Inverse Problems in Wave Propagation and in Fluid Flows, in collaboration with ENIT/LAMSIN, Tunis, Tunisia, ICCTI/Tunisia, 1999-2002.

M. E. Sousa Dias, Bifurcations and Dynamics of the Affine-rigid Bodies, European Research Training Network MASIE (Mechanics and Symmetry in Europe), MASIE-HRPN-CT-2000-00113, 6.00-5.04.

6.3 Participation in other Research Projects

M. Abreu, EDGE-European Differential Geometry Endeavour, European Contract Human Potential Programme, Research Training Network HPRN-CT-2000-00101, 6.00-5.04.

A. Cannas da Silva,

- EDGE-European Differential Geometry Endeavour, European Contract Human Potential Programme, Research Training Network HPRN-CT-2000-00101, 6.00-5.04.
- Geometric Analysis, Research Training Network HPRN-CT-1999-00118, 4.00-3.04.

C. Florentino, EDGE-European Differential Geometry Endeavour, European Contract Human Potential Programme, Research Training Network HPRN-CT-2000-00101, 6.00-5.04.

P. Gouveia, PRAXIS XXI Project PRAXIS/P/EEI/11249/1998 - QUEST: Quintessential Algorithms for Satisfiability and Optimization, 1999-2001.

P. M. Lima, NATO Project PST/CLG.976878, Mathematical Models of Complex Media, 2000-2001.

A. Pacheco, SCALE: Statistical Characterization of Telecommunications Traffic, POSI/34826/CPS/2000, 1.01-6.02.

R. F. Picken, Mathematical Physics, FCT/PRAXIS, coordinated by A. B. Cruzeiro.

M. F. Ramalhoto,

- European Union Expert for two Research Programmes of the Fifth Framework Programme.
- European Masters and Research Program on Total Quality Management, with Denmark, France, Greece, Ireland, Italy, Spain, Sweden, and UK, financed by the European Foundation for Quality Management.

A. Sequeira,

- Applied Mathematics for Industrial Flow Problems - Project of the European Science Foundation, AMIF/ESF (chairman: P.-L. Lions; co-chairman: A. Quarteroni), 1998-2001.
- Multiscale Models of Blood Flow in the Cerebral Vasculature – NSF project of international cooperation (with A. Quarteroni and coordinated by A. M. Robertson), 2001–2004.

7 Organization of Conferences, Workshops, Meetings, etc.

S. Anjos, Co-organizer of the Lisbon Summer Minicourses on Geometry II, Instituto Superior Técnico, Lisbon, Portugal, 18-22.6.01 and 25-28.6.01.

C. J. S. Alves,

- Member of the Organizing Committee of Journnée Luso-Tunisienne en Mathématiques Appliquées, Applied Mathematics Centre, Instituto Superior Técnico, Lisbon, Portugal, 5.12.01.
- Member of the Scientific Committee of the International Symposium in Inverse Problems 2001, Nagano, Japan, 6-9.2.01.

F. M. Dionísio, Member of the Organizing Committee of the workshop Electronic Media in Mathematics, Coimbra, Portugal, 13-15.9.01.

C. Florentino,

- Co-organizer of Curso de Álgebra Comutativa e Aplicações: Geometria Algébrica e Curvas Algébricas, Instituto Superior Técnico, Lisbon, Portugal, 2-12.7.01.
- Co-organizer of the Lisbon Summer Minicourses on Geometry II, Instituto Superior Técnico, Lisbon, Portugal, 18-22.6.01 and 25-28.6.01.

P. M. Girão, Co-organizer of the Summer School on Nonlinear Partial Differential Equations, Instituto Superior Técnico, Lisbon, Portugal, 16-20.7.01.

L. Godinho, Co-organizer of the Lisbon Summer Minicourses on Geometry II, Instituto Superior Técnico, Lisbon, Portugal, 18-22.6.01 and 25-28.6.01.

D. Gomes, Co-organizer of the Summer School on Nonlinear Partial Differential Equations, Instituto Superior Técnico, Lisbon, Portugal, 16-20.7.01.

J. Mourão,

- Co-organizer of the Lisbon Summer Minicourses on Geometry II, Instituto Superior Técnico, Lisbon, Portugal, 18-22.6.01 and 25-28.6.01.
- Member of the Organizing Committee of the Xth Oporto Meeting on Geometry, Topology and Physics, Porto, Portugal, 20-24.9.01.

J. P. Nunes,

- Co-organizer of the Lisbon Summer Minicourses on Geometry II, Instituto Superior Técnico, Lisbon, Portugal, 18-22.6.01 and 25-28.6.01.
- Co-organizer of the Lisbon School on Superstrings II: Modern Trends in String Theory, Lisbon, Portugal, 13-17.7.01.

C. D. Paulino,

- Co-organizer of the course in Markov chain Monte Carlo, Applied Mathematics Centre and Centro de Estatística e Aplicações, Lisbon, Portugal, 18-19.7.01.
- Member of the Programme Committee of VII Latin American Congress of Probability and Mathematical Statistics, Havana, Cuba, 12-16.11.01.

R. Picken, Member of the Organizing Committee of the Xth Oporto Meeting on Geometry, Topology and Physics, Porto, Portugal, 20-24.9.01.

M. F. Ramalhoto,

- Member of the Scientific Programme Committee of ESREL 2001, Turin, Italy, 16-20.9.01.
- Organizer of the Workshop Statistics and Stochastic Models for Reliability, Maintenance and Quality Improvement, September 19, ESREL 2001, Turin, Italy (5 speakers from Netherlands, Portugal, Sweden, UK and USA, 45 participants).
- Organizer and Co-chairperson of the Session Probabilistic Modelling & Statistics in Safety and Reliability, September 19, 2001, ESREL 2001, Turin, Italy (5 papers, authors from Italy, Poland, Portugal, UK, USA, 33 participants).
- Chairperson of the Session Reliability Improvement, First ENBIS Annual Conference, Oslo, Norway, 15-17.09.01.

A. Sequeira,

- Member of the Scientific Committee of the International Conference on Contemporary Challenges in Applied Fluid Mechanics, Capo Miseno, Italy, 31.5–5.6.01.
- Member of the Organizing Committee of Journnée Luso-Tunisienne en Mathématiques Appliquées, Applied Mathematics Centre, Instituto Superior Técnico, Lisbon, Portugal, 5.12.01.

A. Sernadas,

- Member of the program committee of CAISE2001, 13th Conference on Advanced Information Systems Engineering, Interlaken, Switzerland, 4-8.6.01.
- Member of the program committee of IFIP WG8.1 Working Conference on Organisational Semiotics – the evolving science of information systems, Montreal, Canada, 23-25.7.01.

C. Sernadas, Member of the program committee 11th European-Japanese Conference on Information Modeling and Knowledge Bases, Maribor, Slovenia, 29.5-1.6.01.

J. D. Silva, Co-organizer of the Summer School on Nonlinear Partial Differential Equations, Instituto Superior Técnico, Lisbon, Portugal, 16-20.7.01.

M. E. Sousa Dias, Co-organizer of the Annual Conference of the Research Training Network MASIE on Geometry, Symmetry and Mechanics I, Instituto Superior Técnico, Lisbon, Portugal, 11-16.7.01.

J. Videman, Co-organizer of the Summer School on Nonlinear Partial Differential Equations, Instituto Superior Técnico, Lisbon, Portugal, 16-20.7.01.

8 Personal Notes

A New Professors and Promotions

A. Pacheco Pires, Professor Associado.

S. Anjos, Professor Auxiliar.

M. J. Borges, Professor Auxiliar.

J. Fachada, Professor Auxiliar.

D. Gomes, Professor Auxiliar.

A. Marques Fernandes, Professor Auxiliar.

P. Mateus, Professor Auxiliar.

R. Saramago, Professor Auxiliar.

G. Silva, Professor Auxiliar.

J. D. Silva, Professor Auxiliar.

B Other notes

M. Abreu,

- Visited The Fields Institute for Research in Mathematical Sciences, Toronto, Canada, on a Jerrold E. Marsden Postdoctoral Fellowship, 8.00-7.01.
- Lectured the Short course Geometria/Topologia Simplética, in Escola de Verão de Matemática 2001, Sociedade Portuguesa de Matemática, Instituto Politécnico da Guarda, Portugal, 3-7.9.01.

C. J. S. Alves,

- Member of the Scientific Committee of the 4th International Conference in Inverse Problems in Engineering 2002, Brazil, 26-31.5.02.
- Invited Speaker in the 2nd Conference on Inverse Problems, Control and Shape Optimization, Carthage, Tunisie, 10-12.4.02.

S. Anjos, Received a Fundação Calouste Gulbenkian Award, Programa Gulbenkian de Estímulo à Investigação, 7.3.01.

L. Barreira,

- Associate Member of the Center for Dynamical Systems, The Pennsylvania State University, University Park, USA.
- Executive Editor of *Portugaliae Mathematica*.
- Member of the Editorial Board of *Dynamical Systems*.
- Member of the Executive Commission of the Center for Mathematical Analysis, Geometry, and Dynamical Systems, Lisbon, Portugal.

J. Buescu,

- Received the Prize Rómulo de Carvalho de Investigação e Divulgação Científica, 7.01.
- Nominated Corresponding Member of *Ordem dos Engenheiros*, 7.01.
- Co-editor (with F. M. Dionísio and J. F. Queiró) of *CIM Bulletin*.

C. Caleiro, Visited the University of Freiburg, Germany, 20.5-9.6.01.

A. Cannas da Silva,

- Member of the Institute for Advanced Study, Princeton, USA, 9-12.01.
- Member of the Scientific Committee for the Gulbenkian undergraduate excellency prize *Novos Talentos em Matemática*.

R. Cordovil,

- Executive Editor of *Portugaliae Mathematica*.
- Member of the Scientific Council of *Centro Internacional de Matemática*, Coimbra, Portugal, 2000-2004.

F. P. da Costa, Grant awarded by Fundação Calouste Gulbenkian to support visits to the universities of Heriot-Watt (Edinburgh, UK), Strathclyde (Glasgow, UK), and Nottingham (Nottingham, UK) from April to June 2001.

J. F. Costa,

- Supervisor of the undergraduate student R. Gonçalves, “Gödel’s theorem”, Program *Novos Talentos em Matemática*.
- Received an honor from the Faculty of Sciences, University of Lisbon, Portugal.
- Editor of the Science Serial “World Machine”, published by Bizâncio, Portugal.

F. M. Dionísio, Co-editor (with J. Buescu and J. F. Queiró) of *CIM Bulletin*.

A. F. dos Santos, President for Scientific Affairs, Instituto Superior Técnico, 2001-2002.

R. Loja Fernandes,

- Received the Prize Gulbenkian of Sciences, 2001.
- Organizer of the Conference *Poisson 2002*, Instituto Superior Técnico, Lisbon, Portugal, 2-9.7.02.

P. Freitas, Vice-presidente of *Sociedade Portuguesa de Matemática*.

L. Godinho, Received a Fundação Calouste Gulbenkian Award, Programa Gulbenkian de Estímulo à Investigação, 7.3.01.

G. Granja,

- Visited the Centre de Recerca Matemática, Barcelona on a postdoctoral fellowship by FCT, 9.00-8.01.
- Member of the Scientific Committee for the 2003 Euro Ph.D. Conference on Algebraic Topology.

A. Lebre, Vice-President for Scientific Affairs, Instituto Superior Técnico, 2001-2002.

P. Lopes, Organizer of the working seminar on Knotted Surfaces, Instituto Superior Técnico, Lisbon, Portugal, weekly from 10.10.01 to 6.12.01.

P. Mateus, Visited the University of Pennsylvania, USA, 9.01-2.02.

J. Mourão, Member of the Organizing Committee of the XIth Oporto Meeting on Geometry, Topology and Physics, Porto, Portugal, 12-15.7.02.

A. Pacheco, Visiting Researcher at the School of Computer Science of the University of Birmingham, 11.01.

C. D. Paulino,

- Supervisor of the Master thesis in Epidemiology “Gestão da Qualidade em Registos de Cancro – uma nova abordagem para o ROR-Sul”, by S. Dória, Faculdade de Ciências Médicas, Universidade Nova de Lisboa, Portugal, 2.01.
- Visiting Researcher in Department of Epidemiology and Biostatistics – University of California, San Francisco, USA, 5-6.01.
- Corresponding Editor of The International Society for Bayesian Analysis Bulletin, 2001.

R. Picken,

- Co-organizer of the weekly Quantum Gravity discussion seminar, Instituto Superior Técnico, Lisbon, Portugal.
- Member of the Organizing Committee of the XIth Oporto Meeting on Geometry, Topology and Physics, Porto, Portugal, 12-15.7.02.
- Member of the Advisory Committee of the Fourth International Conference on Geometry, Integrability and Quantization, Varna, Bulgaria, 6-15.6.02.

M. F. Ramalhoto,

- “Expert-Evaluateur” for the European Commission.
- Elected Vice-President of ENBIS-European Network for Business and Industrial Statistics.
- Member of the International Advisory Board of Reliability Conferences of the International Statistics.
- Member of the Editorial Board Committee of the European periodical EJEE.
- Reviewer for the International Statistical Institute - Short Book Reviews.
- Member of the Advisory Board of the International Conference Mathematical Methods in Reliability, MMR’2002, Trondheim, Norway.
- Member of the Scientific Committee for two Associate Professorship position, Instituto Superior Técnico, Department of Mathematics, 2001.

- Member of the Scientific Committee for one Full Professorship position, Instituto Superior Técnico, Department of Mathematics, 2001.
- Member of the Jury (“arguente” and “relator”) for the Agregação of R. Dias, Mathematics-Probability and Statistics, Universidade de Évora, Portugal, 12-13.7.01.

A. Ravara, Visited the INRIA, Sophia-Antipolis, France, 1.01-2.02.

P. Resende, Co-organizer of Seminário Diagonal (mathematics student seminar), Instituto Superior Técnico, Lisbon, Portugal.

C. Rocha,

- Member of the Jury (“arguente” for the scientific and pedagogical curriculum) for the Agregação of L. Barreira, Instituto Superior Técnico, Lisbon, Portugal, 18-19.6.01.
- Member of the Jury (“arguente” for the scientific and pedagogical curriculum) for the Agregação of P. Freitas, Instituto Superior Técnico, Lisbon, Portugal, 28-29.5.01.
- Member of the Jury for the Agregação of M. P. Malonek, Grupo/Sub-Grupo de Matemática, Universidade de Aveiro, 2001.

A. Sequeira,

- Chairman of the Organizing Committee and Member of the Scientific Committee of the Third International Conference on Applied Mathematics for Industrial Flow Problems - AMIF/ESF, Lisbon, Portugal, 17-20.4.02.
- Member of the Organizing Committee and lecturer of a Short Course: International School on Biomathematics, Bioengineering and Clinical Aspects of Blood Flow, MSRI, Berkeley, California, USA, 23.7-9.8.02.

A. Sernadas,

- Member of the scientific committee of the journal Information and Software Technology.
- Member of the scientific committee of the journal Formal Aspects of Computing.
- Member of the Jury for the Agregação of A. Sequeira, Instituto Superior Técnico, Lisbon, Portugal, 15-16.1.01.
- Member of the Jury for the Agregação of P. Freitas, Instituto Superior Técnico, Lisbon, Portugal, 28-29.5.01.

C. Sernadas,

- Member of the Jury for the Agregação of A. Sequeira, Instituto Superior Técnico, Lisbon, Portugal, 15-16.1.01.
- Member of the Jury for the Agregação of L. Barreira, Instituto Superior Técnico, Lisbon, Portugal, 18-19.6.01.

A. M. Santos, Member of the Organizing Committee of the International Conference on Factorization, Singular Operators and Related Topics- FSORP, Madeira, Portugal, 2002.

P. A. Santos,

- Member of the Directive Board of Instituto Superior Técnico.

- Represents Instituto Superior Técnico at APIET (Associação para a Permuta Internacional de Estudantes de Tecnologia, Portuguese branch of IAESTE-International Association for the Exchange of Students of Technology and Engineering).
- Member of the working group for the development of e-learning at Universidade Técnica de Lisboa.
- Coordinator of the e-learning content production supporting office - Gabinete de apoio à produção de conteúdos multimédia e e-learning (GAEL), Instituto Superior Técnico.

F.-O. Speck,

- Member of the Advisory Board of *Mathematische Nachrichten*.
- Member of the Editorial Board of *Mathematical Methods in the Applied Sciences*.

F. S. Teixeira, President of the Department of Mathematics.

Preprint Series

- 1/01 GRAÇA, M. M.: Updates for a standard accelerator of neutral fixed point iteration maps. 32pp.
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