BULLETIN

INTERNATIONAL CENTER FOR MATHEMATICS

December 1996

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English Summary

This is the first issue of the CIM Bulletin. It includes a brief introduction by CIM President professor J. A. Perdigão Dias da Silva and a few biographical details on the members of the recently elected Scientific Committee. The scientific program for 1997 is also included. Two Summer Schools will take place and Stewart A. Robertson will lecture on convex bodies.

More details, and an english version, are available at http://www.cim.pt .

Opening

On the 9th November the membership of the International Center for Mathematics elected its Scientific Committee. The list of candidates had been put forward by the Presiding Committee, after consultation with the membership. The criteria adopted for the selection of the foreign mathematicians on the list were their connections with the Portuguese mathematical community and the range of topics encompassed. As far as Portuguese mathematicians were concerned, priority was given to those working in applied areas and in areas in which there is considerable mathematical activity within the country.

Now that the Scientific Committee has been elected, the CIM finally has its full administrative structure in place, and can therefore seriously tackle the planning of its future activities.

The Presiding Committee, which was elected last July, has suggested that the activities of the CIM should be structured essentially as follows: 3-month periods focusing on a particular theme, intensive courses, conferences and seminar series. These activities should be connected with existing Portuguese research groups, and the active participation of Portuguese researchers and post-graduate students should be one of their essential features.

It is therefore imperative that members of the CIM show their interest in its future by fully participating in its activities, both administrative and scientific.

The aim of the bulletin of the CIM, of which this is the first issue, is to keep the Portuguese mathematical community in general, and the CIM membership in particular, informed about all aspects of its progress and activities.

The first major event in the life of the CIM will take place in 1998, with its first thematic 3-month period. Great care is necessary in the planning of the 1997 and 1998 programmes, as well as a significant financial contribution. Special funding is being requested for that purpose. The success of the CIM depends upon the active interest and support of its membership.

J. A. Perdigão Dias da Silva
President of the Presiding Committee

Members of the Scientific Committee

Ana Bela Cruzeiro

Born: Lisbon, August 26, 1957.

Graduation: Pure Mathematics, Faculdade de Ciências da Universidade de Lisboa, 1980.

Ph. D.: Université Pierre et Marie Curie, 1985.

Present position: Associated Professor, with *Agregação*, Departamento de Matemática da Faculdade de Ciências da Universidade de Lisboa.

Field of research: Stochastic Analysis; Mathematical Physics.

Selected publications: *Equations differentielles sur l'espace de Wiener et formules de Cameron-Martin non linéaires*, J. Functional Anal. (1983); *Processus sur l'espace de Wiener associés a des opérateurs elliptiques à coefficients dans certains espaces de Sobolev*, J. Functional Anal. (1987); *Global flows with invariant (Gibbs) measures for Euler and Navier-Stokes two dimensional fluids*, with S. Albeverio, Comm. Math. Phys. (1990); *Malliavin Calculus and Euclidean Quantum Mechanics, I-Functional Calculus*, with J.C. Zambrini, J. Functional Anal. (1991); *Renormalized differential geometry on path space: structural equation, curvature*, with P. Malliavin, J. Functional Anal. (1996).

João Paulo Dias

Born: Lisbon, November 18, 1944.

Graduation: Mathematics, Faculdade de Ciências da Universidade de Lisboa, 1966.

Ph. D.: Mathematics, Université Pierre et Marie Curie, Paris, 1971.

Present position: Full Professor, Departamento de Matemática da Faculdade de Ciências da Universidade de Lisboa.

Field of research: Partial differential equations.

Selected publications: *Une classe de problèmes variationnels non linéaires de type elliptique ou parabolique*, Ann. Mat. Pura et Appli. (1972); *Variational inequalities and eigenvalue problems for nonlinear maximal monotone operators in a Hilbert space*, American J. of Math. (1975); *A simplified variational model for the bidimensional coupled evolution equations of a nematic liquid crystal*, J. of Math. Anal. and Appli. (1979); *Sur l'existence d'une solution globale pour une équation de Dirac non linéaire avec masse nulle*, with M. Figueira, C.R. Acad. Sci. Paris, Série I (1987); *Scattering for a one-sided Klein-Gordon equation in quantum gravity*, with M. Figueira and J. Rauch, Ann. Inst. Henri Poincaré, Phys. Théorique (1994).

Additional information: Prémio Artur Malheiros, 1972. Prémio Gulbenkian de Ciência e Tecnologia, 1988.

Ivette Gomes

Born: July 21, 1948.

Graduation: Pure Mathematics, Faculdade de Ciências da Universidade de Lisboa, 1970.

Ph. D.: Probability and Statistics, University of Sheffield, U.K., 1978.

Present position: Full Professor, Departamento de Estatística, Investigação Operacional e Computação da Faculdade de Ciências da Universidade de Lisboa.

Field of research: Ordinal Statistics and extreme values; Computacional Statistics; Exploratory data analysis; Simulation; Jackknife and Bootstrap; Nonparametric methods.

Selected publications: *Penultimate limiting forms in extreme value theory*, Ann. Inst. Statist. Math. (1984); *Statistical theory of extremes – comparison of two approaches*, Statistics and Decision (1985); *Non-standard domains of attraction and rates of convergence*, with D.D. Pestana, New Perspectives in Theoretical and Applied Statistics (1987); *On the estimation of parameters of rate events in environmental time series*, Statistics for the Environment (1993); *Statistical choice of extreme value domains of attraction – a comparative analysis*, with M.I. Fraga Alves, Comm. in Statistics (1996).

José Basto Gonçalves

Born: Porto, January 28, 1952.

Graduation: Applied Mathematics, Faculdade de Ciências da Universidade do Porto, 1975.

Ph. D.: University of Warwick, 1981.

Present position: Full Professor, Departamento de Matemática Aplicada da Universidade do Porto.

Field of research: Geometric methods in non-linear control; Differential equations and Hamiltonian systems.

Selected publications: *Realization theory for Hamiltonian systems*, SIAM J. on Control and Optimization, 25 (1987). *Controllability in codimension one*, J. Differential Equations, 68 (1987). *Geometric conditions for local controllability,* J. Differential Equations, 89 (1991). *Reduction of Hamiltonian systems with symmetry*, J. Differential Equations, 92 (1991). *Local Controllability at critical points and generic systems in 3-space*, J. Mathematical Analysis and Applications, 201 (1996).

Graciano N. Oliveira

Born: Cabanas (Portugal), May 7, 1938.

Graduation: Mathematics, Universidade de Coimbra, 1961.

Ph. D.: Mathematics, Universidade de Coimbra, 1969.

Present position: Full Professor, Departamento de Matemática da Faculdade de Ciências e Tecnologia da Universidade de Coimbra.

Field of research: Linear Algebra.

Selected publications: *Matrices with Prescribed Characteristic Polynomial and a Prescribed Submatrix III*, Monats. Mathematik (1971); *Matrices with Prescribed Characteristic Polynomial and Several Prescribed Submatrices*, Linear Multil. Algebra (1975); *Equality of Decomposable Symmetrized Tensors and $*$-Matrix Groups*, with J.A. Dias da Silva, Linear Algebra Appl. (1983); *On Matrix Groups Defined by Certain Polynomial Identities*, with J.A. Dias da Silva, Portugaliae Math. (1985/86); *Pairs of Matrices Satisfying Certain Polynomial Identities*, with M. Antónia Duffner, Linear Algebra Appl. (1994).

Additional information: President of Sociedade Portuguesa de Matemática (1986-1988). Vice-President of the International Society of Linear Algebra (1993-1995). Editor of the journals *Linear Algebra and its Applications* and *Portugaliae Mathematica.*

Paula Oliveira

Born: Coimbra, July 19, 1952.

Graduation: Pure Mathematics, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, 1974.

Ph. D.: Mathematics, Universidade de Coimbra, 1981.

Present position: Full Professor, Departamento de Matemática da Faculdade de Ciências e Tecnologia da Universidade de Coimbra.

Field of research: Numerical methods in partial and ordinal differential equations; Positive methods for hyperbolic equations.

Selected publications: *Some theorical considerations on regridding methods*, Teubner Texts in Mathematics, Berlin, 1991; *On fitting stability regions of second derivative multistep methods*, Communications in Applied Numerical Methods (1992); *On the characterization of finite difereces "optimal" meshes*, Journal of Computational and Applied Math. (1991); *Supraconvergence properties of numerical discretizations and regridding methods*, with J.A. Ferreira, Journal of Computational and Applied Math. (1993); *Numerical Oscillations on nonuniform grids*, with F. Patrício, accepted for publicaction in Journal of Engineering Mathematics.

Luís Moniz Pereira

Born: Dezember 20, 1947.

Graduation: Electronics Engineering, Instituto Superior Técnico, 1971.

Ph. D.: University of Brunel, London, 1974.

Present position: Full Professor, Departamento de Informática da Universidade Nova de Lisboa.

Field of research: Artificial Intelligence; Logic Programming.

Selected publications: *Reasoning with Logic Programming*, with J.J. Alferes, Springer, LNAI (1996); *A logic programming system for non monotonic reasoning*, with J.J. Alferes and C.V. Damásio, J. of Automated Reasoning (1995); *Belief, Provability and Logic Programs*, with J.J Alferes, J. of Applied Nonclassical Logics (1995); *Adding closed world assumptions to well founded semantics*, with J.J. Alferes and J.N. Aparício, Theoretical Computer Science (1994); *Non-monotonic reasoning with logic programming*, with J.J. Alferes and J.N. Aparício, J. of Logic Programming (1993).

Additional information: Prémio Gulbenkian de Ciência e Tecnologia (1984). Prémio Boa Esperança (1994).

José Francisco Rodrigues

Born: Lisbon, October 29, 1956.

Graduation: Mathematics, Universidade de Lisboa, 1978.

Ph. D.: Mathematics, Universidade de Lisboa, 1982.

Present position: Full Professor, Departamento de Matemática da Faculdade de Ciências da Universidade de Lisboa.

Selected publications: *Free boundary problems in the Homogenization of the One Phase Stefan Problem*, Trans. Amer. Math. Soc. (1982); *Global behaviour for bounded solutions of a porous media equation of elliptic-parabolic type*, with D. Kroner, J. Math. Pures et Appl. (1985); *Obstacle Problems in Mathematical Physics*, North-Holland Mathematical Studies (1987); *Remarks on the Reynolds problem of Elastohydrodynamic lubrication*, European J. Appl. Math. (1993); *Some Free Boundary Problems in Theoretical Glaciology*, with L. Santos, NATO ASI Series I: Global Environmental Change (1996).

Luís Sanchez

Born: Lisbon, November 27, 1948.

Graduation: Mathematics, Faculdade de Ciências da Universidade de Lisboa, 1971.

Ph. D.: Universidade de Lisboa, 1981.

Present position: Full Professor, Departamento de Matemática da Faculdade de Ciências de Lisboa.

Field of research: Border value problems in ordinal differential equations; Non-linear functional analysis.

Selected publications: *Periodic solutions of some Linéard equations with singularities*, with P. Habets, Proc. Amer. Math. Soc. (1990); *Positive solutions for a class of semilinear two-point BVPs*, Bull. Austr. Math. Soc. (1992); *Jumping nonlinearities for Neumann BVPs with positive forcing*, with P. Habets and M. Ramos, Nonlinear Analysis TMA 20 (1993); *Homotopical linking and Morse index estimates in max theorems*, with M. Ramos, Manuscripta Math. (1995); *Existence and multiplicity for an ODE with nonlinear boundary conditions*, Differential Equations and Dynamical Systems (1995).

Additional information: Member of the Editorial Committee of Portugaliae Mathematica.

Richard Brualdi

Born: September 2, 1939.

Graduation: University of Connecticut, 1956.

Ph. D.: Syracuse University, 1960.

Present position: Full Professor, Department of Mhematics, University of Wisconsin - Madison.

Field of research: Matrix Theory and Combinatorics.

Selected publications: *On the spectral radius of (0,1)-matrices with 1s in prescribed positions*, with S.G. Hwang, SIAM J. Matrix Analysis (1996); *Matrices of Sign Solvable Linear Systems*, with B.L. Shader, Cambridge Tracts in Mathematics, CUP (1995); *Combinatorial Matrix Theory*, with H.J. Ryser, CUP (1991); *Two extremal problems in graph theory*, with S. Mellendorf, Electronic J. Combinatorics (1994). *The symbiotic relationship between combinatorics and matrix theory*, Linear Algebra and its Applications (1992).

Additional information: *Chancellor's Award for Excellence in Teaching*, University of Wisconsin - Madison, 1986.

Arrigo Cellina

Born: Varese (Italy), August 3, 1941.

Graduation: Physics, Universitá di Milano, 1965.

Ph. D.: Mathematics, University of Maryland, 1969.

Present position: Full Professor, SISSA/ISAS, Trieste.

Field of research: Calculus of variations; Differential inclusions.

Selected publications: *Continuous selections and differential relations*, with H.A. Antosiewicz, J. Diff. Eq. (1975); *On the nonexistence of solutions of differential equations in nonreflexive spaces*, Bull. Am. Math. Soc. (1972); *On minima of a functional of the gradient: necessary conditions*, Nonlinear Analysis TMA (1993); *On minima of a functional of the gradient: suficient conditions*, Nonlinear Analysis TMA (1993); *Differential inclusions*, Grundlehren der Math. Wiss. Springer (1984)

Additional information: Member of the Scientific Council of the C.I.M.E. Foundation.

Jacob Palis

Born: Brasil, 1940.

Graduation: Universidade Federal do Rio de Janeiro, 1962.

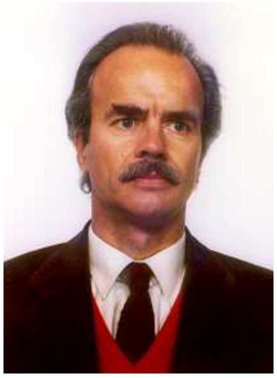
Ph. D.: University of California, Berkeley, 1967.

Present position: Full Professor, Instituto de Matemática Pura e Aplicada, Rio de Janeiro.

Field of research: Global stability of dynamical systems; chaotic systems.

Selected publications: *Structural stability theorems*, with S. Smale, Proc. Inst. Global Anal., American Math. Society (1970); *Moduli of stabilty and bifurcation theory*, Proc. International Congress of Mathematicians (1978); *Cycles and measure of bifurcation sets for two-dimensional diffeomorphisms*, with F. Takens, Inventiones Math. (1985); *Homoclinic tangencies for hyperbolic sets of large Hausdorff dimension*, with J.C. Yoccoz, Acta Math. (1994); *High dimension diffeomorphisms displaying infinitely many sinks*, with M. Viana, Annals of Mathematics (1994).

Additional information: He has been awarded several prizes, of which the Interamerican Prize for Science (1994) was the last one; Director of IMPA since 1993.



H. Beirão da Veiga

Born: Lisbon, April 3, 1943.

Graduation: Mathematics, Faculdade de Ciências da Universidade de Lisboa, 1965.

Ph. D.: Université Paris VI, 1971.

Present position: Full Professor, Universitá di Pisa.

Field of research: Partial differential equations; Functional analysis.

Selected publications: *On the barotropic motion of compressible perfect fluids*, Annali Scuola Normale Superiore di Pisa (1981); *An L^p-theory for the n-dimensional stationary compressible, Navier-Stokes equations, and the incompressible limit for compressible fluids. The equilibrium solutions* , Communications in Math. Phys. (1987); *Perturbation theorems for linear hyperbolic mixed problems and applications to the Euler compressible equations*, Comm. Pure and Appl. Math. (1993); *Singular limits in compressible fluid dynamics*, Archive for Rational Mech. Anal. (1994); *On the semiconductor drift diffusion equations*, Differential and Integral Equations (1996).

Additional information: Prémio Artur Malheiros para as Ciências Matemáticas from Academia das Ciências de Lisboa (1972).

Bernd Wegner

Graduation: Mathematics, TU Berlin, 1967.

Ph. D.: TU Berlin, 1970.

Present position: Full Professor, TU Berlin.

Field of research: Differential Geometry; Discrete Geometry.

Selected publications: *Codazzi-Tensoren und Kennzeichnungen Sphärischer Immersionen*, J. Diff. Geometry (1974); *Einige Bemerkungen zur Geometrie transnormaler Mannigfaltigkeiten*, J. Diff. Geometry (1981); *On the projective invariance of shaky structures in Euclidean space*, Acta Mec. (1984); *On the rectangle property for plane continua and immersed topological hypersurfaces*, Geom. Dedicata (1990); *Partial inflation of closed polygons in the plane*, Beitr. Algebra Geom. (1993)

Additional information: Editor-in-Chief of Zentralblatt für Mathematik. Managing Editor of Beiträge zur Algebra und Geometrie/Contributions to Algebra and Geometry.

Efim I. Zelmanov

Born: Former U.R.S.S., September 7, 1955.

Graduation: Novosibirsk State University, 1977.

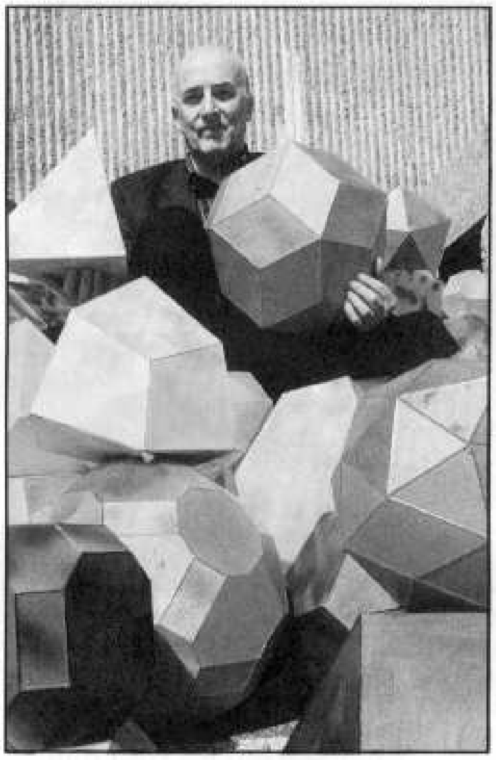
Ph. D.: Novosibirsk State University, 1980.

Present position: Professor, Yale University.

Field of research: Algebra.

Selected publications: *On linear groups and Lie algebras over arbitrary rings of coefficients*, Jordan Algebras, Proc. of Conf. Oberwolfach (1994); *Extending the norm from Jordan-Banach algebras of Hermitian elements to their associative envelopes*, with A. Rodriguez-Palacios and A. Slinko, Commun. in Algebra (1994); *Nonassociative Algebras related to Hamiltonian operators in the formal calculus of variations*, J. Pure and Appl. Algebra (1995); *Lie methods in group theory*, Proc. Conf. Galway (1995); *Jordan Algebras of Gelfand-Kirillov Dimension One*, with C. Martinez, J. Algebra (1996).

Additional information: Editor of several journals, such as Journal of Algebra and Transactions of the American Mathematical Society. Fields Medal (1994).



(from *New Reporter*, University of Southampton, vol. 13, nº 1)

Seminar Series on **Convex Bodies**

During 23-29 March 1997 there will be a seminar series on convexity by Prof. S. A. Robertson (Faculty of Mathematical Studies – Southampton University – UK). He will be giving the following talks:

- Euler's Theorem: The last 200 years,
- The regular polytopes,
- The regular convex bodies.

This series is being organized by F. J. Craveiro de Carvalho (fjcc@mat.uc.pt). Further details can be obtained from him directly.

Summer School on **Mathematical Methods in Materials Science and Materials Engineering**

This summer school will take place from 23rd August to 6th September 1997. The organizers are António Ornelas (Universidade de Évora) and Hélder Rodrigues and José Miranda Guedes (Mechanical Engineering, Instituto Superior Técnico, Lisbon).

The courses taught during the first week will be an introduction to research in the relevant areas. There will be courses specializing in various topics during the first three days of the following week. The last two days of that week have been set aside for an international conference, which will provide the participants with an opportunity to present their own work.

More information can be obtained from Prof. A. Ornelas at ornelas@uevora.pt.

Summer School on **Mathematical Foundations of Computation**

J. L. Fiadeiro (Faculdade de Ciência, Universidade de Lisboa) and Amílcar Sernadas (Instituto Superior Técnico, Lisbon) are organizing a Summer School on the mathematical foundations of computation, 8th-12th September 1997 (dates to be confirmed). The purpose of the school is "...to give participants the broadest possible view of formal methods and the associated tools available in computer science, especially in the following areas: computability, complexity theory, programming language semantics and specification. ..."

More information can be obtained from Prof. J. L. Fiadeiro at fiadeiro@di.fc.ul.pt.

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