

# Curriculum Vitae

**Name:** Jaime **Carvalho e Silva**

**Position:** Associate Professor

**Date and Place of birth:** 7/27/1955 in Coimbra, Portugal

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## **DEGREES**

I completed my graduation in Pure Mathematics at the Mathematics Department of the Faculty of Sciences and Technology of the University of Coimbra in 1977. I made my post-graduate studies at the University of Paris 6 under Prof. Jean Vaillant and obtained the degree of "Docteur de 3e cycle" in Mathematics at the University of Paris 6 in 1984 and the Ph.D. in Mathematics at the University of Coimbra in 1985.

## **ACADEMIC EXPERIENCE**

I began my career at the University of Coimbra teaching in 1976 as an undergraduate teaching assistant and I am now Associate Professor (at this post since 1991). I have taught numerous courses, namely Analysis, Calculus for Engineers, Differential Equations, Complex Analysis, Computers in Mathematics Education, History of Mathematics. I have also taught post graduate courses on Analysis, Differential Equations and Computers in Mathematics Education.

In 1994 and in 2001 I was for one semester Visiting Professor at the Arizona State University (USA) teaching courses on Calculus, Linear Algebra, Differential Equations and History of Mathematics.

## **RESEARCH INTERESTS**

My main focus is on the search of conditions for hyperbolicity, i.e., existence and uniqueness for  $C^\infty$  and Gevrey classes problems for partial differential operators; the problems are standard Goursat problems or Goursat problems of Darboux type. I also study problems of asymptotic representations of generalized hypergeometric functions of several variables necessary to obtain asymptotic behaviour of exact solutions of certain partial differential equations.

I also work on History of Mathematics, namely the History of Portuguese Mathematics and the uses of History of Mathematics in Mathematics Teaching, and also on Technology in Mathematics Education.

I am the major advisor of (completed or ongoing) 14 M. Sc. Students (5 in Analysis, 2 in History of Mathematics, 7 in Mathematics Education) and 6 Ph.D. students (2 in Analysis, 1 in History of Mathematics, 3 in Mathematics Education).

## **OTHER PROFESSIONAL EXPERIENCE**

I am a member of the research centre of the University of Coimbra, CMUC, and I belong to the groups on Analysis, and History and Methodology of Mathematics. I was the research director of the first of these groups from 1991 to 2004. I have been a co-organizer of an annual European Intensive Course on Complex Analysis and Applications in the last twelve years. I coordinated the organization of several meetings in Coimbra, namely two Portuguese and Brazilian meetings on the History of Mathematics in 1993 and 2000, and two European meetings on Partial Differential equations in 1988 and 1995. I was also a member of the organizing committee of several conferences held in Coimbra namely of the VIII Portuguese-Spanish Mathematical Meetings in 1981 and the 2<sup>nd</sup>, 4<sup>th</sup> and 5<sup>th</sup> Meetings on Mathematical Physics in 1980, 1984 and 1986.

I gave a series of lectures "Hyperbolic Operators of constant coefficients" in 1986, and a series of lectures on the History of Mathematics" in 2003, in Summer Courses of the Portuguese Mathematical Society (SPM).

From 1988 to 1990 I was a member of the Board of Directors of the Portuguese Mathematical Society (SPM). I am now Vice-President of the National Committee of Mathematicians of Portugal/IMU and Coordinator of the National Subcommittee ICMI-Portugal.

I participated in several international conferences namely ICME-8 and ICME-10, the Third European Congress of Mathematicians in 2000 (I was a member of the Round Table "What is mathematics

today?"), and "ICTMA 9 – International conference on the teaching of mathematical modelling and applications" in 1999 (I was a member of the Plenary Panel "Mathematical modelling and applications in the secondary school curriculum: where do we come and where do we want to go?").

MATHEMATICS EDUCATION: I have given numerous talks to secondary school teachers, written monographs and papers for both high school and college mathematics courses, I am co-editor of the education section in the Portuguese Mathematical Society Bulletin (1986-1994, 2003- ), and I coordinated several committees of the Portuguese Ministry of Education to propose several changes of the secondary mathematics curriculum.

I participated in the following ICMI study meetings: ICMI Study Conference on **The role of the history of mathematics in the teaching and learning of mathematics**. CIRM, Marseille, April 20-25 1998; ICMI Study Conference on **The teaching and learning of mathematics at the university level**, Singapore, December 8-12 1998.

COMPUTERS IN MATHEMATICS EDUCATION: I have developed and lectured in workshops on the use of computers in the teaching of mathematics, written several texts on the use of computers in the calculus teaching, and translated into Portuguese the software 'MicroCalc' by Harley Flanders.

POPULARIZATION OF MATHEMATICS: I was the president of the Portuguese Mathematical Olympiad Committee (1988-1991), I translated into Portuguese a book by Miguel de Guzmán, made the scientific revision of a book by Ian Stewart and gave numerous talks to high school students.

MEMBERSHIPS: Currently I hold memberships in "SPM-Sociedade Portuguesa de Matemática" (Portugal), "APM-Associação de Professores de Matemática" (Portugal), "American Mathematical Society" (USA), "MAA-Mathematical Association of America" (USA), "NCTM-National Council of Teachers of Mathematics" (USA), "Mathematical Association" (England), "Société Mathématique de France" (France).

#### **MAIN PUBLICATIONS (REFEREED JOURNALS)**

Le rôle des fonctions spéciales dans les problèmes de Goursat pour des équations aux dérivées partielles à coefficients constants. *Hyperbolic differential operators and related problems*, 83-88, Lecture Notes in Pure and Appl. Math., 233, *Dekker, New York*, 2003. (MR # 2004860)

A complete comparison of 25 contraction conditions. *Nonlinear Analysis*, 30, (1): 470-476, 1997 (with Paula O. Collaço). (MR # 98j:47124)

The generalized Goursat-Darboux problem for a third order operator. *Proceedings of the American Mathematical Society*, 125 (2): 471-475, 1997 (with Carlos Leal). (MR # 97d:35129)

On the hyperbolicity of a third order operator and the generalized Goursat-Darboux problem. *Portugaliae Mathematica*, 46 sup: 567-577, 1989. (MR # 1080774)

A sufficient condition for the  $C^\infty$  well posedness of a Goursat problem. *Portugaliae Mathematica*, 45 (2): 221-228, 1988. (MR # 89k:35051)

Problème de Goursat-Darboux généralisé pour un opérateur du troisième ordre. *Comptes Rendus de l'Académie des Sciences de Paris*, 303 I, (6): 223-226, 1986. (MR # 87i:35033)

On the well posedness of a  $C^\infty$  Goursat problem for a partial differential operator of order greater than two. *Proceedings of the American Mathematical Society*, 94 (4): 612-616, 1985. (MR # 87a:35041)

#### **MAIN PUBLICATIONS ON THE HISTORY OF MATHEMATICS**

**The teaching of Mathematics in the University of Coimbra in the 19<sup>th</sup> century**, in: *The J. A. Sampaio Martins anniversary volume* (António J. G. Bento et al. Eds.), textos de matemática – série B, Dep. Matemática, Univ. Coimbra, 34 (2004), 109-119.

The history of mathematics in the new mathematical curricula in Portugal. (Portuguese) **Nobre, Sergio (ed.), 2nd Portuguese-Brazilian meeting on the history of mathematics and 2nd national seminar on the history of mathematics**. Theme: Contributions of Portuguese mathematicians on the development of mathematics in Brazil, Aguas de Sao Pedro, Brazil, March 23--26, 1997. Proceedings. Rio Claro: UNESP, Dept. de Matematica, 165-172 (1997). (ZBL # 889.01011)

Some notes on the History of Mathematics in Portugal **Katz, V. (ed.), The teaching mathematics and the history of mathematics**. M.A.A. (2000) (with António Leal Duarte and João Filipe Queiró) (MR # 1796409)

The teaching of mathematics in the university of Coimbra in the second half of the 19th century. (Portuguese) **Nobre, Sergio (ed.), 2nd Portuguese-Brazilian meeting on the history of mathematics and 2nd national seminar on the history of mathematics**. Theme: Contributions of Portuguese mathematicians on the development of mathematics in Brazil, Aguas de Sao Pedro, Brazil, March 23--26, 1997. Proceedings. Rio Claro: UNESP, Dept. de Matematica, 229-238 (1997). (ZBL # 896.01019)

Some comments on the *Mathematical principles* of José Anastácio da Cunha. (Portuguese) **Proceedings of the XIIth Portuguese-Spanish Conference on Mathematics**, Vol. II (Portuguese) (Braga, 1987), 274--289, Univ. Minho, Braga, 1987. (CC # 1 139 171) (with A. Leal Duarte) (MR # 1139171)