

CURRICULUM VITAE

José Félix Gomes da Costa

2020

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1 SYNOPSIS

I am 61 years old (March 19).

I have the BSc and MSc in Physics, the MSc in Applied Mathematics, the PhD in Mathematics, and the Aggregation (Habilitation) in Computer Science.

I worked as teacher for three years in a high school and as teacher and researcher for thirty and seven years in public universities.

I have an interdisciplinary background and practice that with difficulty can be found in somebody else, as my cv demonstrates. Although centered in computability and complexity, I have been publishing in the areas of algebraic methods (category theory), analog computation (analysis and differential equations), computability (recursion theory), complexity (computational and structural complexity), and the philosophy of science, besides other areas such as soft computing where the knowledge of Biology or Physics is required. I have published about one hundred research papers covering all those subjects.

Current research interests: Algorithmic scientific inference; Computability; Complexity; Foundations of physics; Philosophy of science.

I lectured in a broad range of disciplines: Computability and Complexity, Algebraic Methods in Computer Science, History and Philosophy of Science, and Mathematical Physics. I often received the certificate of excelency in teaching.

I organized Workshops and Conferences, namely in the fields of Physics and Computation and Unconventional Computing.

I was head of department twice, and I was engaged in several management duties and responsibilities.

2 SHORT BIOGRAPHY

PLACE OF WORK

Instituto Superior Técnico (University of Lisbon)
Department of Mathematics (5th floor, Room 5.24)
Avenida Rovisco Pais 1
1049-001 Lisboa

Phone: +351 21 841 71 45

Telefax: +351 21 841 75 98

E-mail: fgc@math.tecnico.ulisboa.pt

WEB: <http://fgc.math.ist.utl.pt/jfc.htm>

ORCID ID: <http://orcid.org/0000-0002-0345-9904> (Scopus Author ID: 24586970200)

MathSciNet: **344499**

WEB OF SCIENCE <http://www.researcherid.com/rid/K-5551-2015>

zbMATH (Author-ID): [costa.jose-felix](#)

h-index (Google Scholar): **23**

ADVISORS

PhD in Mathematics under the guidance of Amílcar dos Santos Costa Sernadas (Theoretical Computer Science).

MSc in Applied Mathematics under the guidance of Amílcar dos Santos Costa Sernadas (Theoretical Computer Science).

MSc in Physics under the guidance of Luís Alberto Mendes Vítor (Geophysics) and João Andrade e Silva (History of Science).

ACADEMIC DEGREES AND UNIVERSITY TITLES

Aggregation in Theoretical Computer Science, University of Lisbon, Faculty of Sciences, Department of Informatics, March 1995.

PhD in Mathematics, Instituto Superior Técnico, Department of Mathematics, January 1992 (Summa cum laude).

MSc in Applied Mathematics, Instituto Superior Técnico, Department of Mathematics, March 1990 (First class honours).

MSc in Physics, University of Azores, Department of Geosciences, February 1986 (First class honours).

Graduation in Physics (five years), University of Lisbon, Faculty of Sciences, November 1982 (Eighteen points in twenty).

Bachelor's degree in Physics (three years), University of Lisbon, Faculty of Sciences, September 1980 (Seventeen points in twenty).

Admission to the University (Mathematics and Physics), June 1977 (Nineteen. five points in twenty).

Highschool Education, Liceu Normal de Pedro Nunes, June 1976 (Eighteen points in twenty).

SCHOOL ATTENDANCE

Attendance of the Advanced School on the Algebraic, Logical and Categorical Foundations of Concurrency, Gargnano del Garda, October 1991.

SCHOLARSHIP

Research scholarship granted by FCT (Foundation for the Science and Technology), in the second term of the school year 2007/08.

Research scholarship granted by FCT (Foundation for the Science and Technology), in the second term of the school year 1996/97.

MILITARY SERVICE

He has served in the Anti-aircraft Artillery from the 16th of August of 1983 to the 16th of December of 1984. He was awarded a praise.

ACADEMIC CATEGORY

To this date he has completed 38 years of civil service in Portugal (about two years in a secondary state school and a private secondary school, and thirty and six years in the university).

Associate professor since 1993, with aggregation since 1995.

He was admitted to the contest for Full Professor (University of Lisbon, Instituto Superior Técnico) in July 2005, December 2010, April 2011, November 2015, and April 2019.

DETAILED ACADEMIC POSITIONS

Associate Professor, University of Lisbon, Instituto Superior Técnico, Department of Mathematics, since the 1st of October 1999.

Associate Professor, University of Lisbon, Faculty of Sciences, Department of Informatics, from the 29th of June 1993 to the 30th of September 1999.

Assistant Professor, University of Lisbon, School of Economics, Department of Mathematics, from the 1st of March to the 29th of June 1993.

Assistant Professor, University of Lisbon, Instituto Superior Técnico, Department of Mathematics, from the 17th of January 1992 to the 28th of February 1993.

Assistant, University of Lisbon, Instituto Superior Técnico, Department of Mathematics, from 1st October of 1987 to the 16th of January 1992.

Assistant, University of Azores, Department of Geosciences, from the 4th of April 1983 to the 30th of September 1987.

TEMPORARY POSITIONS

Professor of the Instituto Superior de Línguas e Administração (ISLA), Graduation in Applied Mathematics, from the 1st October of 1993 to the 30th of September 1995 (under a protocol celebrated between ISLA and the Faculty of Sciences).

Highschool temporary teacher, Escola Secundária da Cidade Universitária, school years 1980/81 and 1982/83 and Externato Marquês de Pombal in the school year 1981/82.

VISITING PROFESSOR

University of Wales Swansea, School of Physical Sciences, from the 1st of February of 2008 to the 30st of September of 2009.

SCIENTIFIC PRIZES

Honorable Mention in the Scientific Prize of IBM 1992, awarded by the Company IBM Portuguesa, SA, to the work “A Calculus of Activities and Transactions”.

Prize Descartes 1992, awarded by the Institute of Informatics of the Ministry of Finance to the work “Specification of Objects with Diagrams: OBLOG Approach” (in collaboration with Amílcar Sernadas and Cristina Sernadas).

HONOURS

Honorary Medal, for services rendered, awarded by the Faculty of Sciences, University of Lisbon, commemorative of its 90th anniversary (in December 2001).

Honorary Certificate (awarded by the students) for directing the process of graduation in Informatics of the Faculty of Sciences, University of Lisbon, June 2000.

AFFILIATION

Member of the *Sociedade Portuguesa de Matemática*.

3 TEACHING

I taught a wide range of subjects with varied syllabi, covering the most diverse thematic areas of Mathematics and Computer Science. I have received quite often the mention of excelency in teaching along four decades. Most of the following lectured courses were coordinated by me:

Algebraic Elements of Programming, BSc (1991/93).

Complexity, BSc and PhD (1998/99 and 2010/11).

~~Current~~Computability and Complexity, BSc, MSc, and PhD (2001/02, 2003/07 and 2009/20).

~~Current~~Computability and Complexity of Learning, MSc and PhD (2013/15 and 2016/20).

Concurrent Processes, BSc (2001/02).

Data Structures and Algorithms, BSc (1988/90).

Differential Geometry, BSc (1984/85).

~~Current~~Discrete Mathematics, BSc (2013/20).

Formal Specifications, BSc (1991/92).

Functional Programming, BSc and MSc (1994/95).

History of Mathematics, BSc (1985/86).

Imperative Programming, BSc (1987/90, 1992/93 and 1994/98).

Introduction to Physics and Chemistry, BSc (1984/87).

Languages and Paradigms of Programming, BSc (1993/94).

Logical and Algebraic Elements of Programming, BSc (1989/90).

Logical Foundations of Programming, BSc (1990/91).

Mathematical-Physics, BSc (1983/85).

New Paradigms of Computation, BSc, MSc and PhD (2001/02, 2003/06 and 2009/11).

Neurocomputation, MSc (1994/99).

Neurodynamics, MSc (1994/96).

Programming in Logic and Functional Programming, BSc (1990/91).

Seismology, BSc (1985/87).

Syntax and Semantics of Languages, BSc (1999/01 and 2000/01).

Theory of Computation, BSc (1989/90, 1994/98 and 1999/00 and 2009/12).

OTHER COURSES

Intensive Course on Neuronal Computers, COCITE, June / July 1996.

Intensive Course on Neuronal Computers, Faculty of Sciences, University of Lisbon, from 13th to 17th May 1996.

Object-oriented Specification with OBLOG, University of Lund, Sweden, June 1992.

OBLOG: Development of Systems with Objects, INESC, carried out in October 1991.

OBLOG: Development of Systems with Objects, INESC, carried out in January 1990.

OBLOG: Development of Systems with Objects, INESC, carried out in July 1989.

IMPLEMENTED CURRICULA PROPOSALS

Proposal [3] below was a great achievement for it opened the way to joint ventures between the Faculties of the University of Lisbon. Today, such BSc courses still exist running in the University of Lisbon.

[4]Proponent of a new Graduation in Applied Mathematics in the Instituto Superior de Línguas e Administração (ISLA, 1995).

[3]Proposal for the BSc in Language and Knowledge Engineering, combined project of the Departments of Informatics and Mathematics of the Faculty of Sciences and of the Department of General and Romanic Linguistics of the Faculty of Humanities (December 1993). Proponents were Fernando Ferreira, Inês Duarte, Isabel Hub Faria, José Félix Costa, José Luiz Fiadeiro, and Margarita Ramalho.

[2]Proposal for a MSc in Informatics and Education, combined project of the Departments of Education and Informatics of the Faculty of Sciences, with the collaboration of the Department of General and Romanic Linguistics of the Faculty of Humanities (December 1993). Proponents were José Félix Costa, José Luiz Fiadeiro, José Pedro da Ponte, Maria Odete Valente, and Pedro Veiga.

[1]Proposal for MSc in Informatics, a project of the Department of Informatics of the Faculty of Sciences (December 1993). Proponents were José Félix Costa, José Luiz Fiadeiro, and Pedro Veiga.

AS ADVISOR

POST-DOC RESEARCHERS

[44]Danilo Montesi. Project: “Foundations and Applications of Object-oriented Rule Languages for Database Systems”, Programme of Research of INESC/FCUL, from October 1993 to April 1994.

ADVISOR OF PhD STUDENTS

[43]Luís Miguel Pacheco Mendes Gomes. Dissertation: “Applications of Real Recursive Infinite Limits”, PhD in Informatics (branch Theory of Computation), University of the Azores, 2007.

[42]Hélia Marília Ferreira Guerra. Dissertation: “Teoria Algébrica de Processos Sequenciais com Requisitos de Animação”, PhD in Informatics (branch “Theory of Computation”), University of the Azores, 2004.

[41]João Pedro Guerreiro Neto. Dissertation: “Construção Modular de Redes Neurais Recorrentes Analógicas”, PhD in Informatics, Faculty of Sciences, University of Lisbon, 2002. (Co-advisor Helder Coelho.)

[40]Manuel Lameiras de Figueiredo Campagnolo. Dissertation: “Computational Complexity of Real Valued Recursive Functions and Analog Circuits”, PhD in Mathematics, IST Instituto Superior Técnico, University of Lisbon, 2002. (Co-advisor Cristopher Moore.)

INFORMAL ADVISOR OF PhD AND MSc STUDENTS

These two researchers worked with me towards their dissertations, although they were formally enrolled and advised (at that time) in another University.

[39]Paulo Fernando Blauth Menezes. Dissertation: “Reificação de Objectos Concorrentes”, PhD in Mathematics, Instituto Superior Técnico, University of Lisbon, 1997.

[38]Maria Antónia Bacelar da Costa Lopes. Dissertation: “Herança na Especificação OBLOG: Um Sistema Correcto e Adequado de Reescrita do Comportamento”, MSc in Applied Mathematics, Instituto Superior Técnico, University of Lisbon, 1993.

ADVISOR OF MSc STUDENTS

[37]Bruno Miguel Carrajola Patrício. Dissertation: “Automated Search of Functions and Synthesis of Programs”, MSc in Applied Mathematics, IST Instituto Superior Técnico, Universidade de Lisboa, 2019.

[36]Vasco Boavida de Brito. Dissertation: “The Power of Unreliability in Analogue-Digital Computation”, MSc in Applied Mathematics, IST Instituto Superior Técnico, Universidade de Lisboa, 2017.

[35]João Alves Alírio. Dissertation: “Scatter machines in bounded space”, MSc in Applied Mathematics, IST Instituto Superior Técnico, Universidade de Lisboa, 2017.

[34]Martim Cortez de Lobão. Dissertation: “Identifying Empirical Laws”, MSc in Applied Mathematics, IST Instituto Superior Técnico, Universidade de Lisboa, 2016.

[33]Pedro Cortez Rodrigues. Dissertation: “BPP//log* (Random Walks as Oracles)”, MSc in Applied Mathematics, IST Instituto Superior Técnico, Universidade de Lisboa, 2015.

[32]Tânia Filipa Nascimento Ambaram. Dissertation: “Theory of two-sided experiments (A new insight on measurable numbers)”, MSc in Applied Mathematics, IST Instituto Superior Técnico, Universidade de Lisboa, 2014.

[31]Diogo Miguel Ferreira Poças. Dissertation: “Complexity with costing and stochastic oracles”, MSc in Applied Mathematics, IST Instituto Superior Técnico, University of Lisbon, 2013.

[30]Raimundo Coelho Leong. Dissertation: “Positive relativizations of $P = NP$ and $P \neq NP$ in the ARNN model”, MSc in Applied Mathematics, IST Instituto Superior Técnico, University of Lisbon, 2010.

[29]Bruno Serra Loff Barreto. Dissertation: “Physics, Computation, and Definability”, MSc in Informatics, IST Instituto Superior Técnico, University of Lisbon, 2007.

[28]José Daniel Dias Pacheco. Dissertation: “Computational Power of Killers and Helpers in the Immune System”, MSc in Informatics, Faculty of Sciences, University of Lisbon, 2004.

[27]Daniel da Silva Graça. Dissertation: “The Analog Purpose Analog Computer and Recursive Functions over the Reals”, MSc in Mathematics, IST Instituto Superior Técnico, University of Lisbon, 2002.

[26]Francisco Cipriano da Cunha Martins. Dissertation: “Computação em Redes Idiotípicas, MSc in Informatics”, University of Azores, 2000.

[25]Pedro Miguel de Andrade Rodrigues. Dissertation: “Verificação de Propriedades em Redes Neurais”, MSc in Informatics, Faculty of Sciences, University of Lisbon, 2000.

[24]Sara Guilherme Oliveira da Silva. Dissertation: “Previsão da Estrutura Secundária de Proteínas Utilizando Redes Neurais”, MSc in Informatics, Faculty of Sciences, University of Lisbon, 1999. (Co-advisor: Pedro Silva.)

[23]Sérgio Moura Santana. Dissertation: “Computação Analógica em NetWay”, MSc in Informatics, Faculty of Sciences, University of Lisbon, 1997.

[22]João António de Oliveira Maçãs. Dissertation: “Computação no Limiar do Eu — Um Novo Algoritmo Evolutivo”, MSc in Informatics, Faculty of Sciences, University of Lisbon, 1997.

[21]Hélia Marília Goulart Ferreira de Oliveira Guerra. Dissertation: “Poder Computacional das Redes Neurais”, MSc in Informatics, Faculty of Sciences, University of Lisbon, 1997.

DIPLOMA THESIS (ENDED WITH BOLONHA TREATY)

[20]Alexandre Paulo Lourenço Francisco. Dissertation: “Finite Automata over Continuous-time”, Graduation in Applied Mathematics and Computation, Instituto Superior Técnico, University of Lisbon, June 2002.

[19]Ricardo Joel Marques dos Santos Silva. Dissertation: “On the Computational Power of Sigmoidal Neural Networks”, Graduation in Applied Mathematics and Computation, Instituto Superior Técnico, University of Lisbon, June 2002.

[18]Luís Calhorda Cruz-Filipe. Dissertation: “ λ -calculus and Beyond”, Graduation in Applied Mathematics and Computation, Instituto Superior Técnico, University of Lisbon, June 2001.

[17]Sara Guilherme Oliveira da Silva. Dissertation: “Arquitecturas de Ressonância Aplicadas na Classificação de Imagens de Satélite”, Graduation in Informatics, Faculdade de Ciências, University of Lisbon, September 1995.

[16]Rui Jorge Soares da Silva Bastos. Dissertation: “Computação Associativa Aplicada à Emergência de Conceitos”, Graduation in Informatics, Faculdade de Ciências, University of Lisbon, September 1995.

[15]Jaime Alexandre dos Santos Rodrigues. Dissertation: “Experimentação em Algorítmica Genética”, Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração, June 1995.

[14]Carla Alexandra Félix Silva. Dissertation: “Verificação de Propriedades Temporais”, Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração, July 1994.

[13]João António de Oliveira Maçãs. Dissertation: “Máquinas Abstractas e Programação”, Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração, July 1994.

[12]Luís Miguel Pacheco Mendes Gomes. Dissertation: “Through the Looking Glass”, Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração, July 1994.

[11]Nuno Gonçalo Gaspar dos Santos Guarda. Dissertation: “a-Life: Vida Artificial”, Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração, July 1994.

[10]Pedro Manuel Valério Vília. Dissertation: “Sistemas Auto-replicadores”, Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração, July 1994.

[09]Mário Jorge Alexandre Arrais. Dissertation: “Cálculo- μ ”, Graduation in Applied Mathematics and Computation, Instituto Superior Técnico, University of Lisbon, July 1993.

[08]Rosa Maria Mimoso. Dissertation: “Model-Checking: Composicionalidade”, Graduation in Applied Mathematics and Computation, Instituto Superior Técnico, University of Lisbon, July 1993.

[07]Sofia Maria Figueiredo Cardoso. Dissertation: “Model Checking: Verificação de Propriedades Temporais de Diagramas de Comportamento”, Graduation in Applied Mathematics and Computation, Instituto Superior Técnico, University of Lisbon, July 1993.

TUTOR

[06]Gabriel Matos, project on Machine Learning “An Exhaustive Algorithm for Minimum State Automaton Identification”, 2017.

[05]Gilberto Silva, project “Collider machine experiment simulator”, 2017.

[04]Sérgio Daniel Gonçalves Melo Pequito, project “The Perceptron”, 2007.

[03]Teresa Alves de Matos, project “Mathematics in Ancient Egypt”, 2007.

[02]António Reis, scholarship holder of the programme “Novos Talentos da Matemática” of the Fundação Calouste Gulbenkian, 2006.

[01]Ricardo Gonçalves Rodrigues, scholarship holder of the programme “Novos Talentos da Matemática” of the Fundação Calouste Gulbenkian, 2000.

IST / UNIV. LISBOA

4 RESEARCH

FUNDED RESEARCH PROJECT

Coordinator of the Project COMBINA (Computational Structure of Biological Metaphors), financed by JNICT (PBIC/C/TIT/2527/95), started on the 1st of December 1995 and extended to the 30th of November 2001. Joint project of the Department of Informatics, Faculty of Sciences, and the Faculties of Psychology and Medicine, University of Lisbon.

FUNDED RESEARCH IN WHICH HE TOOK PART

Researcher of the Project IDD (Inter-operationality of Deductive Data Bases), financed by JNICT (PBIC/C/TIT/1227/92), started in January 1993 and completed in December 1995.

Chief of the work 3087, OBLOG – ESDI, from the 1st of April to the 31th of December 1992, connected with the contract Espírito Santo Data Informática / INESC.

Researcher of the Project FAC3 (Algebraic and Categorical Foundations of Computer Science), started in September 1990 and completed in September 1992. Joint project of the Groups of Engineering in Logic and of Computer Science of INESC and the University of Minho, financed by JNICT (PMCT/C/TIT/178/90). Activity in the area of the mathematical foundations of computer science.

Researcher of the Project IS-CORE (Information Systems Correctness and Reusability). The project IS-CORE started in March 1989 and finished in September 1992. It originated in the programme ESPRIT II (ESPRIT BRA 3023), with the aim of studying the theoretical and methodological foundations of the conception and development of correct and reusable information systems. Apart from the INESC, it included the participation of the Universities of Braunschweig, of Hannover, of London, and of Tilburg.

MEMBER OF RESEARCH UNITS

Researcher of CFCUL, *Center for the Philosophy of Science of the University of Lisbon*, Faculty of Sciences, University of Lisbon, since January 2016.

Researcher of CMAF, *Center of Mathematics and Fundamental Applications* (Line 2: Logic), Faculty of Sciences, University of Lisbon, from January 2006 to December 2014.

Researcher of LabMAg, *Laboratory of Agent Modelling*, Faculty of Sciences, University of Lisbon, from January 2004 to December 2005.

Researcher of LabMAC, *Laboratory of Models and Computational Architectures*, Faculty of Sciences, University of Lisbon, from January 1999 to December 2003, of which he was a founding member, and responsible for Line 1: *From Sub-symbolic to Symbolic Computation*.

Researcher of the *Complexity Sciences Center*, Faculty of Sciences, University of Lisbon, from January 1996 to December 2005, of which I am a founding member.

Researcher of the *Institute of Theoretical and Computational Linguistics (ILTEC)*, from January 1994 to December 1995.

Researcher of the *Group of Engineering in Logic*, INESC, from October 1992 to December 1993.

Researcher of the *Group of Computation Science: Logical and Algebraic Foundations of Programming*, INESC, from October 1987 to October 1992.

Researcher of the *Center of Volcanology of the National Institute of Scientific Research (INIC)*, from the 26th February 1986 to the 30th September 1987.

EDITION

EDITORIAL BOARD

Member of the editorial board of the *International Journal of Unconventional Computing* since March 2011 (Q2 in Computer Science (miscellaneous), SJR 2017 0.23, Journal Impact Factor 1.022).

JOURNAL ISSUES

[ED-AMC-03]Cristian S. Calude, José Félix Costa, and Hélia Guerra (Guest Editors). Special Issue «Towards a computational interpretation of physical theories», *Applied Mathematics and Computation*, Volume 219, Issue 1, Elsevier, September 15, 2012.

[ED-NC-03]José Félix Costa and Nachum Dershowitz (Guest Editors). Special Issue on Unconventional Computation, *Natural Computing*, Volume 10, Issue 4, Springer, December, 2011.

[ED-IJUC-01]Cristian S. Calude and José Félix Costa (Guest Editors). Special Issue on Physics and Computation, *International Journal of Unconventional Computing*, Volume 7, Issue 5, Old City Publishing Science Journals, September/October 2011.

[ED-NC-02]Cristian S. Calude and José Félix Costa (Guest Editors). Special Issue on Unconventional Computing, *Natural Computing*, Volume 9, Issue 4, Springer, December, 2009.

[ED-AMC-02]Cristian S. Calude and José Félix Costa (Guest Editors). Special Issue on Physics and Computation, *Applied Mathematics and Computation*, Volume 215, Issue 4, Elsevier, October 15, 2009.

[ED-NC-01]Cristian S. Calude and José Félix Costa (Guest Editors). Special Issue on Physics and Computation, *Natural Computing*, Volume 8, Issue 3, Springer, September 2009.

[ED-AMC-01]Francisco António Dória and José Félix Costa (Guest Editors). Special Issue on Hypercomputation, Applied Mathematics and Computation, Volume 178, Issue 1, Elsevier, July 1, 2006.

PROCEEDINGS

[LNCS-ED-02]Cristian S. Calude, José Félix Costa, Nachum Dershowitz, Elisabete Freire, and Grzegorz Rozenberg, editors of Lecture Notes in Computer Science, Volume 5715, Unconventional Computation, 8th International Conference, UC 2009, Ponta Delgada, Azores, Portugal, September 7–11, Springer, 2009.

[LNCS-ED-01]Cristian S. Calude, José Félix Costa, Rudolf Freund, Marion Oswald, and Grzegorz Rozenberg, editors of Lecture Notes in Computer Science, Volume 5204, Unconventional Computation, 7th International Conference, UC 2008, Vienna, Austria, August 25–28, Springer, 2008.

REVIEWS

REVIEW ARTICLES

[REVIEW-01]Edwin Beggs, José Félix Costa, and John V. Tucker. “Physical experiments as oracles”, Bulletin of the European Association for Theoretical Computer Science, 97:137–151, February 2009.

REVIEWS (FOR THE AMERICAN MATHEMATICAL SOCIETY)

[AMS-10]“The straight line complexity of small factorials and primorials”, by Klas Markström, Integers 15 (2015), Paper No. A6, 8 pp., 2015.

[AMS-09]“The power of nondeterminism in self-assembly”, by Nathaniel Bryans, Ehsan Chiniforooshan, David Doty, Lila Kari, and Shinnosuke Seki, Theory of Computing 9(1):1–29, 2013.

[AMS-08]“Unconventional complexity measures for unconventional computers”, by Ed Blakey, Natural Computing 10: 1245–1259, 2011.

[AMS-07]“The Extended Analog Computer and Functions Computable in a Digital Sense”, by Monika Piekarz, Acta Cybernetica, 19:749–764, 2010.

[AMS-06]“Descriptive Complexity of Splicing Systems”, by Remco Loos, Andreas Malcher, and Detlef Wotschke, International Journal of Foundations of Computer Science, 19(4): 813–826, World Scientific Publishing Company, 2008.

[AMS-05]“The computational complexity of one-dimensional sandpiles”, by Peter Bro Miltersen, Theory of Computing Systems, 41:119–125, 2007.

[AMS-04]“Membrane computing and complexity theory: a characterization of PSPACE”, by Petr Sosík and Alfonso Rodríguez-Patón, J. Comput. Systems Sci., 73:137–152, 2007.

[AMS-03]“Super-recursive Algorithms”, by Marc Burgin, Monographs in Computer Science, Springer, 2005.

[AMS-02]“Low complexity classes of multidimensional cellular automata”, by Véronique Terrier, Theoretical Computer Science, 69:142–156, 2006.

[AMS-01]“Three simulations of Turing machines with the use of real recursive functions”, by Monika Piekarz, Ann. Univ. Mariae Curie-Skłodowska Sect. AI Inform., 2:101–114, 2004.

BOOKS AND TEXTS PUBLISHED

BOOKS

[B-03]“Matemática Discreta” by José Félix Costa and Paula Gouveia, ISTPress, January 2019, 710 pp.

[B-02]“Génese da Revolução Astronómica” by José Félix Costa, Escolar Editora, 2000.

[B-01]“FÍSICA”, Addison-Wesley, 1999, 936 pp, coordinator of the Portuguese version of PHYSICS by Marcelo Alonso and Edward J. Finn, PHYSICS, Addison-Wesley, 1998.

TEXTS FOR THE STUDENTS

[T-03]“Formal Specifications” by José Félix Costa, Amílcar Sernadas, and Cristina Sernadas, Graduation Course in Applied Mathematics and Computation, Instituto Superior Técnico, 1992.

[T-02]“Algebraic Aspects of Programming” by Amílcar Sernadas and José Félix Costa, Graduation Course in Informatics Engineering and Computers, Instituto Superior Técnico, 1991.

[T-01]“Logic and Functional Programming” by José Luiz Fiadeiro and José Félix Costa, Graduation Course in Informatics Engineering and Computers, Instituto Superior Técnico, 1990.

PAPERS PUBLISHED (WITH REFEREEING)

ORIGINAL PAPERS IN BOOKS

[BOOK-07]Edwin Beggs, Pedro Cortez, José Félix Costa, and John V. Tucker. “A hierarchy for BPP//log* based on counting calls to an oracle”, in Andrew Adamatzky (editor):

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NATIONAL INVITED LECTURES (SHORT SELECTION)

Special session on the Turing centennial, organized by Academia das Ciências de Lisboa, November 8, 2012. **Title:** “O cientista como algoritmo”.

Colóquio do Centro de Matemática da Universidade do Minho, Anfiteatro da Escola de Ciências, Campus de Gualtar, May 23, 2012. **Title:** “O cientista como algoritmo”.

Workshop of the Project FAC³, Braga, September 7-8, 1992. **Title:** “Object Interaction”.

SPEAKER IN CONFERENCES AND WORKSHOPS (SELECTION)

CiE 2010, 6th International Conference Computability in Europe 2010: Programs, Proofs, Processes, CiE 2010, Ponta Delgada, June 30 – July 4, 2010. **Title:** “Comparing Complexity Classes Relative to Physical Oracles”.

Workshop Infinity 2010, Infinite and Infinitesimal in Mathematics, Computing and Natural Sciences, Università della Calabria, Cetraro, Italy, May 17–21, 2010. **Title:** “Potential Infinity... Not Accessible”.

Studia Logica International Conference on Logic and the Foundations of Physics: space, time and the quanta – TRENDS VI, Belgium, Brussels, December 11–12, 2008. **Title:** “Quanta in Classical Mechanics: Uncertainty in Space, Time, Energy”.

UC 2008, 7th International Conference on Unconventional Computation, Vienna, Austria, August 25–28, 2008. **Title:** “Oracles and Advice as Measurements”.

UC 2007, 6th International Conference on Unconventional Computation, Queen's University, Kingston, Ontario, August 13–17, 2007. **Title:** “The Abstract Immune System Algorithm”.

UC 2006, 5th International Conference on Unconventional Computation, University of York, UK, September 4–8, 2006. **Title:** “The Euclid Abstract Machine: Trisection of the Angle and the Halting Problem”.

CiE 2006, Computability in Europe 2006: Logical Approaches to Computational Barriers, University of Swansea, from the 30th of June to the 5th of July 2006. **Title:** “The Conjecture $P \leftrightarrow NP$ Given by Some Analytic Condition”.

SEMINARS (SHORT SELECTION)

INTERNATIONAL

Department of Computer Science of the University of Leicester, May 23, 2008. **Title:** “Oracles and Advices as Measurements in Physics”.

Department of Computer Science of the University of Sheffield, May 22, 2008. **Title:** “The Semantic Collider: Computing with a Dynamic Experiment”.

Department of Pure Mathematics of the University of Leeds, May 21, 2008. **Title:** “Oracles and Advices as Measurements in Physics”.

Department of Computer Science of the University of Swansea, May 8, 2008. **Title:** “A Foundation for Real Recursive Function Theory”.

Department of Computer Science of the University of Leicester, 11th of April 2008. **Title:** “A Foundation for Real Recursive Function Theory”.

Department of Computer Science of the University of West England (UWE), Bristol, April 11, 2008. **Title:** “A Foundation for Real Recursive Function Theory”.

Institut National Polytechnique de Lorraine, Nancy, December 8, 2006. **Title:** “Recursion Over the Reals”.

Department of Pure Mathematics, University of Leeds, September 13, 2006. **Title:** “A Kleene's Theory of Real Valued Functions”.

Oxford University Computing Laboratory, Oxford, UK, September 2004. **Title:** “Non Standard Methods in Structural Complexity”.

Department of Mathematics, University of Maria Curie – Skłodowska, Lublin, Poland, June, 2004. **Title:** “Analog Computation and Beyond”.

Computational Logic Seminar, Institute for Logic, Language and Computation, University of Amsterdam, Netherlands, February 2001. **Title:** “Analog Computation in Continuous Time”.

Computer Science Colloquium, Department of Mathematics, Tel Aviv University, Israel, Novembro de 2001. **Title:** “Analog Computation in Continuous Time”.

Department of Computer Science, University of Genoa, July 1992. **Title:** “Object Inheritance Beyond Subtyping”.

University of Lund, June 1992. **Title:** “Object-oriented Specification with OBLOG”.

Gesellschaft für Mathematik und Datenverarbeitung (GMD), March 1992. **Title:** “Object Interaction”.

Department of Computer Science, University of Pisa, February 1992. **Title:** “Action Refinement is an n -Natural Transformation”.

Oxford University Computing Laboratory, Oxford, UK, September 1991. **Title:** “Objects as non-sequential machines”.

Advanced School on the Algebraic Logical and Categorical Foundations of Concurrency, Gargnano del Garda, October 1991. **Title:** “Live CSP”.

NATIONAL

CMAF Mathematical Logic Seminar, May 2012. **Title:** “A Mathematical Logic Introduction to the Philosophy of Science. Part II: ... And if the laws of nature turn to be non-computable?”

CMAF Mathematical Logic Seminar, April 2012. **Title:** “A Mathematical Logic Introduction to the Philosophy of Science. Part I: Learning a Law of Nature”.

Logic and Computation Seminar, Department of Mathematics, New University of Lisbon, January 2010. **Title:** “Computable Scientists, Uncomputable World”.

Centro da Filosofia das Ciências da Universidade de Lisboa, Seminário Permanente de Filosofia da Ciência, March 2006. **Title:** “The Computing Universe”.

Department of Mathematics, University of Coimbra, March 2, 2006. **Title:** “A New Conceptual Framework for Analog Computation”.

CMAF Mathematical Logic Seminar, Complexo II, Faculty of Sciences, University of Lisbon, 2005. **Title:** “Real Recursive Functions: Ideas and Results”.

Opening Lesson of the School Year 1996/97, Department of Informatics, Faculty of Sciences, University of Lisbon, October 1996. **Title:** “Bio-informática”.

Seminar of Mathematical Logic, Instituto Superior Técnico, June 1996. **Title:** “Computação Neuronal (Análogica)”.

Instituto Superior Técnico, Technical University of Lisbon, December 1990. **Title:** “Process Models Within a Categorical Framework”.

WORKSHOPS AND CONFERENCES

STEERING COMMITTEE

Member of the Steering Committee of the *Workshop on Physics and Computation*, together with Časlav Brukner, Cristian S. Calude, Gregory Chaitin, and István Németi (for the events of 2008, 2009, 2010, and 2012).

CHAIR

General chair of the conference UC 2009, 8th International Conference on Unconventional Computation, Ponta Delgada, September 7–11, 2009.

Co-chair of the Programme Committee of the conference UC 2008, Seventh International Conference on Unconventional Computation, TU Vienna, Vienna, Austria, August 25–28, 2008.

WORKSHOP ORGANIZER

INTERNATIONAL

Co-organizer (together with Valentina Harizanov) the Special Session COMPUTABILITY of the Logic Colloquium 2013, University of Évora, Portugal, July 22–27, 2013.

Co-organizer (together with Cristian Calude, Walid Gomaa, Hélia Guerra, and Karl Svozil) the Third International Workshop on Physics and Computation, Egypt, August 30 – September 4, 2010.

Co-organizer (together with Cristian S. Calude) of the Workshop on Physics and Computation (Physics and Computation 2008), satellite event of the Conference UC 2008, August 25–28, 2008.

MEMBER OF PROGRAM COMMITTEE

INTERNATIONAL

Program Committee member of the 1st International Workshop on Biological, Chemical and Physical Computations (BCPC'15), part of the 2015 Federated Conference on Computer Science and Information Systems (FedCSIS), Lodz, Poland, September 13–16, 2015.

Conference UCNC 2014, Thirteenth International Conference on Unconventional Computation and Natural Computation, University of Western Ontario, London, Ontario, Canada, July 14–18, 2014.

2013 Symposium for Computing & Philosophy, University of Exeter (U.K.), April 2–5, 2013.

Conference UCNC 2013, Twelfth International Conference on Unconventional Computation and Natural Computation (previously called Unconventional Computation), Università degli Studi di Milano-Bicocca, Milano (Italy), July 1–5, 2013.

Conference UCNC 2012, Eleventh International Conference on Unconventional Computation and Natural Computation (previously called Unconventional Computation), LIFO, University of Orléans, Orléans, France, September 3–7, 2012.

International Workshop on Theoretical Computer Science Dedicated to Professor Cristian S. Calude's 60th Birthday, Auckland, New Zealand, February 21–24, 2012.

Conference UC 2011, Ninth International Conference on Unconventional Computation, FUNDIM Laboratory of the Mathematics Department, University of Turku, Finland, June 6–10, 2011.

ICALP 2010, 37th International Colloquium on Automata, Languages and Programming, Bordeaux, France, July 5–10, 2010.

Conference UC 2007, Sixth International Conference on Unconventional Computation, Queens University, Kingston, Ontario, August 13–17, 2007.

Conference IBERAMIA'98 – Sixth IberoAmerican Conference on Artificial Intelligence, Lisbon, October 5–9, 1998.

Conferences PARLE'92, PARLE'93 and PARLE'94 – Parallel Architectures and Languages, Paris, June 15–18 (1992), Munich, June 14–18 (1993) and Athens, June 13–17 (1994).

REFEREE

Reviewer of the American Mathematical Society.

INTERNATIONAL RESEARCH PROJECTS

Occasional referee of the Natural Sciences and Engineering Research Council of Canada (2008, 2018–19).

Occasional referee of the United States – Israel Binational Science Foundation (BSF), Regular Applications in Computer Science (2013).

JOURNALS

Acta Cybernetica; Applied Mathematics and Computation; Annals of Fuzzy Mathematics and Informatics; Artificial Intelligence; CHAOS: An Interdisciplinary Journal of Nonlinear Science; IEEE Transactions on Computers; Formal Aspects of Computing; International Journal of Foundations of Computer Science; International Journal of Unconventional Computation; Journal of the ACM; Journal of Computer and System Sciences; Journal of Symbolic Computation; Kairos; Mathematical Structures in Computer Science; Natural Computing; Physica D; Philosophies; Proceedings A of the Royal Society; Reports on Mathematical Logic; Synthèse; The Computer Journal; Theoretical Computer Science.

CONFERENCES

Computing in Europe, CiE 2006, CiE 2007, CiE 2008, CiE 2010; ICALP, in particular ICALP 2010, 37th International Colloquium on Automata, Languages and Programming; International Symposium on Autonomous Decentralized Systems; Mathematical Foundations of Computer Science, MFCS 2010; Parallel Architectures and Languages; Physics and Computation 2010, 2017; 2013 Symposium for Computing & Philosophy; Symposium on Theoretical Aspects of Computer Software; Unconventional Computation, UC 2007, UC 2008, UC 2009, UC 2011; Unconventional Computation and Natural Computation, UCNC 2012, UCNC 2013, UCNC 2014; Very Large Data Bases; Workshop on Biological, Chemical and Physical Computations (BCPC'15).

BOOKS

“Advances in Unconventional Computing Series”, Springer.

“The Once and Future Turing – Computing the World”, Edited by S. Barry Cooper and Andrew Hodges, Cambridge University Press, 2012.

JURIES (AGGREGATION, PHD, MSC)

I have been member of several juries of MSc, PhD, and Aggregation exams: One international exam of qualification to supervise PhD students (aggregation) in Nancy (France) and one such national exam (Évora); One international PhD exam in Nancy (France) and nineteen national exams (not including the exams of my own students); Seven MSc exams in Portugal (not including the exams of my own students). I was also member of several juries for the hiring of trainee assistants, assistants, auxiliary professors and associate professors, and of various panels for the hiring of technically skilled

personnel for Civil Service. The following list excludes the juries where my role was of advisor. It sums up to more than 50 juries.

AGGREGATION (AND QUALIFICATION TO SUPERVISE PhD STUDENTS)

INTERNATIONAL

[J-28]Oponent, Olivier Bournez, Institut National Polytechnique de Lorraine. (Dissertation entitled “Modèles continus. Calculs. Algorithmique distribuée”.) Villers-lès-Nancy, France, on the 7th of December 2006.

NATIONAL

[J-27]Member of the jury, Fernando José Gomes Moura Pires. Aggregation in Informatics. University of Évora, July 18–19, 2002.

ASSOCIATE PROFESSOR

[J-26]Member of the jury of the documental contest for the appointment to a vacancy for Associated Professor of Theory of Computation of the University of Azores, November 19, 2001.

PhD

INTERNATIONAL

[J-25]Oponent, Emmanuel Hainry (Docteur de L’Institut National Polytechnique de Lorraine), Institut National Polytechnique de Lorraine. (Dissertation entitled “Modèles de calcul sur les réels, résultats de comparaison”.) Villers-lès-Nancy, France, on the 7th of December 2006.

NATIONAL

[J-24]Member of the jury, David João Barros Henriques. (Dissertation entitled “Formal Reasoning About Temporal Properties in Dynamic Stochastic Systems – Exact and Approximate Procedures with Application”.) Instituto Superior Técnico, University of Lisbon, october, 2016.

[J-23]Member of the jury, Daniel da Silva Graça. (Dissertation entitled “Computabilidade com Equações Diferenciais Polinomiais”, PhD in Mathematics.) Instituto Superior Técnico, University of Lisbon, September 5, 2007.

[J-22]Oponent, Rogério Ventura Lages dos Santos Reis. (Dissertation entitled “Autómatos Finitos: Manipulação, Geração e Contagem”, PhD in Computer Science.) Oporto University, June 11, 2007.

[J-21]Oponent, Fábio Cunha Conde. (Dissertation entitled “Um Estudo Biometeorológico em São Paulo: Elaboração de um Índice de Risco Meteorológico (IRM) sobre a Morbidade por Doenças Respiratórias na Cidade de São Paulo”, PhD in Physics.) University of Évora, October 20, 2006.

[J-20]Oponent, Elisabete Maria da Silva Raposo Freire. (Dissertation entitled “Contributos para o Estudo da Semântica de Linguagens com Concorrência e Mobilidade”, PhD in Informatics, branch of Theory of Computation.) University of Azores, November 19, 2004.

[J-19]Oponent, Isabel Maria Oitavem Fonseca da Rocha. (Dissertation entitled “Classes of Computational Complexity: Implicit Characterizations”, a Study in Mathematical Logic, PhD in Mathematics, branch of Algebra, Logic, and Foundations.) Faculty of Sciences, University of Lisbon, July 5, 2001.

[J-18]Member of the jury, Paulo Alexandre Carreira Mateus. (Dissertation entitled “Interconexão de Sistemas Probabilísticos”, PhD in Mathematics). Instituto Superior Técnico, University of Lisbon, January 12, 2001.

[J-17]Member of the jury, António Maria Alarcão Ravara. (Dissertation entitled “Tipificação de Objectos Concorrentes não Uniformes”, PhD in Mathematics.) Instituto Superior Técnico, University of Lisbon, December 18, 2000.

[J-16]Member of the jury, Carlos Manuel Costa Lourenço Caleiro. (Dissertation entitled “Combinação de Lógicas”, PhD in Mathematics.) Instituto Superior Técnico, University of Lisbon, December 5, 2000.

[J-15]Member of the jury, Jaime Arsénio de Brito Ramos. (Dissertation entitled “The Situation and State Calculus: Specification and Verification”, PhD in Mathematics.) Instituto Superior Técnico, University of Lisbon, May 19, 2000.

[J-14]Oponent, Luís Manuel Marques da Costa Caires. (Dissertation entitled “A Model for Declarative Programming and Specification with Concurrency and Mobility”, PhD in Informatics, branch of Informatics.) Faculty of Sciences and Technology, New University of Lisbon, December 14, 1999.

[J-13]Oponent, Francisco José de Bettencourt Corrêa Guedes. (Dissertation entitled “Economia e Complexidade”, PhD in Economics.) Universidade Autónoma de Lisboa, November 3–4, 1999.

[J-12]Member of the jury, Maria Isabel Batalha Gama Nunes. (Dissertation entitled “Semântica de Programas Comportamentais”, PhD in Informatics.) Faculty of Sciences, University of Lisbon, June 1998.

[J-11]Reporting member of the jury for the appreciation of the request for equivalence to a PhD in Informatics, Carlos Eduardo Ramos dos Santos Lourenço. (Dissertation entitled “Control of Chaos and Information Processing in Neural Networks”, Université Libre de Bruxelles – Center for Nonlinear Phenomena and Complex Systems, June 1996.) Faculty of Sciences, University of Lisbon, March 1997.

[J-10]Reporting member of the jury for the appreciation of the request for equivalence to a PhD in Informatics, Joaquim Miguel Fernandes Lourenço. (Dissertation entitled “#Metodo Retroductivo Hibrido para Su Uso en Tecnicas de Prediccion (MEREHI)”, Facultad de Informatica, Universidad Politecnica de Madrid, February 1992.) Faculty of Sciences, University of Lisbon, April 1995.

[J-09]Reporting voter of the jury for the appreciation of the request for equivalence to a PhD in Informatics, Vasco Thudichum Vasconcelos. (Dissertation entitled “A Process-Calculus Approach to Typed Concurrent Objects”, Keio University, November 1994.) Faculty of Sciences and Technology, New University of Lisbon, 1995.

[J-08]Member of the jury, Maria da Graça de Figueiredo Rodrigues Gaspar. (Dissertation entitled “Modelação de Agentes Autónomos Inteligentes Integrados em Sociedade de Agentes”, PhD in Informatics.) Faculty of Sciences, University of Lisbon, December 1994.

MSc

[J-07]Oponent, Miguel Ângelo Nogueira Ferreira. (Dissertação entitled “Significant Classes of NFA and Their Random Generation”, MSc in Computer Science.) Faculty of Sciences, Oporto University, November 29, 2018.

[J-06]Oponent, Pedro Miguel Figueiredo Medas. (Dissertation entitled “Aplicações da Complexidade de Kolmogorov à Criptografia”, MSc in Computer Science.) Faculty of Sciences, Oporto University, September 12, 2002.

[J-05]Member of the jury, Francisco Manuel Gonçalves Coelho. (Dissertation entitled “Polinómios, Réguas e Compassos. Problemas de Decidibilidade e Computabilidade”, MSc in Mathematics, branch of Algebra.) Faculty of Sciences, University of Lisbon, January 1997.

[J-04]Oponent, Pedro Gabriel de Faria Barbosa de Almeida. (Dissertation entitled “Modelação de Processos Tectónicos por Autómatos Celulares”, MSc in Dynamic Geology.) Faculty of Sciences, University of Lisbon, September 1996.

[J-03]Oponent, Álvaro de Lemos César Anjo. (Dissertation entitled “Lógica para Verificação de Hardware”, MSc in Electrotechnical and Computer Engineering.) Instituto Superior Técnico, University of Lisbon, January 1996.

[J-02]President of the jury for the appreciation of the request for equivalence to a MSc in Informatics, Sérgio António Andrade de Freitas. (Dissertation entitled “Défictos e Anáforas Pronominais em Diálogos”, Instituto de Informática da Universidade Federal do Rio Grande do Sul, as a partial qualification to obtain a MSc in Computer Science.) Faculty of Sciences, University of Lisbon, November 1995.

[J-01]Reporting voter of the jury for the appreciation of the request for equivalence to a MSc in Informatics, Vítor Manuel Mendes Pacheco Moreira. (Dissertation entitled “Concurrent Objects with Local and Shared Databases”, MSc, Department of Computing, Imperial College of Science, Technology and Medicine.) University of Minho, 1992.

5 MANAGEMENT

HEAD OF DEPARTMENT

Head of the Department of Informatics (Faculty of Sciences), from the 16th of September 1997 to the 15th of September 1999.

Director of the Graduation in Applied Mathematics, Instituto Superior de Línguas e Administração (ISLA), from the 15th of June 1994 to the 14th of June 1995 (under a protocol between ISLA and the Faculty of Sciences).

MEMBER OF THE EXECUTIVE COMMISSION OF DEPARTMENT

Member of the Executive Commission of the Department of Informatics (Faculty of Sciences), from September 16, 1993, to September 15, 1995.

MEMBER OF ELECTORAL COMMISSION

Member of the Electoral Commission of the Scientific Council, composed of Professors Carlos Alberto de Matos Alves, Eduardo José de Frias Gonçalves Crespo, and José Félix Costa, October/December 1995 and October/December 1998.

MEMBER OF THE ASSEMBLY OF REPRESENTATIVES

Effective Member of the Assembly of Representatives, biennia 1994/96 (elected) and 1997/99 (inherent to the status of Head of Department).

MEMBER OF THE SCIENTIFIC COUNCIL

Representative of the Department of Informatics to the Coordination of the Scientific Council, from September 16, 1997, to September 15, 1999 (inherent to the status of Head of Department).

Proxy representative of the Department of Informatics to the Coordination of the Scientific Council, from November 18, 1993, to October 20, 1995.

OTHER ACTIVITY

Member of the Commission for the installation of the Central Library (Faculty of Sciences) in Campo Grande, February 1996.

Coordinator of the Unity of Applied Geophysics and Geodesia of the Department of Geoscience, University of Azores, February 26, 1986, to September 30, 1987.

MEMBER OF THE PEDAGOGICAL COUNCIL

Representative of the Department of Informatics (Faculty of Sciences) to the Pedagogical Council, from November 18, 1993, to October 20, 1995.

COORDINATOR OF MSc

Coordinator of the MSc in Informatics (Faculty of Sciences), editions 1994/96 and 1995/97; Coordinator of the MSc in Informatics and Education, edition 1994/96.

6 NOTES ON KNOWLEDGE TRANSFERAL

I did some work in popularizing science, namely I was editor of the collection «A Máquina do Mundo» of the Editorial Bizâncio until September 2007. I was lecturer of some courses on humanities and have delivered circa two hundred talks in popular science.

VOLUMES EDITED AND/OR REVISED (SELECTION)

[ED-19]“Física do Cristianismo”, Bizâncio 2007, edition and scientific review of the translation of “The Physics of Christianity” by Frank Tipler, 2007.

[ED-18]“Turing – Um romance sobre computação”, Bizâncio 2007, edition and scientific review of the translation of “Turing – A novel about computation” by Christos H. Papadimitriou, 2003.

[ED-17]“Mundos Paralelos, Uma viagem através da criação, dimensões superiores e o futuro do cosmos”, Bizâncio 2006, edition and review of the translation of “Parallel Worlds” by Michio Kaku, 2005.

[ED-16]“Impossibilidade: Os Limites da Ciência e a Ciência dos Limites”, Bizâncio 2005, edition and review of the translation of “Impossibility: The Limits of Science and the Science of Limits” by John Barrow, 1998.

[ED-15]“O Computador Universal: Matemáticos e as Origens do Computador”, Bizâncio 2004, edition and review of the translation of “The Universal Computer: Mathematicians and the Origin of the Computer” by Martin Davis, 2000.

[ED-14]“A Física da Imortalidade”, Bizâncio 2003, edition and review of the translation of “The Physics of Immortality: Modern Cosmology, God and the Resurrection of the Dead” by Frank Tipler, 1994.

[ED-13]“T. rex e a Cratera da Destruição”, Bizâncio 2000, edition of the translation of “T. rex and the Crater of Doom” by Walter Alvarez, 1997.

[ED-12]“Em Busca de Susy”, Bizâncio 2000, edition and review of the translation of “In Search of Susy” by John Gribbin, Princeton University Press, 1998.

[ED-11]“Mentes Artificiais”, Relógio d’Água 2000, review of the translation of “Artificial Minds” by Stanley P. Franklin, 1995.

[ED-10]“Os Símios Caçadores, Alimentação Carnívora e Origens do Comportamento Humano”, Bizâncio 2000, edition and review of the translation of “The Hunting Apes” by Craig Stanford, Princeton University Press, 1999.

[ED-09]“Prisões de Luz”, Bizâncio 2000, edition and review of the translation of “Prisons of Light: Black Holes” by Kitty Ferguson, Cambridge University Press, 1996.

[ED-08]“O Pequeno Livro da Ciência”, Bizâncio 1999, review of the translation of “The Little Book of Science” by John Gribbin, Penguin Books, 1999.

[ED-07]“O Quinteto de Cambridge”, Bizâncio 1999, edition and review of the translation of “The Cambridge Quintet” by John L. Casti, Perseus Books, 1999.

[ED-06]“A Lição Esquecida de Feynman: O Movimento dos Planetas em Torno do Sol”, Gradiva 1997, review, adaptation of the text and notes of the translation of “Feynman’s Lost Lecture, The Motion of Planets Around the Sun” by David L. Goodstein and Judith R. Goodstein, W. W. Norton & Company, 1996.

[ED-05]“Breve História do Tempo Ilustrada”, Gradiva 1996, review, adaptation and notes of the translation of “The Illustrated Brief History of Time” by S. Hawking, Bantam Books, 1996.

[ED-04]“Círculos Viciosos e Infinito”, Gradiva 1993, review and notes of the translation of “Vicious Circles and Infinity” by P. Hughes and G. Brecht.

[ED-03]“A Mão Esquerda da Criação”, Gradiva 1989, review, adaptation of the text and notes of the translation of “Left Hand of Creation” by J. Barrow and J. Silk.

[ED-02]“Breve História do Tempo”, Gradiva 1988, review, adaptation of the text and notes of the translation of “A Brief History of Time” by S. Hawking.

[ED-01]“Nascimento de uma Nova Física”, Gradiva 1988, review, adaptation of the text and notes of the translation of “The Birth of a New Physics” by I. Cohen.

ORGANIZATION OF EVENTS

I organised the Programme Ciência Viva 1999/2000, in the Department of Mathematics, Instituto Superior Técnico, Technical University of Lisbon, under the theme “Do Neurónio Biológico ao Neurónio Matemático”.

TALKS TO THE GENERAL PUBLIC (SELECTION)

POPULAR SCIENCE

History of Science, Universidade Sénior de Setúbal, 2009/14. One talk once a week for a full year. (Session titles not listed.)

History of Astronomy, Universidade Sénior de Setúbal, 2011/12. One talk once a week for a full year. (Session titles not listed.)

Cosmology, Universidade Sénior de Setúbal, 2007/08. One talk once a week for a full semester. (Session titles not listed.)

COSMOLOGY

Escola de Verão de Geometria: “100 anos de Relatividade Geral”, 13–17 de julho, 2015.
Title: “Porque é o céu escuro à noite?”

Conference, Biblioteca Municipal de Setúbal, June 20, 2012. **Title:** “Cosmologia e Religião”.

Observatório Astronómico de Lisboa, May 25, 2007. **Title:** “Newtonian Cosmology”.

Club Setubalense, April 12, 2007. **Title:** “As Concepções Clássicas do Universo e os Primeiros Passos da Revolução Científica”.

University of Azores, June 1985. **Title:** “Cosmologia Newtoniana”.

Planetário Calouste Gulbenkian (sponsored by Sociedade Portuguesa de Física), together with Máximo Ferreira, May 1982. **Title:** “Paradoxos Cosmológicos”.

HISTORY AND PHILOSOPHY OF SCIENCE

“Controvérsia Interdisciplinar na Génese da Computação Digital”, IV workshop of the thematic line “Unity of Science and Interdisciplinarity – Illustrative ID cases”, Faculty of Sciences, 2017.

Book presentation: “Entre o Conceito e a Imagem. O lugar da Psicanálise na obra de Gaston Bachelard” by Ana Gaspar, organized by Centro de Filosofia das Ciências da Universidade de Lisboa, Livraria Escolar Editora, Faculty of Sciences, May 14, 2010.

“Bachelard's Implicit Measurement Theory of Physical and Chemical Quantities”, Workshop “Bachelard: Conceitos & Imagens”, organized by Centro de Filosofia das Ciências da Universidade de Lisboa, May 14, 2010.

“Obsessão pela Ciência: O Caso de Maria Sklodowska”, Dia Internacional da Mulher, Organização de Palmira Santana, Auditório da Biblioteca Municipal de Setúbal, March 8, 2010.

“O Lugar da Imaginação em Ciência”, Workshop “Os lugares da Epistemologia e da Poética de Gaston Bachelard”, Centro da Filosofia das Ciências da Universidade de Lisboa, December 10, 2007.

“A Pré-ciência”, Workshop “Arte e Ciência como Criação: Em torno de Gaston Bachelard”, Centro da Filosofia das Ciências da Universidade de Lisboa, January 26, 2007.

“Physics and Computation: An essay on the unity of science through computation”, First Lisbon Colloquium for the Philosophy of Science, “The Unity of Science: Non-Traditional Approaches”, October 25–28, 2006.

“A Matemática no Antigo Egipto”, Escola Secundária Antero de Quental, Ponta Delgada, May 1986.

MATHEMATICS AND COMPUTER SCIENCE

“Física e Computação”, Seminário de Matemática, DMIST, October 2019. (Session of 1h.)

“Complexidade da Computação Híbrida (Analogico-Digital)”, EIM 2019 – Escola de Inverno de Matemática 2019, DMIST, February 6–8, 2019, Anfiteatro Abreu Faro. (Session of 1h.)

“Sessão 1: O Calendário: O Sol na Igreja” and “Sessão 2: O Calendário: A Heresia da Páscoa”, Universidade Sénior de Setúbal, VI Universidade de Verão, Auditório Maestro Rui Serôdio, June 26–27, 2019. (2 Sessions of 2h.)

“Segredos, sonhos e problemas do calendário: A matemática aplicada ao estudo do tempo”, Semana Raul Proença, Escola Secundária Raul Proença, April 2, 2019. (Session of 1h30.)

“Labirintos de Literatura & Ciência”, Biblioteca Gil Vicente, “À Conversa Com...” Ciclo Anual de Conferências, Escola Secundária de Gil Vicente, January 18, 2019. (Session of 1h30.)

“Os Labirintos”, PNL – Plano Nacional de Leitura, Teatro Thalia, November 25, 2018.

“Descoberta Automática das Leis Científicas”, Seminário de Matemática, IST, October 2018. (Session of 1h.)

“Os Labirintos”, NECT – Núcleo dos Estudantes Católicos do Técnico, July 2018. (Session of 1h.)

“Os Labirintos”, Escola Secundária de Raul Proença, February 5, 2018. (Session of 1h30.)

“Os Labirintos”, Escola Secundária de D. Pedro V, November 10, 2017. (Session of 1h.)

“Segredos do Calendário Gregoriano”, Seminário de Matemática, IST, October 2017. (Session of 1h.)

“Os Labirintos”, Seminário de Doutoramento em Filosofia da Ciência, Tecnologia, Arte e Sociedade, February 2017.

“Os Labirintos”, Seminário de Matemática, IST, October 2016.

“Física e Computação”, EIM – Escola de Inverno de Matemática 2016, DMIST, February 2016 (2 Sessions of 1h).

“Limites da Ciência e Ciência dos limites”, Seminário de Matemática, DMIST, September 2015 (1 Session of 1h).

“Coisas de Bruxas”, Escola de Verão em Matemática, Estatística e Computação, DMIST, 6–8 de julho, 2015 (1 Session of 1h).

“Teoria Matemática do Conhecimento”, EIM – Escola de Inverno de Matemática 2015, DMIST, February of 2015 (2 Sessions of 1h).

“Sensorium Dei – As regularidades e irregularidades dos céus”, Seminário de Matemática, DMIST, novembro de 2014 (1 Session of 1h).

“Gödelian Systems”, Panel “Kurt Gödel in Current Culture”, Livraria Almedina, June 2007.

“Bio-informática, Ir Mais Além... Benefícios e Malefícios da Manipulação do Genoma Humano”, Semana da Ciência e da Tecnologia, Câmara Municipal de Portalegre, November 2001.

“Aplicações da Matemática: A Biocomputação”, Sociedade Portuguesa de Matemática – Ano Mundial da Matemática (palestras do ano 2000), Escola Secundária Leal da Câmara, May 12, 2000.

“Que Porventura Podem Fazer os Computadores?”, Encontro AngraMat 2000, Universidade dos Açores (pólo da Ilha Terceira), May 2–3, 2000.

“Bio-informática”, Opening Lesson of the School Year 1996/97, Department of Informatics, Faculty of Sciences, University of Lisbon, October 1996.

“Geração dos Biocomputadores”, Virtual Week '95, Students' Union of the Faculty of Sciences, University of Lisbon, December 1995.

“Engenharia da Linguagem e do Conhecimento”, Open Day in Faculty of Sciences, University of Lisbon, October 1994.

“Engenharia da Linguagem e do Conhecimento”, Debate on “Learning Mathematics Today” (carried out by the Instituto da Inovação Educacional do Ministério da Educação), Institut Franco-Portugais, May 1994.

SCIENCE AND ART

“Neuroestética, Pode a ciência explicar a arte?”, Jornadas Pedagógicas da Escola Secundária D. Pedro V e Instituto dos Pupilos do Exército, Instituto dos Pupilos do Exército, February 22, 2019. (Session of 1h30.)

“Neuroaesthetics”, Associação “Casa Veva de Lima”, Regular Seminar Series 2012, January 25, 2012.

Book presentation: “Neuroaesthetics – Can Science Explain Art?”, edited by Olga Pombo, Sílvia di Marco, and Marco Pina, organized by Centro de Filosofia das Ciências da Universidade de Lisboa, Fábrica Braço de Prata, December 16, 2010.

“A Neurobiologia da Arte”, Seminar “Aproximações ao Conceito de Imagem XX”, organized by Centro de Filosofia das Ciências da Universidade de Lisboa, June 14, 2010.

“A Neurobiologia da Arte”, Sessão Inaugural AIA: “Artes, Ciências, Tecnologias”, September 21, 2009.

“A Quarta Dimensão na Arte”, Workshop “Caminhos da Complexidade: Ciência e Arte”, Arrábida, July 4–6, 2005.