

Curriculum vitae of : António Ornelas

updated May 2014

1. Personal data :

Full Name : António Costa de Ornelas Gonçalves

Name under which publishes : António Ornelas

Portuguese Fiscal ID number : 139 323 309

Portuguese Citizen ID document : 1 282 536

Portuguese Citizen Passport : M 526 479, valid until 14 Mar 2018

Birth date : 13 Aug 1951 in Lisbon, Portugal

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2. Academic degrees :

Year: 1977 (July)

Degree: Undergraduate Degree in Applied Mathematics

Final grade: 15

Degree granting institution: Universidade de Lisboa

School/College/Campus: Faculdade de Ciências

Thesis title: Simulation of a computer operating system using MIX language of D. E. Knuth

Supervisor: Amilcar Sernadas
Scientific area: Mathematics
Number of curricular years: 5
Program title: Undergraduate Degree in Applied Mathematics

Year: 1986 (October)
Degree: MAGISTER PHILOSOPHIAE in Mathematics
Final grade: Approved
Degree granting institution: SISSA (www.sissa.it), Trieste, Italy
Thesis title: Nonconvex Analysis
Supervisor: Arrigo Cellina
Scientific area: Mathematics, Differential Equations & Functional Analysis
Number of curricular years: 2
Program title: MAGISTER PHILOSOPHIAE in Mathematics

Year: 1988 (November)
Degree: DOCTOR PHILOSOPHIAE in Mathematics
Final grade: Approved
Degree granting institution: SISSA (www.sissa.it), Trieste, Italy
Thesis title: Nonconvex Differential Inclusions
Supervisor: Arrigo Cellina
Scientific area: Mathematics, Differential Equations & Functional Analysis
Program title: DOCTOR PHILOSOPHIAE in Mathematics

Year: 2004 (January)
Degree: HABILITATION in Mathematics
Final grade: Approved
Degree granting institution: Universidade de Évora
Thesis title: Nonconvex Calculus of Variations
Supervisor: n/a
Scientific area: Mathematics, Differential Equations & Functional Analysis
Program title: AGREGAÇÃO em Matemática (HABILITATION in Mathematics)

3. Previous activity and current status :

Period

Position or Category

Institution

from Sept 2004 to Aug 2008 :

Vice-president of the General Assembly of CIM (Centro Internacional de Matemática, International Center of Mathematics, Coimbra, www.cim.pt)

from Sept 1996 to Aug 2000 :

Member of the first Executive Committee (Membro da primeira Direcção: Tesoureiro) of CIM (Centro Internacional de Matemática, International Center of Mathematics, Coimbra, www.cim.pt)

from Nov 2008 to Oct 2010 :

Director of PDM-UE (Programa de Doutoramento em Matemática, Math PhD

Programme, [http://www.estudar.uevora.pt/Oferta/doutoramentos/curso/\(codigo\)/139](http://www.estudar.uevora.pt/Oferta/doutoramentos/curso/(codigo)/139)), Universidade de Évora

from Nov 2008 to Oct 2010 :

Director of MMA-UE (Mestrado em Matemática e Aplicações, Master Degree in

Mathematics, [http://www.estudar.uevora.pt/Oferta/mestrados/curso/\(codigo\)/174](http://www.estudar.uevora.pt/Oferta/mestrados/curso/(codigo)/174)), Universidade de Évora

from Nov 1995 to Oct 2007 :

Coordinator of Analysis and Geometry Group, including 19 professors and 9 assistants, DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora

from Nov 1993 to Oct 2007 :

Scientific Coordinator of Research Group A (Analysis, Geometry, Algebra & Logic) CIMA-UE (Centro de Investigação em Matemática e

Aplicações, Research Center in Mathematics and its Applications, www.cima.uevora.pt), Universidade de Évora

from Nov 1999 to Oct 2003 :

Director of CIMA-UE (Centro de Investigação em Matemática e Aplicações, Research Center in Mathematics and its Applications, www.cima.uevora.pt), Universidade de Évora

from Nov 1993 to Oct 2003 :

Scientific Coordinator (Coordenador Científico) of CIMA-UE (Centro de Investigação em Matemática e Aplicações, Research Center in Mathematics and its Applications, www.cima.uevora.pt), Universidade de Évora

from Nov 1993 to Oct 1994 :

President of the Settlement Committee (Presidente da Comissão Instaladora) of CIMA-UE (Centro de Investigação em Matemática e Aplicações, Research Center in Mathematics and its Applications, www.cima.uevora.pt), Universidade de Évora

from Nov 2001 to Oct 2003 :

Head (Presidente do Conselho) of DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora

from Nov 1991 to Oct 1993 :

Head (Presidente do Conselho) of DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora

from Nov 1993 to Oct 1995 :

Vice-head (Adjunto do Presidente do Conselho) of DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora

from Nov 1990 to Oct 1991 :

Vice-head (Adjunto do Presidente do Conselho) of DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora

from Nov 1993 to Oct 2001 :

Director of MMA-UE (Mestrado em Matemática e Aplicações, Master Degree in Mathematics, [http://www.estudar.uevora.pt/Oferta/mestrados/curso/\(codigo\)/174](http://www.estudar.uevora.pt/Oferta/mestrados/curso/(codigo)/174)), Universidade de Évora

from Nov 1991 to Oct 1995 :

Director of Undergraduate Degree in Applied Math (Licenciatura em Matemática Aplicada), Universidade de Évora

from Nov 1991 to Oct 1995 :

Director of Undergraduate Degree in Teaching of Mathematics (Licenciatura em Ensino de Matemática), Universidade de Évora

from Nov 1991 to Oct 1995 :

Vice-President (Vice-Presidente) of Scientific Council of College of Exact Sciences (Conselho Científico da Área Departamental de Ciências Exactas), Universidade de Évora

from Nov 1989 to Oct 1991 :

Secretary (Secretário) of Scientific Council of College of Exact Sciences (Conselho Científico da Área Departamental de Ciências Exactas), Universidade de Évora

from 22 Jan 2004 to 28 Feb 2014 :

Associate Professor with Habilitation in DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora, Portugal

from 19 Feb 1992 to 21 Jan 2004 :

Associate Professor (with Tenure since 18 Jun 1997) in DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora, Portugal

from 22 May 1989 to 18 Feb 1992 :

Auxiliary Professor in DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora, Portugal

from 27 Oct 1980 to 21 May 1989 :

Teaching Assistant in DMAT-UE (Departamento de Matemática,

Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora, Portugal

from 11 Apr 1978 to 26 Oct 1980 :

Teaching Assistant (eventual) in DMAT-UE (Departamento de Matemática, Department of Mathematics, www.dmat.uevora.pt), Universidade de Évora

4. Area of scientific activity

General Area : Differential Equations and Functional Analysis ;

More specifically :

Calculus of Variations (and also Differential Inclusions) mainly without convexity :

existence and qualitative properties of solutions to nonconvex and non coercive problems in the scalar case (i.e. whenever the domain or the values of the solutions searched has dimension 1),

using techniques such as :

the Liapunov theorem on the range of vector measures ;
the Baire category theorem ;
the constructive version of Vitali theorem ;
reparametrizations and inversion of absolutely continuous parametrizations
(having a.e. strictly positive derivative) .

The main focus has been on highly discontinuous lagrangians (namely lsc or Borel or even just Lebesgue-measurable relative to space/state variables) ; and implicitly including state & gradient pointwise-constraints together with any kind of explicit or implicit ordinary or partial differential equations or inclusions, by freely allowing the infinity value.

In this way, each one of our results of existence & regularity of minimizers to Calculus of Variations problems implicitly also includes results of existence & regularity of solutions to Optimal Control or Calculus of Variations problems under state & gradient pointwise constraints.

Vector Calculus of Variations, mainly without convexity : radially symmetric minimizers, using techniques of reparametrization, hence reduction to problems involving scalar functions of scalar variable in competition.

5. Present research interests

Domain of specialisation:

Nonconvex & noncoercive problems, under pointwise state & gradient constraints, of the Calculus of Variations, Optimal Control or Differential Inclusions. Indeed, we have been constructing regular solutions to convex & nonconvex problems of the Calculus of Variations under pointwise state & gradient constraints, using for example inversion of reparametrizations with derivative a.e. > 0 .

The main focus has been on highly discontinuous lagrangians (namely lsc or Borel or Lebesgue-measurable relative to state variables).

Moreover, by freely allowing lagrangians to assume the infinity value, we implicitly include state & gradient pointwise-constraints and explicit or implicit ordinary or partial differential equations or inclusions.

The power of this approach is that we thus reach, at once, existence & regularity of solutions to Calculus of Variations, Optimal Control and Differential Inclusion

problems

under state & gradient pointwise constraints (as in Cesari's book).

Current research interests

In particular, more recently we have been dealing mainly with

Vector Calculus of Variations :

to look for radially symmetric vector minimizers to multiple integrals under state & gradient pointwise constraints, by reducing to problems involving competition, among scalar functions of scalar variable, to minimize single integrals;

Optimal Control :

to solve nonconvex problems involving higher order derivatives under state & gradient pointwise constraints.

Other professional interests/activities :

Necessary conditions under pointwise state & gradient constraints.

6. Experience as scientific advisor:

(a) 4 PhD theses supervisions, 1 awaiting final exam in 2014 & 3 already approved (in 2007, 2009 & 2013) namely :

2007-2013 Co-supervisor (with Clara Carlota) of Sílvia Chá,
"Convex and non-convex problems of the calculus of variations"

2006-2012 Supervisor of Luís Bicho,
"Existence of minimizers for n-dimensional nonconvex integrals"

2005-2009 Co-supervisor (with Pablo Pedregal) of Luís Bandeira,
"On the characterization of rank-1 convexity and laminates versus quasiconvexity and microstructures for deformations having 2x2 symmetric gradients"

2001-2007 Supervisor of Clara Carlota,
"Existence and regularity of minimizers for 1-dim integrals of the calculus of variations with nonconvex autonomous lagrangian"

(b) 11 Master theses supervisions , already approved, of Mestrado em Matemática Aplicada, namely :

2005-2007 Supervisor of Pedro Simões,
“Existence of minimizers for integrals of the calculus of variations with very irregular lagrangian”

2004-2006 Supervisor of Sílvia Chá,
“Nonconvex and noncoercive problems of the calculus of variations”

2001-2003 Supervisor of Luís Bicho,
“Parametrized measures and application to the determination of necessary and sufficient conditions for minimizers of nonconvex scalar integrals”

2001-2003 Supervisor of Luís Bandeira,
“Examination of the rank-1 convex closure and the quasiconvex closure for vector integrals depending on 2×2 symmetric gradients”

2001-2003 Supervisor of Fátima Pereira,
“Proximal and non-smooth analysis with applications to obtain necessary conditions for minimizers of scalar integrals”

2001-2003 Co-supervisor (with Arrigo Cellina) of Telma Santos,
“Generalizations of the Euler-Lagrange equation with applications to qualitative properties of scalar minimizers for integrals depending on the gradient”

2001-2001 Supervisor of Graça Carita,
“Rank-1 convexity and quasiconvexity in the context of lower semicontinuity of vector integrals depending on 2×2 symmetric gradients”

1999-2001 Co-supervisor (with Vladimir Goncharov) of Nelson Lopes,
“Vitali type covering theorems and applications to the existence of scalar minimizers for nonconvex integrals depending on the gradient”

1998-2000 Supervisor of Clara Carlota,

“Existence of minimizers for non-convex and non-coercive integrals”

1997-1998 Supervisor of Rogério Cardoso,
“Non-smooth analysis and applications to the existence of minimizers of nonconvex scalar integrals”

1993-1995 Supervisor of the PAPCC Thesis of (Orientador das PAPCC de)
Paulo Correia,
“Existence of minimizers for scalar nonconvex integrals”

(c) 17 undergraduate theses supervisions , already approved, of Licenciatura em Matemática Aplicada, namely :

2006 Co-supervisor (with Luís Bandeira) of Ana Trindade,
“On the structure of 2×2 symmetric discrete periodic gradients”

2003 Co-supervisor (with Clara Carlota) of João Dias,
“On the theorem of Liapunov on vector measures”

2002 Co-supervisor (with Clara Carlota) of Hélia Serrano,
“Minimization of convex noncoercive scalar integrals”

2001 Supervisor of Sílvia Chá,
“Minimization of nonconvex scalar integrals”

2001 Supervisor of Marisa Silva,
“Existence of minimizers for non-coercive scalar integrals applied to the biology of populations”

2001 Supervisor of Telma Guerra,
“Hardy-Littlewood type inequalities and applications to the existence of minimizers for nonconvex scalar integrals”

2000 Supervisor of Dolores Diogo,
“Total differential inclusions and Baire category with applications to the existence of scalar minimizers for nonconvex integrals depending on the gradient”

2000 Supervisor of Fátima Correia,
“Parametrized measures and applications to the existence of minimizers for nonconvex scalar integrals”

2000 Supervisor of Diogo Baptista,
“Parametrized measures and applications to the explicit determination of minimizers for nonconvex scalar integrals”

1999 Supervisor of João Costa,
“Necessary conditions in the calculus of variations”

1999 Supervisor of Telma Santos,
“Liapunov’s theorem and applications to the existence of optimal controls in linear nonconvex non-autonomous problems”

1999 Supervisor of Fátima Pereira,
“Nonsmooth analysis and applications to obtain necessary conditions for minimizers of scalar integrals”

1999 Supervisor of Luís Bandeira,
“The opaque square optimization problema”

1997 Supervisor of Luís Bicho,
“The DuBois-Reymond differential inclusion and applications to the existence of scalar minimizers for nonconvex scalar integrals”

1997 Supervisor of Graça Carita,
“Relationships between rank-1 convexity and quasiconvexity for integrals depending on 2x2 symmetric gradients”

1995 Supervisor of Sandra Silva,
“Ordinary differential equations with impulsive control”

1992 Supervisor of Luís Comparada,
“Mathematical models of biology involving ordinary differential equations and inclusions”

7. Participation in R&D projects:

Coordination of Research Projects :

2012 Coordinator of the Research Project “Pointwise-constrained optimization of functions”

in the framework of, and financially supported by,
EMMA-West 2013 Erasmus Mundus Programme

2005-2008 Coordinator of the Research Project POCI/MAT/56727/2004
“Calculus of Variations : nonconvex and noncoercive scalar problems”

financially supported by FCT

(Fundação para a Ciência e a Tecnologia, Portugal, <http://www.fct.pt/>)

and POCI project of the European Union,

involving also VGoncharov and 6 graduate students from Évora

2001-2004 Coordinator of the Research Project

POCTI/MAT/36422/2000

“Optimization and Differential Equations”

financially supported by FCT and POCTI project of the European Union

involving also GSmirnov, MVornicescu, VBushenkov, VGoncharov

and 6 graduate students from Évora

1998-2001 Coordinator of the Research Project PRAXIS/MAT/48/1996

“Minimization of nonconvex and noncoercive functionals of the exact
and natural sciences”

financially supported by FCT and PRAXIS project of the European
Union,

involving 7 graduate students from Évora

2001-2004 Coordinator of the Évora team of the Research Project

POCTI/MAT/199/2001

“Nonlinear Analysis and Dynamical Systems”

financially supported by FCT and POCTI,

involving 25 professors from 3 portuguese universities (IST, Évora and
Lisboa)

1995-2000 Coordinator of the Évora team of the Research Project

PRAXIS/199/1994

“Nonlinear Analysis and Dynamical Systems”,

financially supported by FCT and PRAXIS,

involving 25 professors from 3 portuguese universities (IST, Évora and

Lisboa)

1995-1999 Coordinator of the Évora team of the Research Project “Mathematical Physics”, financially supported by FCT, involving 30 professors from 5 portuguese universities

1997-2002 Coordinator of the Research Project “Fundo Programático Especial para o grupo de Análise do CIMA-UE”, financially supported by Programa de Financiamento Plurianual of JNICT (Junta Nacional de Investigação Científica e Tecnológica), Portugal involving 3 professors and several graduate students from Évora

1994-2002 Coordinator of the Research Project “Financiamento Plurianual do CIMA-UE”, financially supported by JNICT, involving approximately 40 researchers from Évora

1993-1995 Coordinator of the Research Project “Differential Optimization”, financially supported by JNICT/BASE, involving 4 professors from 3 portuguese universities (Lisboa, Évora, Porto)

1990-1991 Coordinator of the Research Project “Differential Inclusions”, financially supported by INIC, Portugal, involving 2 professors from 2 portuguese universities (Lisboa, Évora)

1991-1996 Coordinator of the portuguese team of the “italian CNR/ portuguese JNICT” cooperation Research Project “Calculus of Variations, Optimal Control and Differential Equations” involving 12 professors from 3 portuguese universities (Évora, Lisboa, IST) and 4 italian universities (SISSA Trieste, Firenze, Pisa , Milano)

1994-2001 Coordinator of the portuguese team of the INTAS Research Project involving many italian, french, german, portuguese and russian researchers

2013-2014 Member of the “Projecto de Investigação em Matemática e

Aplicações”

involving 40 researchers from Portugal, Cabo Verde & Brasil

Fellowships received to support visit of foreign researchers to CIMA-UE:

1996-1996 received research funding from JNICT (Bolsa PRAXIS XXI para Cientista Convidado) to support visit of Arrigo Cellina (SISSA, Italia) to CIMA-UE in April-June 1996

1996-1996 received research funding from JNICT (Fundo de apoio à Comunidade Científica) to support visit of Pablo Pedregal (Ciudad Real, Spain), Mikhail Sychev (Novosibirsk, Russia) and Vladimir Goncharov (Irkutsk Computing Centre, Russia) to CIMA-UE in April-June 1996

1994-1994 received research funding from NATO Cooperation Partners Programme to support visit of Vladimir Goncharov (Irkutsk Computing Centre, Russia) to CIMA-UE in June-December 1994

8. Prizes and awards received :

Year

Name of the prize or award

Pro

moting entity

2008

10-month sabbatical fellowship to visit Univ. Castilla-La Mancha in Ciudad Real, Spain

FCT Portugal

2003

9-month post-doctoral fellowship to visit Univ. Castilla-La Mancha, Spain
Univ. Castilla-La Mancha

2002

5-month sabbatical fellowship to visit Univ. Castilla-La Mancha, Spain
FCT Portugal

2001

6-month sabbatical fellowship to visit Ceremade, Univ. Paris-Dauphine
NATO Portugal

1997

6-month sabbatical fellowship to visit SISSA, Trieste, Italia
NATO Portugal

1996

8-month sabbatical fellowship to visit SISSA, Trieste, Italia
Pierre & Marie Curie Programme of the European Union

1992

6-month sabbatical fellowship to visit SISSA
SISSA, Trieste, Italia

1984

4-year PhD fellowship to SISSA, Trieste, Italia
INIC Portugal

1968

1-year high-school fellowship
Fundação Calouste Gulbenkian

9. Published works :

Theses :

Nonconvex Calculus of Variations, Habilitation Thesis Un Évora
(Agregação) 2004

Nonconvex Differential Inclusions, PhD Thesis SISSA 1988, advisor
Arrigo Cellina

Nonconvex Analysis, Magister Phil Thesis SISSA 1986, advisor Arrigo

Cellina

Books (editor) : (IF = Impact Factor)

"Optimal shape design", lessons of an European Summer School organized by italian CIME & portuguese CIM in Tróia, Portugal, in June 1998 (with courses by B. Kawohl, O. Pironneau, L. Tartar & J.P. Zolesio) edited by A. Cellina & A. Ornelas, Lecture Notes Math 1740, Springer 2000, ISSN: 0075-8434, ISBN: 3-540-67971-5, MR1804683, Zbl 0954.00031, WOS:000170814800001, IF=0.614

Chapters of Books :

An overview on existence of vector minimizers for almost convex 1-dim integrals, in : Differential Equations, Chaos and Variational Problems, (V. Staicu, ed.), in series: Progress in Nonlinear Differential Equations and Their Applications, vol. 75, p. 117-122, ISBN: 978-3-7643-8481-4 (Print) 978-3-7643-8482-1 (Online) , MR2409098, Zbl 05343062 (co-author: C. Carlota)

Artigos em revistas de circulação internacional com arbitragem científica :

Publications in Refereed Journals with International Circulation :

(IF = Impact Factor)

25. Pointwise constrained radially increasing minimizers in the quasi-scalar calculus of variations, ESAIM: COCV (2013), ISSN: 1292-8119, DOI 10.1051/cocv/2013058 (co-author: L. B. Bicho) IF=1.282

24. Erratum to: A pointwise constrained version of the Liapunov convexity theorem for single integrals, NoDEA (Nonlinear Differ Equ

Appl) 20 (2013) 1409, ISSN: 1021-9722, DOI 10.1007/s00030-012-0213-y, MR3057183, Zbl 1274.28022, WOS:000319478800047 (co-authors: C. Carlota & S. Chá)

23. A pointwise constrained version of the Liapunov convexity theorem for single integrals, NoDEA (Nonlinear Differ Equ Appl) 20 (2013) 273-293, ISSN: 1021-9722, DOI 10.1007/s00030-012-0199-5, MR3046974, Zbl 06196731, WOS:000318284900007 (co-authors: C. Carlota & S. Chá) IF=0.671

22. Radially increasing minimizing surfaces or deformations under pointwise constraints on positions and gradients, Nonlinear Anal TMA 74 (2011) 7061-7070, ISSN: 0362-546X, DOI: 0.1016/j.na.2011.07.033, MR2833694, Zbl 1229.49002, WOS:000295714200021 (co-author: L. B. Bicho) IF=1.640

21. The DuBois-Reymond differential inclusion for autonomous optimal control problems with pointwise-constrained derivatives, DCDS-A 29 (2011) 467-484, ISSN: 1078-0947, DOI: 10.3934/dcds.2011.29.467, MR2728466, Zbl 1211.49028, WOS:000284618400006 (co-author: C. Carlota) IF=1.005

20. Existence of minimizers for nonautonomous highly discontinuous scalar multiple integrals with pointwise constrained gradients, DCDS-A 29 (2011) 439-451, ISSN: 1078-0947, DOI: 10.3934/dcds.2011.29.439, MR2728464, Zbl 1209.49002, WOS:000284618400004 (co-author: L. B. Bicho) IF=1.005

19. On the characterization of a class of laminates for 2×2 symmetric gradients, J Convex Anal 18 (2011) 37-58, ISSN: 0944-6532, MR2777596, Zbl 1218.49003, WOS:000286151200002 (co-author: L. Bandeira) IF=0.625

18. Existence of vector minimizers for nonconvex autonomous 1-dim integrals with almost convex lagrangian, J Diff Eqs 243 (2007) 414-426, ISSN: 0022-0396, DOI: 10.1016/j.jde.2007.05.019, MR2371794, Zbl 1138.49001, WOS:000252285300014 (co-author: C. Carlota) IF=1.480

17. Existence of scalar minimizers for simple convex integrals with autonomous lagrangian measurable on the state variable, Nonlinear Anal TMA 67 (2007) 2485-2496, ISSN: 0362-546X, DOI:

10.1016/j.na.2006.08.044, MR2338114, Zbl 1121.49004,
WOS:000248332300013, IF=1.640

16. On minima of a functional of the gradient: upper and lower solutions, *Nonlinear Anal TMA* 64 (2006) 1437-1459, ISSN: 0362-546X, DOI: 10.1016/j.na.2005.07.002, MR2200152, Zbl 1102.49011, WOS:000235694400003 (co-author: V. Goncharov) IF=1.640

15. Lipschitz regularity for scalar minimizers of autonomous simple integrals, *J Math Anal Appl* 300 (2004) 285-296, ISSN: 0022-247X, DOI: 10.1016/j.jmaa.2004.04.064, MR2098209, Zbl 1056.49033, WOS:000225417700003, IF=1.050

14. Existence of solutions to differential inclusions and to time optimal control problems in the autonomous case, *SIAM J Control Optim* 42 (2003) 260-265, ISSN: 0363-0129, Article Number: PII S0363012902408046, DOI: 10.1137/S0363012902408046, MR1982744, Zbl 1058.49003, WOS:000183168100012 (co-author: A. Cellina) IF=1.379

13. Existence and regularity for scalar minimizers of affine nonconvex simple integrals, preprint 5/II, Cima-ue (2000), *Nonlinear Anal TMA* 53 (2003) 441-451, ISSN: 0362-546X, Article Number: PII S0362-546X(02)00309-7, DOI: 10.1016/S0362-546X(02)00309-7, MR1964336, Zbl 1039.49032, WOS:000181640800009, IF=1.640

12. Lipschitz and piecewise-C1 regularity for scalar minimizers of affine simple integrals, preprint 4/II Cima-ue (2000), *J Math Anal Appl* 296 (2004) 21-31, ISSN: 0022-247X, DOI: 10.1016/j.jmaa.2004.02.045, MR2070490, Zbl 1048.49029, WOS:000222829700003, IF=1.050

11. Existence of scalar minimizers for nonconvex simple integrals of sum type, *J Math Anal Appl* 221 (1998) 559-573, ISSN: 0022-247X, DOI: 10.1006/jmaa.1998.5915, MR1621754, Zbl 0920.49026, WOS:000073589100010, IF=1.050

10. A Lipschitz selection from the set of minimizers of a nonconvex functional of the gradient, *Nonlinear Anal TMA* 37 (1999) 707-717, ISSN: 0362-546X, MR1692827, Zbl 0941.49009, WOS:000080841200003 (co-authors: G. Dal Maso & V. Goncharov) IF=1.640

9. Existence of minimizers for some non-convex one-dimensional integrals, *Portugaliae Mathematica* 55 (1998) 167-185, ISSN: 0032-5155, MR1629622, Zbl 0912.49015 (co-authors: N. Fusco & P. Marcellini) IF=0.422
8. On minima of a functional of the gradient : a continuous selection, *Nonlinear Anal TMA* 27 (1996) 1137-1146, ISSN: 0362-546X, DOI: 10.1016/0362-546X(95)00122-C, MR1407452, Zbl 0877.49015, WOS:A1996VH37300004 (co-author: V. Goncharov) IF=1.640
7. Genericity and existence of minimum for nonconvex scalar integral functionals, *J Optim Th Appl* 86 (1995) 421-431, ISSN: 0022-3239, DOI: 10.1007/BF02192088 , MR1348335, Zbl 0835.49010, WOS:A1995RU66300008 (co-author: M. M. Marques) IF= 1.423
6. Representation of the attainable set for lipschitzian differential inclusions, *Rocky Mountain J Math* 22 (1992) 117-124, ISSN: 0035-7596, DOI: 10.1216/rmjm/1181072798, MR1159946, Zbl 0752.34012, WOS:A1992HR87100007 (co-author: A Cellina) IF= 0.389
5. Approximation of relaxed solutions for lsc differential inclusions, *Annales Polonici Math* 56 (1992) 1-10, ISSN: 0066-2216, MR1145564, Zbl 0755.34015, IF= 0,306
4. A continuous version of the Filippov-Gronwall inequality for differential inclusions, *Rend Mat Acc Lincei* 9 (1990) 105-110, ISSN: 1120-6330, MR1081392, Zbl 0719.34032
3. Convexity and the closure of the solution set to differential inclusions, *Bollettino UMI* 7 (4-B) (1990) 255-263, ISSN: 0041-7084, MR1061215, Zbl 0719.34031, WOS:A1990DH79700002 (co-author: A. Cellina)
2. Parametrization of Carathéodory multifunctions, *Rend Sem Mat Univ Padova* 83 (1990) 33-44, ISSN: 0041-8994, MR1066426, Zbl 0708.28005, IF= 0,321
1. Lower semicontinuous perturbations of maximal monotone differential inclusions, *Israel J Math* 61 (1988) 211-218, ISSN: 0021-2172 ,DOI: 10.1007/BF02766211, MR0941237, Zbl 0661.47038, WOS:A1988N313500007 (co-authors: G. Colombo & A. Fonda) IF=

0.646

Publications in Proceedings of Math Research Meetings:

2. Overview on the pointwise constrained Liapunov vectorial convexity theorem, Hindawi Publishing Corporation, Conference Papers in Mathematics, Volume 2013, Article ID353460 (2013) 4 pages (co-authors: C. Carlota & S. Chá)

1. Surfaces changing continuously with affine boundary data and having gradients on a prescribed set, EQUADIFF 95 - International Conference on Differential Equations (Lisboa, 1995), 386–391, World Sci. Publ., River Edge, NJ, 1998, ISBN: 981-02-3421-X, MR1639434, Zbl 0961.35033 (co-author: V. Goncharov)

Other Publications :

15. Nonconvex second-order linear optimal control : a sharp version of the Liapunov convexity theorem, preprint 2013 (co-author: C. Carlota)

14. A pointwise constrained version of the Liapunov convexity theorem for first-order linear optimal control with single integrals, preprint 2012 (co-authors: C. Carlota & S. Chá)

13. Unimodal decomposition of absolutely continuous functions and applications to Lebesgue integral inequalities, preprint 2012 (co-author: C. Carlota)

12. Existence of scalar minimizers for nonconvex autonomous 1-dim integrals depending on the prescribed boundary slopes, preprint 2006 (co-author: C. Carlota)

11. Existence of scalar minimizers for nonconvex autonomous 1-dim integrals with lagrangian having non-mean-strict minimizers, preprint 2006 (co-author: C. Carlota)

10. Existence of scalar minimizers for autonomous simple integrals nonconvex except at zero, preprint 2003
9. Bimonotonicity for scalar minimizers of autonomous simple integrals, preprint 2003
8. Sumário pormenorizado da lição de síntese, Universidade de Évora, Habilitation thesis, 2002
7. Relatório da disciplina Cálculo das Variações, Universidade de Évora, Habilitation thesis, 2002
6. Existence of scalar minimizers for affine regular nonconvex simple integrals, technical report 1 Cima-ue (2000)
5. Monotonicity for scalar minimizers of affine simple integrals, preprint 3/II Cima-ue (2000)
4. Relatório da disciplina Equações Diferenciais e Integrais, Universidade de Évora, Concurso para Professor Associado, 1991
3. Existence of Holder solutions for ordinary differential equations with Holder control having exponent larger than one-half, preprint 1990
2. Best Lipschitz constant for multivalued projection onto convex sets, pré-publicação 1/90 CMAF, Lisboa
1. On Smale's Newton method, technical report SISSA 1985

10. Communications in scientific meetings :

Invited Oral Communications :

76. "Convexity of range of vector measures under pointwise constraints", International meeting "Variational Methods in Elliptic Equations and Systems (dedicated to the memory of Miguel Ramos)", CMAF, Lisboa, Portugal, 7-10 January 2014 (co-authors: C.

Carlota & S. Chá, presented by S. Chá)

75. “New results on existence and regularity and necessary conditions for scalar and vector minimizers of nonconvex single and multiple integrals under state and gradient pointwise constraints”, International meeting “The Cape Verde International Days on Mathematics 2013 (CVIM'2013)”, Universidade de Cabo Verde, Praia, Cabo Verde, 22-25 April 2013 (co-authors: L Bicho, C. Carlota & S. Chá, presented by A. Ornelas)

74. “A pointwise constrained version of the Liapunov convexity theorem for single integrals”, International meeting “The Cape Verde International Days on Mathematics 2013 (CVIM'2013)”, Universidade de Cabo Verde, Praia, Cabo Verde, 22-25 April 2013 (co-authors: C. Carlota & S. Chá, presented by C. Carlota)

73. “Necessary and sufficient conditions for applicability of the pointwise constrained Liapunov convexity theorem”, International meeting “The Cape Verde International Days on Mathematics 2013 (CVIM'2013)”, Universidade de Cabo Verde, Praia, Cabo Verde, 22-25 April 2013 (co-authors: C. Carlota & S. Chá, presented by S. Chá)

72. “Necessary conditions for Bolza optimal control problems”, meeting “Workshop on Variational Analysis and Applications” Universidade de Évora, Évora, Portugal, 28 October 2011 (co-authors: C. Carlota & S. Chá, presented by C. Carlota)

71. “Existence of tame radial minimizers for nonconvex vectorial multiple integrals in the calculus of variations or optimal control”, International Meeting “Nonlinear differential equations and control, celebrating Arrigo Cellina’s 70th birthday”, Milan, Italy, 22-23 September 2011 (co-authors: L Bicho, C. Carlota & S. Chá, presented by A. Ornelas)

70. “New results on existence and regularity and necessary conditions for scalar and vector minimizers of nonconvex single and multiple integrals under state and gradient pointwise constraints”, meeting “Workshop on Nonlinear Analysis and Variational Problems” Universidade de Évora, Évora, Portugal, 10-11 February 2011 (co-author: C. Carlota, presented by A. Ornelas)

69. "An overview on existence and regularity and necessary conditions for scalar and vector minimizers of nonconvex single and multiple integrals under state and gradient pointwise constraints", Seminário Dept Matemáticas, Universidad de Castilla-La Mancha, Ciudad Real, Spain, December 2010
68. "The DuBois-Reymond differential inclusion for constrained calculus of variations problems", meeting "Mini--simpósio em Análise Funcional e Aplicações", Universidade de Évora, Évora, Portugal, 18 October 2010 (co-author: C. Carlota, presented by C. Carlota)
67. "Recent applications of reparametrization and bimonotonicity techniques to the calculus of variations", International meeting "Encontro no Douro – Equações Diferenciais e Aplicações", Foz de Douro, Portugal, 2-4 October 2010 (co-author: C. Carlota, presented by C. Carlota)
66. "One dimensional calculus of variations: examples of application of the generalized DuBois-Reymond inclusion", Encontro Évora-Aveiro sobre Optimização e Controlo Óptimo, Universidade de Évora, Évora, Portugal, December 2009 (co-authors: C. Carlota & S. Chá, presented by S. Chá)
65. "Minimizantes de funcionais integrais simples não-convexos e não-coercivos - condições suficientes e condições necessárias", Encontro Évora-Aveiro sobre Optimização e Controlo Óptimo, Universidade de Évora, Évora, Portugal, December 2009 (co-author: C. Carlota, presented by C. Carlota)
64. "Existência de minimizantes para integrais simples não-convexos", meeting "Mini-Simpósio de Optimização Funcional", Universidade de Évora, Évora, Portugal, 15 May 2009
63. "Existência e regularidade de soluções para alguns problemas de controlo óptimo não-convexos e não-coercivos", meeting "Mini-Simpósio de Optimização Funcional", Universidade de Évora, Évora, Portugal, 15 May 2009 (co-author: C. Carlota, presented by C. Carlota)
62. "On the DuBois-Reymond differential inclusion under pointwise constraints", International Meeting "Workshop on Control, Nonsmooth Analysis and

Optimization”,

Faculdade de Ciências da Universidade do Porto, Porto, Portugal, 4-8 May 2009 (co-author: C. Carlota, presented by A. Ornelas)

61. “Existence and regularity of solutions to some nonconvex optimal control problems”, International Meeting "Workshop on Control, Nonsmooth Analysis and Optimization", Faculdade de Ciências da Universidade do Porto, Porto, Portugal, 4-8 May 2009 (co-author: C. Carlota, presented by C. Carlota)

60. “Existência de minimizantes radiais monótonos para integrais múltiplos com lagrangiano convexo”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo, Universidade de Aveiro, Aveiro, Portugal, December 2008

59. “New improvements related to the existence of vector minimizers for nonconvex 1-dim integrals with almost convex Lagrangian”, International Meeting "Calculus of Variations and its Applications: from Engineering to Economy", Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica, Portugal, 8-11 September 2008 (co-author: C. Carlota, presented by A. Ornelas)

58. "Existence of Holder solutions for ordinary differential equations with Holder control having exponent larger than one-half”, Seminário Dept Matemáticas, Universidad de Castilla-La Mancha, Ciudad Real, Spain, December 2007

57. “Existence of scalar minimizers for autonomous 1-dim integrals with lagrangian nonconvex and non-lsc even at zero”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo, Universidade de Évora, Évora, Portugal, October 2007 (co-author: C. Carlota, presented by A. Ornelas)

56. “Existence of scalar minimizers for nonconvex noncoercive 1-dim integrals”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo, Universidade de Évora, Évora, Portugal, October 2007 (co-author: C. Carlota, presented by C. Carlota)

55. “Existence of vector minimizers for nonconvex noncoercive 1-dim integrals”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo,

Universidade de Évora, Évora, Portugal, October 2007
(co-authors: C. Carlota & S. Chá, presented by S. Chá)

54. “Existence results for minimizers of nonconvex simple integrals with autonomous almost convex Lagrangean”, International Meeting "Variational and Differential Problems with Constraints" in honor of Professors Arrigo Cellina and James Yorke, Venezia, Italia, 15-18 September 2006 (co-author: C. Carlota, presented by C. Carlota)

53. “Existence of scalar minimizers for nonconvex 1-dim integrals of the Calculus of Variations”, International Meeting "Trends and Challenges in the Calculus of Variations" (Satellite Conference of ICM 2006 Madrid 2006) Toledo 16-19 August 2006, (co-author: C. Carlota, presented by C. Carlota)

52. “Existence of scalar minimizers for autonomous simple integrals with nonconvex lagrangian”, International Meeting "Views on ODEs" in honor of Professors Arrigo Cellina and James Yorke, Aveiro, Portugal, 21-24 June 2006 (co-author: C. Carlota, presented by A. Ornelas)

51. “Existence of vector minimizers for nonconvex simple integrals of the calculus of variations”, International Meeting "Views on ODEs" in honor of Professors Arrigo Cellina and James Yorke, Aveiro, Portugal, 21-24 June 2006 (co-author: C. Carlota, presented by C. Carlota)

50. “Existência de minimizantes para integrais não-convexos de funções escalares de variável real”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo, Universidade de Aveiro, Aveiro, Portugal, June 2006 (co-author: C. Carlota, presented by A. Ornelas)

49. “Existência de minimizantes para integrais não-convexos de funções vectoriais de variável real”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo, Universidade de Aveiro, Aveiro, Portugal, June 2006 (co-author: C. Carlota, presented by C. Carlota)

48. “Existência de minimizantes escalares para integrais simples não-convexos. Parte 1: lagrangiano convexo apenas no zero”, Encontro

Évora-Aveiro sobre Optimização e Controlo Ótimo,
Universidade de Évora, Évora, Portugal, April 2005

47. “Existência de minimizantes escalares para integrais simples não-convexos. Parte 2: lagrangiano não-convexo mesmo no zero”, Encontro Évora-Aveiro sobre Optimização e Controlo Ótimo, Universidade de Évora, Évora, Portugal, April 2005 (co-author: C. Carlota, presented by C. Carlota)

46. “Existence and regularity for minimizers of nonconvex coercive scalar 1-dimensional integrals with non lower semicontinuous autonomous lagrangian”, Seminário Dept Matemática, Instituto Superior Técnico, Lisboa, Portugal, February 2004

45. Seminário Dept Matemática, Universidade de Évora, Évora, Portugal, February 2004

44. Seminário Dept Matemáticas, Universidad de Castilla-La Mancha, Ciudad Real, Spain, December 2003

43. Seminário Dept Matemática, Universidade de Évora, Évora, Portugal, June 2003

42. “Existence results for non convex scalar one dimensional problems III”, Seminário Dept Matemáticas, Universidad de Castilla-La Mancha, Ciudad Real, Spain, December 2003

41. “Existence results for non convex scalar one dimensional problems II”, Seminário Dept Matemáticas, Universidad de Castilla-La Mancha, Ciudad Real, Spain, May 2003

40. “Existence results for non convex scalar one dimensional problems I” Seminário Dept Matemáticas, Universidad de Castilla-La Mancha, Ciudad Real, Spain, April 2003

39. Seminário Dept Mathématiques, Ceremade, Université Paris-Dauphine, Paris, May 2002

38. Seminário Dept Mathématiques, Ceremade, Université Paris-Dauphine, Paris, December 2001

37. IV International Conference on Elliptic and Parabolic Problems, Rolduc, Holland, June 2001
36. Seminário Dept Matemática, Universidade Nova de Lisboa, Lisboa, Portugal, November 1999
35. Seminário Dept Matemática, Universidade da Beira Interior, Covilhã, Portugal, November 1999
34. Seminário Dept Matemática, Instituto Superior Técnico, Lisboa, Portugal, January 1999
33. Seminário Dept Matematica, Università di Udine, Udine, Italia, November 1997
32. Seminário Dept Matematica, Università di Firenze, Firenze, Italia, June 1997
31. Convegno su Equazioni Differenziali, Bressanone, Italia, May 1997
30. Seminário Dept Matematica, SISSA, Trieste, Italia, May 1997
29. Seminário da Rede CMAF-Évora-Covilhã, Universidade de Évora, Évora, May 1997
28. Seminário Dept Matemática, Instituto Superior Técnico, Lisboa, Portugal, March 1997
27. Encontro Anual do Grupo de Física Matemática, Funchal, Portugal, February 1997
26. Seminário Dept Matematica, SISSA, Trieste, Italia, December 1996
25. Oberwolfach Institute, Deutschland, March 1996
24. Universitet Irkutsk, Irkutsk, Russia, February 1996
23. Seminário Dept Matemática, Universidade de Évora, Évora, Portugal, November 1995
22. Seminário do Grupo de Física Matemática, Lisboa, Portugal,

November 1995

21. Seminário Dept Matematica, Università di Bologna, Bologna, Italia, October 1995
20. Seminário Dept Matematica, SISSA, Trieste, Italia, October 1995
19. Seminário Dept Matematica, Università di Pisa, Pisa, Italia, October 1995
18. Universitet Moskva, Moskva, Russia, September 1995
17. Universitet Irkutsk, Irkutsk, Russia, September 1995
16. Irkutsk Computing Centre, Irkutsk, Russia, August 1995
15. Congress Equadiff 95, Lisboa, Portugal, July 1995
14. Congress on Differential Equations, Firenze, Italia, September 1993
13. Seminário do CMAF, Lisboa, Portugal, July 1993
12. Seminário Dept Matemática, Universidade de Évora, Évora, Portugal, May 1993
11. Seminário Dept Matematica, Università di Pisa, Pisa, Italia, April 1993
10. Seminário Dept Matematica, SISSA, Trieste, Italia, March 1993
9. Seminaire Mathématique, Université de Montpellier, Montpellier, France, June, 1991
8. Math Seminar, Rutgers University, New Jersey, USA, September 1990
7. Mini-Semester on Differential Inclusions, Banach Center, Warszawa, Poland, December 1989
6. Seminário Dept Matemática, Universidade de Coimbra, Coimbra, Portugal, October 1989

5. Seminário do Grupo de Física Matemática, Universidade de Lisboa, Portugal, May 1989
4. Seminário Dept Matemática, Universidade de Évora, Portugal, March 1989
3. Seminário do CMAF, Universidade de Lisboa, Portugal, February 1989
2. International Conference on Optimization and Nonsmooth Analysis, Erice, Italia, June 1988
1. Convegno su Inclusioni Differenziali, SISSA, Trieste, Italia, May 1987

Poster Communications :

“Recent applications of reparametrization and bimonotonicity techniques to optimal control”, International meeting “Encontro no Douro – Equações Diferenciais e Aplicações”, Foz de Arelas, Portugal, 2-4 October 2010 (co-authors: C. Carlota & S. Chá, presented by S. Chá)

11. Languages :

Language: Reading -- Writing -- Conversation

English: Very Good -- Very Good --Very Good

French: Very Good -- Very Good --Very Good

Italian: Very Good -- Very Good --Very Good

Portuguese: Very Good -- Very Good --Very Good

Spanish: Very Good -- Good -- Good

German: Basic Basic Basic