

CURRICULUM VITAE

Maurizio Falcone

Last up-date: September 13, 2021

Grants and Academic Career

since 11/01	Full Professor of Numerical Analysis at Dipartimento di Matematica, University of Roma "La Sapienza"
2/88-11/01	Associate Professor of Mathematical Analysis at Dipartimento di Matematica, University of Roma "La Sapienza"
10/87-2/88	Professeur associé at University of Paris IX-Dauphine
4/85-6/85	Professeur associé at University of Paris XI-Orsay
2/83-7/83	Chargé de cours at University of Paris IX-Dauphine
7/81-2/88	Researcher at Dipartimento di Matematica, University of Roma "La Sapienza"
2/81-3/81	S.I.S.S.A. Grant, Trieste
10/79-7/81	C.N.R. Grant at Istituto Matematico "G. Castelnuovo"
2/77-2/78	Undergraduate C.N.R. Grant

MANAGING ACTIVITY

International

- 2016-2017 Secretary (elected) of the SIAM Activity Group in "Control and System Theory"
- 2014-2015 Secretary (elected) of the SIAM Activity Group in "Control and System Theory"
- 1/11-12/14 Member of the Scientific Board of the ITN Marie Curie "Sensitivity Analysis for Deterministic Controller Design" (SADCO) (WEB: <http://itn-sadco.inria.fr/>)
- 10/08-11/12 Member of the Steering Committee of the ESF Network OPTPDE "Optimal Control with PDE constraints" (WEB: <http://www.esf.org/index.php?id=5377>)
- 2006-08 Coordinator Galileo Project "Algorithms for dislocation dynamics and applications" between Roma "La Sapienza" and CERMICS (Marne La Vallée)
- 2003-05 Coordinator Galileo Project PLATONOV between Roma "La Sapienza" and IRIT (Toulouse)

National

- 11/16-11/18 Member of the Committee for the Abilitazione Scientifica Nazionale (ASN) in Numerical Analysis (WEB: <http://abilitazione.miur.it/public/index.php>)
- 11/08-6/17 Member of the Scientific Committee of the National Group "Scientific Computing" (GNCS-INDAM) (WEB: <http://gruppi.altamatematica.it/gnacs/>)
- 10/02-10/12 Founder and Head of PostGraduate Master "Scientific Computing", University of Roma "La Sapienza" (<http://www.mat.uniroma1.it/mastercs>)
- 1/02-9/03 Head of the Undergraduate Studies in Mathematics, University of Roma "La Sapienza"
- 1/02- 9/03 Member of the Managing Board (Giunta), Dipartimento di Matematica, La Sapienza
- 11/98-11/99 Member of the Managing Board (Giunta), Dipartimento di Matematica, La Sapienza

1993-2013	Rappresentative of University of Roma "La Sapienza" in the Scientific Board of the CASPUR Consortium https://www.aicanet.it/storia-informatica/calcolo-scientifico-in-italia/caspur
2/88-2/91	President of the Board for the Computing Center, Dipartimento di Matematica
84-87	Member of CUN Panel for the Area "Mathematics"
85-86	Member of the Managing Board (Giunta), Dipartimento di Matematica, La Sapienza

TEACHING ACTIVITY

Undergraduate courses

Degree in Mathematics

Academic Years

Course

87-88	Istituzioni di Analisi Superiore
90-92, 95-97, 00-01	
01-02, 02-03	Matematica Applicata
93-94	Analisi Matematica I
94-95, 99-00	Analisi Matematica II
98-99	Matematica Computazionale
94-95, 95-96, 96-97	Analisi Numerica (Roma Tre)
05-06, 07-08	
10-11, 11-12, 16-17	Analisi Numerica (Sapienza)
19-20, 20-21	
97-98, 98-99, 99-00	Laboratorio di Programmazione e Calcolo (Università di Roma Tre)
00-01, 01-02, 02-03	Laboratorio di Programmazione e Calcolo (Università La Sapienza)
06-07, 14-15, 15-16	
19-20, 20-21	
05-06, 06-07, 07-08, 08-09, 09-10, 10-11, 12-13, 13-14	Metodi Numerici di Ottimizzazione (Università La Sapienza)
12-13, 13-14	
12-13, 13-14	Istituzioni di Analisi Numerica

09-10, 10-11, 11-12 14-15	Metodi Numerici per le Equazioni alle Derivate Parziali (Università La Sapienza)
15-16, 16-17,17-18	Metodi Numerici per le Equazioni alle Derivate Parziali non Lineari (Università Sapienza)
16-17,17-18,19-20, 20-21 20-21	Basi di dati Corso di eccellenza (Università di Genova}

Degree in Physics and Computer Science (La Sapienza)

88-89, 90-91, 97-98	Analisi Matematica I
89-90, 91-92, 98-99	Analisi Matematica II

Graduate courses

Master in "Mathematical Methods for the Analysis and Control of Systems"

85-86, 86-87, 87-88	Lectures on "Integrazione Numerica e Simulazione"
88-89, 89-90, 90-91, 91-92	Metodi numerici per il controllo deterministico
05-06,06-07,07-08	Programmazione in C

Ph.D. Program in Mathematics, University of Roma "La Sapienza"

95-96	Analisi ed approssimazione di problemi di controllo ottimo per processi di diffusione
02-03, 04-05, 06-07, 07-08, 09-10, 11-12	Metodi Numerici per le Equazioni alle Derivate Parziali
11-12	Numerical methods for Hamilton-Jacobi equations and optimal control problems
15-16, 16-17,17-18	Metodi Numerici per le Equazioni alle Derivate Parziali non Lineari (Università La Sapienza)

Ph.D. Program in "Mathematical Methods and Modelling for Science, Technology and Society" , Università di Roma "La Sapienza"

95-96	Analisi ed approssimazione di problemi di controllo ottimo per processi di diffusione
00-01	Metodi Numerici per le Equazioni alle Derivate Parziali
01-02	Metodi Numerici per le equazioni di Hamilton-Jacobi

Master "Scientific Computing", University of Roma "La Sapienza"

02-03	Metodi Numerici per le Equazioni alle Derivate Parziali
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02-03, 08-09 Metodi Numerici per il Controllo Ottimo
09-10

11-12,12-13, 13-14 Metodi Numerici per il Trattamento delle Immagini
14-15, 15-16

FIXO Course (Roma "La Sapienza")

08-09 Metodi Numerici per il Trattamento delle Immagini

Teaching activity outside Italy

Undergraduate courses

85-86 Analisi Matematica II at University of Paris Sud-Orsay

87-88 Lectures in "Contrôle Deterministe" for the Troisième Cycle
"Mathématiques et automatique" at University of Paris IX -
Dauphine.

PhD Courses and Schools

September 2000, TIFR-Bangalore (India)

"An introduction to the analysis and approximation of Hamilton-
Jacobi equations with applications"

March 2004, IRIT-Toulouse (Francia)

"Quelques methodes pour le traitement d'images par les
EDP nonlineaires"

June 2004, Summer School "Differential Games and Applications", GERAD,
Montreal (Canada)

"Numerical methods for differential games based on PDEs"

February 2007, MATHEON Course, Berlin

"An introduction to viscosity solutions"

November 2007, ENSTA, Paris

Minicourse "Fast Marching Methods for Front Propagation"

Winter School "Introduction to Numerical Methods for Moving
Boundaries"

June 2008, Ph.D. Course, Santiago de Compostela

"An introduction to viscosity solutions: theory, numerics
and applications"

September 2008, INRIA, Rocquencourt

Course CEA-EDF-INRIA "Numerical methods for Hamilton-
Jacobi equations and hyperbolic conservation laws"

June 2009 Ecole CNRS Figeac,
"Nouveaux outils mathématiques pour l'analyse d'images et la vision par ordinateur", Figeac,
Course "Méthodes d'ensembles de niveau et algorithmes à marche rapide"

April 2012, ENSTA, Paris
SADCO Spring School & Workshop "Applied and Numerical Optimal Control"
Course "Numerical Schemes for Hamilton-Jacobi equations, optimal control and games"

September 2013, Padova, Dipartimento di Matematica
An introduction to Numerical Optimal Control

May 2018, Analysis and approximation of some PDE models for 3D vision and image segmentation, Università di Napoli "Federico II"

March-May 2021, Optimal control and applications, Università La Sapienza, with M. Palladino (GSSI) and F. Silva (Limoges).

Ph.D. Thesis

I have supervised the following students:

F. Camilli (Indam, Dottorato di Ricerca Roma "La Sapienza"), L. Corrias (Indam), R. Ferretti (Dottorato di Ricerca Roma "La Sapienza"), T. Giorgi (IAC-CNR, Purdue University), P. Lanucara (Borsista IBM-CASPUR), A. Biani (Dottorato in Matematica, Pisa), A. Marta (Indam), C. Signani (CNR, CASPUR), M. Sagona (Dottorato in Matematica Applicata e Informatica, Univ. di Napoli, 2001), E. Carlini (Dottorato.in Modelli e Metodi Matematici per la Scienza, La Tecnologia e la Società, 2004), E. Cristiani (Dottorato.in Modelli e Metodi Matematici per la Scienza, La Tecnologia e la Società, 2007), M. Rorro (Dottorato.in Modelli e Metodi Matematici per la Scienza, La Tecnologia e la Società, 2007), R. Mecca (Dottorato in Matematica, Settembre 2011), A. Festa ((Dottorato.in Matematica, Gennaio 2012), A. Alla (Dottorato.in Matematica, 2013), S. Tozza (Dottorato.in Matematica, 2014), S. Sahu (Dottorato.in Matematica, 2015), G. Fabrini (Genova, 2017), G. Paolucci (Roma La Sapienza, 2018), Luca Saluzzi (GSSI, 2020), A. Pesare (Roma La Sapienza, 2021),

On going Ph.D. Thesis:

A. Pacifico (Roma La Sapienza, in corso)

Member of Committees Abroad

PhD Final Exams

D. Pascal (IRIT, Toulouse, 2000)

Peut-on estimer le relief d'une seule image?

N. Parolini (EPFL Losanna, 2004)

Computational fluid dynamics for naval engineering applications

C. Taubert (Institut National Polytechnique, Toulouse, 2005)

Filtrage anisotrope robuste et segmentation par B-spline snake :
application aux images échographiques

A. Gorbel, (CERMICS, Paris, 2006)

Analyse numérique de la dynamique des dislocations et applications à
l'homogénéisation

F. Courteille (Ecole Doctorale Informatique et Telecommunications,
Toulouse, 2006)

Vision monoculaire: contributions théoriques et application à la numérisation
des documents

A. Lakhua (Ecole Polytechnique, Paris, October 2007)

Méthode des éléments finis max-plus pour la résolution numérique de
problèmes de commande optimale déterministe

S. Detournay (Ecole Polytechnique, Paris, 2012)

Multigrid methods for zero-sum two player stochastic games

G. Bianchi Granato (ENSTA, Paris, November 2012)

Optimization de lois de gestion énergétiques des véhicules hybrides

Z. Qu (Ecole Polytechnique, Paris, October 2013)

Nonlinear Perron-Frobenius theory and max-plus numerical methods for
Hamilton-Jacobi equations

A. Picarelli (Ecole Polytechnique, Paris, April 2015)

Sur des problèmes de contrôle stochastique avec contraintes sur l'état

J. Rotaetxe Arto (Oxford, February 2017)

Boundary treatment and multigrain preconditioning for semi-Lagrangian schemes applied to Hamilton-Jacobi-Bellman equations

Roberto M. Velho (KAUST, July 2017)

Finite-State Mean-Field Games, Crowd Motion Problems and its Numerical Method

J. Melou (Institut National Polytechnique, Tolosa 2020)

Fusion d'approches phoyometriques et g'eom\etriques \pour la cr\eatation de mod\eles 3D

N. Gammoudi (ENSTA, Parigi 2021)

Hamilton–Jacobi approach for state-constrained differential games and numerical learning methods for optimal control

Habilitation a Diriger des Recherches (HDR) (in France)

Prof. J.D. Durou (IRIT, Paul Sabatier, Toulouse, 2009)

Prof. H. Zidani (ENSTA, Paris, 2010)

Haut Conseil de l'Evaluation de la Recherche et de l'Enseignement Supérieur (HCERES, France)

Member of the evaluation committee for the Laboratoire de Mathématiques de Bretagne Atlantique (LMBA), at Brest and Vannes (February 2016)

Hiring and Abilitation Committees in Italy

- 2000 Member of the Committee for a position of Associate Professor in ANALISI NUMERICA MAT/08 at Università di Lecce
- 2001 Member of the Committee for a position of Full Professor in ANALISI NUMERICA MAT/08 at Università di Palermo
- 2016-18 Member of the National Committee for the habilitation of professors in Numerical Analysis (ASN 2016-2018)
- 2018 Member of the Committee for a position of RTDB in ANALISI NUMERICA MAT/08 at Università di La Sapienza
- 2019 Member of the Committee for a position of Full Professor in ANALISI NUMERICA MAT/08 at Università di Padova
- 2020 Member of the Committee for a position of RTDA in ANALISI NUMERICA MAT/08 at Università di La Sapienza
- 2020 Member of the Committee for a position of Associate Professor in ANALISI NUMERICA MAT/08 at Università di Genova

SCIENTIFIC ACTIVITY

My main research topics are:

1. **Numerical methods for PDEs**

Finite difference and semi-Lagrangian schemes for conservation laws, Hamilton-Jacobi equations and hyperbolic equations. Applications to front propagation, fluid dynamics, control theory, homogenization, image processing.

2. **Control Theory and applications**

Optimal control and Hamilton-Jacobi equations: Dynamic Programming, synthesis of feedback form, differential games, pursuit-evasion games, noncooperative games. Reinforcement learning.

Scientific Visits

I have been invited for research periods by the following institutions:

CEREMADE, Université Paris IX-Dauphine

IMA, Institute for Mathematics and its Applications,
University of Minnesota

Department of Mathematics, Wayne State University

Division of Applied Mathematics, Brown University

Department of Mathematics, UCLA, USA

NADA, Koenig Technische Hogshule, Stockholm

PIMS, Pacific Institute for Mathematical Sciences, Vancouver

TIFR, Tata Institute of Fundamental Research, Bangalore

ENSTA, Ecole Nationale Supérieure de Techniques Avancées, Paris

Department of Mathematics, Santiago de Compostela

Paris 7 and Laboratoire J.L. Lions, Paris

IRIT, Université "Paul Sabatier", Tolosa

INRIA, Rocquencourt e Sophia-Antipolis

WIAS, Weierstrass Institute for Applied Analysis and Stochastics,
Berlin

Wüzburg University

IMPA, UCLA, USA

Conferences, workshops and invited talks

I have been invited to give talks at the following institutions:

S.I.S.S.A., Trieste, February 1981

Istituto Matematico, University of Genova, March 1982
Institut de Mathématiques et Informatiques, Université de Bordeaux,
February 1983
Institut Henry Poincaré, Parigi, March 1983
CEREMADE, Université Paris IX Dauphine, April 1983, June 1984,
January 1988
I.N.R.I.A., Sophia-Antipolis, Nizza, April 1983
Laboratorio di Didattica delle Scienze, Università di Roma "La
Sapienza", July 1984
School of Mathematics, University of Leeds, May 1985
I.A.C., Roma, February 1987, March, May 1988
Dipartimento di Matematica, University of Padova, September 1988,
March 1995, March 2004
SFB256, Nichtlineare Partielle Differentialgleichungen, University of
Bonn, March 1990
Dipartimento di Matematica, University of L'Aquila, March 1991
Department of Mathematics, Wayne State University, Detroit,
July 1991, February 1993
Division of Applied Mathematics, Brown University, Providence,
August 1991
Dipartimento di Metodi e Modelli Matematici per le Scienze Applicate,
Università di Roma "La Sapienza", May 1992
Institut for Mathematics and its Applications, University of Minnesota,
November 1992
Mathematisches Institut, Technische Universität München,
February 1993
Program System Institute, Russian Academy of Science, Pereslavl-
Zalessky, June 1993
Institute of Numerical Mathematics, Russian Academy of Science,
Mosca, June 1993
Irkutsk Computing Center, Russian Academy of Science, Irkutsk,
June 1993
Dipartimento di Matematica, University of Roma "Tor Vergata",
June 1993
Dipartimento di Matematica, MIEM, Mosca, June 1995
Dipartimento di Matematica, Moscow Aviation Institute, Mosca,
June 1995
Dipartimento di Matematica, University of Augsburg, January 1996
Department of Mathematics, UCLA, October 1997
NADA, Koenig Technische Hogshule, Stoccolma, October 1998
Departement de Mathématiques, Université "Paul Sabatier", Tolosa,
May 1999, January 2000

TIFR, Tata Institute of Fundamental Research, Bangalore,
September 2000
RIMS, Kyoto, September 2002
MIP, Tolosa, March 2004
IRIT, Tolosa, March 2004
ENSTA, Ecole Nationale Supérieure de Techniques Avancées,
Paris, 2005, 2006, 2012
INRIA, Rocquencourt e Sophia-Antipolis, 2007
WIAS, Berlin, 2007
Department of Mathematics, Santiago de Compostela, 2008
College de France, Paris, 2009
CMAP, Ecole Polytechnique, Paris, 2009
Département de Mathématiques, Université de Tours, 2012
42th South-African Numerical and Applied Mathematics
Conference (SANUM), Stellenbosch (South Africa), April 4-6, 2018

Invited talks at conferences and mini-symposiums

Contrôle stochastique et equations aux dérivées partielles
nonlineares, Parigi, November 1987
ICME-6, Sixth International Congress on Mathematical Education,
Budapest, July 1988
III Elba Conference on Nonlinear Variational Problems and Partial
Differential Equations, October 1990
Surface Tension and Movement by Mean Curvature, Trento,
July 1992
Optimal Control of Partial Differential Equations, Oberwolfach,
January 1993
Partial Differential Equations in Geometry and Physics: Theory and
Numerical Methods, Freiburg, February 1993
Nonsmooth Analysis and Geometric Methods in Deterministic Optimal
Control, Minneapolis, February 1993
Metodi Numerici per Problemi a Convezione Dominante, IAC-CNR,
Roma, September 1993
Motion by Mean Curvature and related Topics, Levico, June 1994
CIME “Viscosity solutions and applications”, Montecatini, June 1995
ICIAM 95 Minisymposium, Advances in Dynamic Programming,
Amburgo, July 1995
ICIAM 95 Minisymposium, Functional differential equations and their
applications, Amburgo, July 1995
IFIP Conference “Modelling and optimization of distributed parameter
systems with application to engineering”, Varsavia, July 1995

Generalized Stefan problems: models, analysis and numerical methods, Pavia, August 1995

Numerical methods for free boundary problems, Freiburg, September 1995

Optimal Control, Oberwolfach, January 1996

International Conference on Control and Estimation of Distributed Parameter Systems, Vorau (Austria), July 1996

Conference on Recent Advances in Numerical Methods for Partial Differential Equations, Trieste, September 1996

Workshop on Stochastic Control and Nonlinear Filtering, North Carolina State University of Raleigh, October 1996

Fourth SIAM Conference on Control and its Applications, Jacksonville, Florida, May 1998

Workshop on "New Trends in Mathematical Control Theory and PDEs", Levico Terme, June 1998

MTNS98 - Mathematical Theory of Network and Systems, Minisimposio "Numerical methods for the stabilization of nonlinear systems", (Org. W. Kliemann e F. Colonius), Padova, July 1998

MTNS98 - Mathematical Theory of Network and Systems, Minisimposio "Viscosity solutions methods", (Org. M. Bardi), Padova, July 1998

Workshop "Phase field models and surface effects", Cortona, September, 1998

"Evolutions Equations and applications", Cortona, May 1999

"CANUM 99- 31eme Congres d'Analyse Numerique 1999", Ax-Bonascres, Francia, May 1999

5th Workshop on "Computational Methods for Oceanic, Atmospheric and Groundwater Flows", Trento, September 1999

"Numerical Methods for Kinetic and Hyperbolic Equations", Ferrara, December, 1999

Workshop "Phase Transitions and Interfaces in Evolution Equations: analysis, control and approximations", S. Margherita Ligure, February 2000

Minisimposio Italia-Cina, all'interno di SIMAI 2000, Ischia, June 2000

ORASIS, Cahors, June 2000

"Phase Transition", Vancouver (Canada), July 2001

"Viscosity solutions and Applications", Vancouver (Canada), July 2001

ENUMATH 2001, Ischia Porto, July 2001

"Numerical Algorithms", Marrakesch, September 2001

SIMAI 2002, Cagliari, Italy, July 2002

"Viscosity solutions and Applications", Cortona, July 2002

"Algoritmy 2002", Tatra Mountains (Rep. Slovacca), September 2002

RIMS Conference on "Viscosity solutions and Applications", Kyoto, September 2002

Workshop "Front propagation and viscosity solutions", IHP, Parigi, December 2002

INTERPHASE 2003, Newton Institute, Cambridge, May 2003

Convegno UMI 2003, Milano, Session "Scientific Computing", September 2003

Workshop "Equations de Hamilton-Jacobi-Bellaman et controle", ENSTA, Paris, September 2003

SIMAI 2004, Venezia, September 2004.

ICIAM 2007 Minisymposium "Efficient methods for Hamilton-Jacobi equations", Zurich, 2007

ENUMATH 2007 - Minisymposium "Level-set methods, Hamilton-Jacobi equations and applications", Graz, September 2007

Pontryagin Centennial Conference, Moscow, June 2008

IFAC 2008, Misymposium "Control problems for dynamical systems under conflicts and uncertainty", Seul, July 2008

Nonlinear PDEs, Rome, September 2008

50 Years of Optimal Control, Bendlewo, September 2008

Nice Weak KAM Methods, Nice, February 2009

14th Belgian-French-German Conference on Optimization, Leuven, September 2009

Actual Problems of Stability and Control Theory (APSCT 2009), Ekaterinburg, September, 2010

Workshop on Computational Issues in Nonlinear Control, Monterey, November 2009

Motion of Interfaces and Nonlinear PDEs, Tours, February 2010

Classical and Weak KAM Theory, Montegrotto Terme, February 2010

EPSRC Symposium on Game Theory for Finance, Social and Biological Sciences, Warwick, April 2010

Journées Numeriques de Besancon, May 2010

ICIAM, Vancouver, July 2011

IFAC 2011, Milan, September 2011

SADCO Workshop "Optimal Control", Londra, September, 2011

ESF-OPTPDE Workshop "Fast solvers for simulation, inversion and control of wave propagation problems", University of Wurzburg, September 2011

Workshop on Control and Optimization of PDEs, Graz, October 2011,

2nd Workshop on Computational Issues in Nonlinear Control, Monterey, November 2011

12th Viennese Workshop "Optimal Control, Dynamic Games and Nonlinear Dynamics" Vienna University of Technology, May 30

- June 2, 2012

IFIP TC 7/2013 System Modeling and Optimization, September 8-13, 2013, European Science Foundation OPTPDE

9th International Conference on "Large Scale Scientific Computations", Sozopol, June 3-7, 2013 (plenary)

Workshop "Modeling and Control of Large Interacting Dynamical Systems", 10 - 12 September 2013, Université Paris-Dauphine, Paris, France.

New Perspectives in Shape Analysis, February 9 – 14, 2014, Dagstuhl Seminar 14072, Dagstuhl Schloss, Germania

Control Theory and Theory of Generalized Solutions of HJ Equations, Ekaterinburg, April 2015

13th Viennese Workshop on Optimal Control and Dynamic Games, May 13-16, 2015, Wien, Austria

16th Italian Meeting on Hyperbolic Equations, GSSI, October 22-24, 2015, L'Aquila (plenary)

Numerical Aspects of Hyperbolic Balance Laws and Related Problems, December 17-19, 2015, Dipartimento di Matematica, Università di Ferrara (plenary)

Optimal Control for Evolutionary PDEs and Related Topics - OCERTO Cortona, June 20-24, 2016 (invited)

Recent Advances in Numerical Methods for Hyperbolic Conservation Laws and Nonlinear Time Dependent Partial Differential Equations, Università di Trento, November 2-4, 2016 (invited)

Numerical methods for Hamilton-Jacobi equations in optimal control and related fields, RICAM (Linz), November 21-25, 2016 (invited)

6th International Conference on Scale Space and Variational Methods in Computer Vision, Kölding, Danimarca, 4-8 Giugno 2017 (plenary)

One day workshop in applied mathematics, Bari, 8 Giugno 2017 (su invito)

IV Conference on Numerical Aspects of Hyperbolic Balance Laws and Related Problems & INdAM Day Ferrara 2018, University of Ferrara 16–20 April, 2018 (plenary)

Final Workshop of the Intensive Bimester INDAM "Computational Methods for Inverse Problems in Imaging", May-July 2018, Como Intensive Bimester Computational Methods for Inverse problems in Imaging, Final Workshop, July 16-18, 2018, Como (plenary)

Conferenza SMAI, Guidel (Francia), 13-17 Maggio 2019 (invited)

SIAM, Control Theory 2019, Cheng-du (Cina), 17-21

Giugno 2019 (invited)

ICIAM 2019, Valencia, 15-19 Luglio 2019 (invited)

Convegno UMI, Pavia, 2-6 Settembre 2019 (invited)

Conference SCDG 2019 - Stability Control and Differential Games, Ekaterinburg, 16-20 Settembre 2019 (plenary)
Conference ENUMATH 2019, Eegmond aan Zee (Olanda), 30 Set-4 Ott 2019
Workshop "Optimal Control and Mean Field Games", Rio de Janeiro, 14-18 Ottobre 2019 (plenary)
Workshop "Feedback control", RICAM, Linz, 27-29 Novembre 2019 (plenary)
IPAM "High dimensional Hamilton-Jacobi PDEs" (special semester)
Workshop I: High Dimensional Hamilton-Jacobi Methods in Control and Differential Games : March 30 - April 3, 2020
III International Seminar "Control Theory and Theory of Generalized Solutions of Hamilton-Jacobi Equations" (CGS'2020), Ekaterinburg, October, 26-30, 2020.
INDAM Workshop "Analysis and Numerics of Design, Control and Inverse Problems", July 13-17, 2021
Numerical Methods for hyperbolic problems, NumHyp 2021 Trento: 26-30 July 2021
SIMAI 2021 Conference, MS14 "Innovative numerical methods for evolutionary partial differential equations", June 30-July 3, 2021

Organization of Conferences and Schools

Member of the Scientific Committee for :

IFAC Conference "Singular solutions and perturbations of control systems" (Peresslavl-Zalesky, July 95 e July 97)
8th International Symposium on Dynamic Games and Applications (Maastricht, July 1998).
Numerical Methods for Viscosity Solutions and Applications, Crete, July 1999
Numerical Methods for Viscosity Solutions and Applications, Rome, September 2004
INTERPHASE 2004, Rome, September 2004
ENUMATH 2005 - Minisymposium "Level-set methods, Hamilton-Jacobi equations and applications", Santiago de Compostela, July 2005
ENUMATH 2007 - Minisymposium "Level-set methods, Hamilton-Jacobi equations and applications", Graz, September 2007
SIAM "Conference on Control and its Applications", Denver, Colorado, July 2009
Mean Field Games and related topics, Roma, May 12-13, 2011

WEB: <http://www.mat.uniroma1.it/ricerca/convegni/2011/mfg/>
ICIAM 2011-Minisymposium "Efficient Numerical Methods For Hamilton-Jacobi Equations", Organized with O. Bokanowski

WEB: <https://itn-sadco.inria.fr/events-meetings/satellite-events/satellite-events-2011/minisymposium-in-iciam-congress>
Recent advances on theory and applications of Semi-Lagrangian methods, Rome, December 5-6, 2011,

WEB: <http://www.mat.uniroma1.it/ricerca/convegni/2011/SL/>
Minisymposium at ORCOS 2012 "Optimal Control, Dynamic Games and Nonlinear Dynamics", Maggio 2012, Analysis and approximation of some PDE models for 3D vision and image segmentation, Università di Napoli "Federico II" University of Technology, May 30 - June 2, 2012

NETCO Conference "New trends in optimal control", Tours, June 23-27, 2014, WEB: <http://netco2014.sciencesconf.org/>

Workshop "New perspectives in optimal control and games", Roma, November 10-12, 2014, <http://www1.mat.uniroma1.it/ricerca/convegni/2014/sadco2014>

Minisymposium "Stochastic Control and Applications" (with H. Zidani), 13th Viennese Workshop on Optimal Control and Dynamic Games, May 13-16, 2015, Wien, Austria

Minisymposium MS-35 "Advanced Numerical Methods for Partial Differential Equations and Applications", Congresso SIMAI 2016, Milano, 13-16 Settembre 2016 (con S. Perotto e G. Rozza)

Minisymposium MS-41 "Model Reduction: Methods, Algorithms, Applications", Congresso SIMAI 2016, Milan, 13-16 Settembre 2016 (con S. Perotto e G. Rozza)

Minisymposium MS9 - Innovative models and algorithms for astronomical imaging (2 parts) inside SIAM IS 2019 (co-organizers Silvia Tozza (INdAM/Dept. Mathematics, University of Rome "La Sapienza"), Marco Castellano (INAF Osservatorio Astronomico di Roma), Adriano Fontana (INAF Osservatorio Astronomico di Roma))

Minisymposium inside SIAM IS 2019, co-organizers Jean-Denis Drouot (IRIT, Université de Toulouse)

Minisymposium "Model order reduction in control and optimization" inside 14th Viennese Conference on Optimal Control and Dynamic Games, 3-6 July, 2018 Wien, Austria

Conference SCDG 2019 - Stability Control and Differential Games, Ekaterinburg, 16-20 Settembre 2019

Minisymposium "Space and time adaptation for PDEs: from theory to practice" in ENUMATH 2019, Egmond aan Zee (Olanda), 30 Settembre-4 Ottobre 2019

IPAM "High dimensional Hamilton-Jacobi PDEs" (special semester)
Workshop I: High Dimensional Hamilton-Jacobi Methods in Control and
Differential Games : March 30 - April 3, 2020

III International Seminar "Control Theory and Theory of Generalized
Solutions of Hamilton-Jacobi Equations" (CGS'2020), Ekaterinburg,
October, 26-30, 2020

INDAM Workshop "Mathematical Methods for Objects Reconstruction: from
3D Vision to 3D Printing, Roma, 8-12 Febbraio, 2021

CIME Summer school "Model Order Reduction and Applications", with G.
Rozza (SISSA), July 1-5, 2021

Organizing Committees for Conferences and Workshops

Member of the organizing committees for:

Recent Mathematical Methods in Dynamic Programming
(Roma, 1984)

Educational Computing in Mathematics (Roma, 1987)

Giornate sulle equazioni di Hamilton-Jacobi
(Castiglion della Pescaia, May 1991)

Recent Advances in Numerical Methods for Partial Differential
Equations (Roma, January 1993)

Viscosity Solution and Application, (Bressanone, July 2000)

Analysis and Control of Deterministic and Stochastic Evolution
Equation, (Bressanone, July 2000)

Workshop "Mathematical Models for Dislocations", Roma,
December 2007

Viscosity, metric and control theoretic methods in nonlinear PDEs:
analysis, approximations, applications, (Rome, September 2008)

WEB: <http://www.mat.uniroma1.it/ricerca/convegni/2008/RomaSet08/>

"Optimal Control of Partial Differential Equations", Cortona July 2010

(WEB: <http://www.mat.uniroma1.it/cortona10/>)

Conference "New Horizons in Optimal Control", Cascais, September
8-10, 2014, <http://paginas.fe.up.pt/~mrpinho/NHOC2014/>

Imagine Math 6, Convegno Internazionale con circa 200 partecipanti,
Istituto Veneto di Scienze, Lettere ed Arti, Venezia,

31/03/2017- 02/04/2017

19th International Conference on Finite Elements in Flow Problems,
FEF 2017 , La Sapienza, Roma, 5-7 Aprile 2017

Mean Field Games and related topics, La Sapienza, Roma,
14-16 Giugno 2017

WEB: <http://www1.mat.uniroma1.it/ricerca/convegni/2017/mfg2017/>

Numerical Methods for optimal control problems: algorithm, analysis and applications, INDAM, Roma, 19-23 Giugno 2017

WEB: <http://www1.mat.uniroma1.it/ricerca/convegni/2017/numoc2017/>

SIAM Control Theory 2017, Convegno Internazionale, Pittsburg, USA, July 10-12, 2017

SIAM Conference on Imaging Sciences 2018, Bologna, June 5-8, 2018

17th IFAC Workshop on Control Applications of Optimization Yekaterinburg, Russia, October 15–19, 2018

Organization of Post-Graduate schools

COMET Course "Constructive Methods in Optimal Control and Applications" (with P. Saint-Pierre), Rome, September 1993.

"Numerical Methods for Optimal Control Problems and Industrial Applications" , (with A. Quarteroni), Pisa, Scuola Normale Superiore, January 1996

"Numerical Methods for Nonlinear Problems in Optimization and Control" (with A. Pasquali), Cortona, June 2001.

SMI-INDAM Summer School "Optimal Control of Partial Differential Equations", Cortona July 2010 (WEB: <http://www.mat.uniroma1.it/cortona10/>)

SADCO Summer School & Workshop "New Trends in Optimal Control" (with F. Ancona), Ravello, September 2012

CIME Summer school "Model Order Reduction and Applications", with G. Rozza (SISSA), July 1-5, 2021

ACTIVITIES FOR SCIENTIFIC JOURNALS

As Editor

Editor for international journals

Associate Editor of the Journal of Dynamic Games and Applications, Springer Verlag (WEB: <http://www.springer.com/mathematics/applications/journal/13235>)

Member of the Scientific Board of the Springer Series

Static & Dynamic Game Theory: Foundations & Applications WEB: <http://www.springer.com/series/10200>

Associate Editor for Special Issues

Invited associate editor for 2 special issues of Applied Numerical Mathematics

Invited Associate editor for 1 special issue of Dynamic Games and Applications on "Numerical Methods in Dynamic Games", vol 7 (4), December 2017

Invited Associate editor for 1 special issue of CAIM <http://caim.simai.eu/index.php/caim> (2016)

Invited Associate editor for a special issue of Computer and Mathematics with Applications (2019) <https://www.journals.elsevier.com/computers-and-mathematics-with-applications/>

Invited Associate editor for a special issue of Computer and Mathematics with Applications (2020, ongoing) <https://www.journals.elsevier.com/computers-and-mathematics-with-applications/>

As Referee

I have written referee reports for the following journals (a selection):

Annals of Dynamic Games
Applied Mathematics and Optimization
Automatica
Bollettino UMI
Computational and Applied Mathematics
Control & Cybernetics
Dynamic Games and Applications
Discrete and Continuous Dynamical Systems
Mathematics of Computation
ISDG - International Society of Differential Games volumes
IEEE Transactions on Automatic Control
IEEE Transactions on Image Processing
JDGA - Journal of Dynamic Games and Applications
IJPRAI - International Journal of Pattern Recognition and
Artificial Intelligence
JMAA Journal of Mathematical Analysis and Applications
IMA Journal on Numerical Analysis
Interfaces and Free Boundaries
Journal of Computational Physics
Journal of Scientific Computing
Journal of Optimization Theory and Applications
Nonlinear Analysis and Applications
Numerische Mathematik
Set-Valued Analysis
SIAM Journal on Numerical Analysis
SIAM Journal on Control and Optimization
SIAM Journal on Scientific Computing
SIAM Journal on Imaging Sciences
Zentralblatt für Mathematik

CONSULTING FOR RESEARCH AGENCIES

CNR, Italy
NSF, USA
ISF, Israel
NSF, Canada
NSF, Netherland
MIUR, Italy
AFORS, USA
NSF, Switzeland
NSF, Portugal

PUBLICATIONS

Books

1. I. Capuzzo Dolcetta- M. Falcone, L'analisi al calcolatore, Zanichelli, 1990
2. M. Falcone, R. Ferretti, Semi-Lagrangian Approximation Schemes for Linear and Hamilton-Jacobi Equations, SIAM, 2013 (319pp)

Articles on international journals and volumes (with referees)

1. M. Falcone, A. Siconolfi
Maximum descent monotone solutions of an ODE with discontinuous right-hand side,
Journal of Optimization Theory and Applications, 39 (3), 1983, 391-402
2. M. Falcone, M. Matzeu
Optimal stopping for a Cauchy problem without uniqueness,
Control and Cybernetics, 12 (3-4), 1983, 85-97
3. M. Falcone, G. Israel
Qualitative and numerical analysis of a class of prey-predators models,
Acta Applicandae Mathematicae, 4, 1985, 225-258
4. M. Falcone
Approximate viscosity solutions of the Hamilton-Jacobi equation,
Methods of Operations Research, 49, 1985, 507-521
- 5a. M. Falcone
A numerical approach to the infinite horizon problem of deterministic control theory,
Applied Mathematics and Optimization, 15, 1987, 1-13
- 5b. M. Falcone
Corrigenda: A numerical approach to the infinite horizon problem of deterministic control theory,
Applied Mathematics and Optimization, 23, 1991, 213-214

6. M. Falcone, P. Saint-Pierre
Slow and quasi-slow solutions of differential inclusions,
Non-linear Analysis TMA, 11, 3, 1987, 367-377
7. I. Capuzzo Dolcetta, M. Falcone
Discrete dynamic programming and viscosity solutions,
Annales de l'Institut Henry Poincaré- Analyse non-lineaire, 6
(supplement), 1989, 161-184
8. M. Bardi, M. Falcone
An approximation scheme for the minimum time function,
SIAM Journal of Control and Optimization, 28 , 4, 1990, 950-965
9. M. Falcone, T. Giorgi e P. Loreti
Level sets of viscosity solutions and applications
SIAM J. Appl. Math., 54 (1994), 1335-1354
10. M. Bardi, M. Falcone
Discrete approximation of the minimal time function for systems with
regular optimal trajectories,
in A. Bensoussan, J.L. Lions (eds.), Analysis and Optimization of
Systems, Lecture Notes in Control and Information Sciences, n. 144,
Springer-Verlag, 1990, 103-112
11. L. Corrias, M. Falcone e R. Natalini
Numerical schemes for Conservation Laws via Hamilton-Jacobi
equations
Mathematics of Computation, 64 (1995), 555-580
12. M. Bardi, M. Falcone e P. Soravia
Fully discrete schemes for the value function of pursuit-evasion
games,
Advances in Dynamic Games and Applications, T. Basar and A.
Haurie eds. , Birkhäuser, (1994), 89-105.
13. F. Camilli e M. Falcone
An approximation scheme for the optimal control of diffusion
processes,
Mathematical Modelling and Numerical Analysis , 29, 1, 1995, 97-122

14. M. Falcone
The minimum time problem and its applications to front propagation
in A. Visintin e G. Buttazzo (eds) , "Motion by mean curvature and
related topics", De Gruyter Verlag, Berlino, 1994
15. M. Falcone, R. Ferretti
Discrete time high-order schemes for viscosity solutions of
Hamilton-Jacobi-Bellman equations,
Numerische Mathematik, 67 (1994), 315-344
16. M. Falcone, P. Lanucara e A. Seghini
A splitting algorithm for Hamilton-Jacobi-Bellman equations
Applied Numerical Mathematics, 15 (1994), 207-218
17. F. Camilli, M. Falcone
Approximation of optimal control problems with state constraints:
estimates and applications,
B.S. Mordukhovic, H.J. Sussman eds., "Nonsmooth analysis and
geometric methods in deterministic optimal control",
IMA Volumes in Applied Mathematics 78, Springer Verlag, 1996,
23-57
18. F. Camilli, M. Falcone, P. Lanucara e A. Seghini, A domain
decomposition method for Bellman equations, in D.E. Keyes and J.Xu
(eds), Domain Decomposition methods in Scientific and Engineering
Computing, Contemporary Mathematics n.180, AMS, 1994, 477-483
19. M. Falcone, R. Ferretti
Convergence analysis for a class of high-order semi-lagrangian
advection schemes,
SIAM J. Numerical Analysis 35 (1998), no. 3, 909--940
20. M. Bardi, S. Bottacin, M. Falcone
Convergence of discrete schemes for discontinuous value functions of
pursuit-evasion games, in G.J. Olsder (ed.), "New Trends in Dynamic
Games and Applications", Birkhäuser, (1995), 273-304.
21. M. Falcone, T. Giorgi
An approximation scheme for evolutive Hamilton-Jacobi equations,
in W.M. McEneaney, G. Yin and Q. Zhang (eds.),
"Stochastic Analysis, Control, Optimization and Applications: A Volume

in Honor of W.H. Fleming", Birkhäuser, 1999, 289-303.

22. M. Falcone, R. Rosace
Discrete- time approximation of optimal control problems for delayed equations,
Control & Cybernetics, 25 (1996), 665-675
SCOPUS: 2-s2.0-0030495398
23. F. Camilli, M. Falcone
Approximation of control problems involving ordinary and impulsive controls
Control, Optimisation and Calculus of Variation, 4 (1999), 159-176.
24. F. Camilli, M. Falcone
Analysis and approximation of the infinite horizon problem with impulsive controls
Avtomatika i Telemekanika, 7, 1997, 169-184.
25. A. Briani, M. Falcone
A priori estimates for the approximation of a parabolic boundary control problem,
in W. Desch, F. Kappel, K. Kunisch, eds., "Control and Estimation of Distributed Parameter Systems", International Series of Numerical Mathematics, vol.126, Birkhäuser Verlag, Berlin, 1998, 49-65.
26. M. Falcone
Numerical solution of dynamic programming equations,
Appendice del libro M. Bardi, I. Capuzzo Dolcetta, "Optimal control and viscosity solutions of Hamilton-Jacobi-Bellman equations",
Birkhäuser, Boston, 1997, 471-504.
27. M. Bardi, M. Falcone, P. Soravia
Numerical methods for pursuit-evasion games via viscosity solutions,
Dipartimento di Matematica, in M. Bardi, T. Parthasarathy e T.E.S. Raghavan (eds.) "Stochastic and differential games: theory and numerical methods", Annals of the I.S.D.G., 4, Birkhäuser, 1999, 289-303.
28. M. Falcone
Some remarks on the synthesis of feedback controls via numerical methods,
J.L. Menaldi, E. Rofman, A. Sulem (eds), "Optimal Control and Partial

Differential Equations”, IOS Press, 2001, 456-465.

29. M. Falcone, R. Ferretti, T. Manfroni
Optimal discretization steps in semi-Lagrangian approximation of first order PDEs,
M. Falcone, Ch. Makridakis (eds), “Numerical Methods for Viscosity Solutions and Applications”, World Scientific, Singapore, 2001.
30. M. Falcone, P. Lanucara, M. Marinucci
Parallel Algorithms for the Isaacs equation, in E. Altman and O. Pourtallier (eds), “Advances in Dynamic Games and Applications”, Annals of the ISDG, vol. 6, 2001, Birkhauser, 203-223
31. M. Falcone, O. Lopez-Pouso,
Analysis and comparison of two approximation schemes for the radiative transfer system,
Math. Mod. Meth. Appl. Sc. 13 (2003), n. 2, 159-186.
32. M. Falcone, R. Ferretti
Semi-Lagrangian schemes for Hamilton-Jacobi equations, discrete representation formulae and Godunov methods,
Journal of Computational Physics, 175, (2002), 559-575.
33. M. Falcone, P. Stefani
Advances on Parallel Algorithms for the Isaacs equation,
Advances in dynamic games, 515–544, Ann. Internat. Soc. Dynam. Games, 7, Birkhäuser, Boston, 2005.
34. M. Falcone, M. Sagona and A. Seghini,
A global algorithm for the Shape-from-Shading problem with black shadows,
in F. Brezzi, A. Buffa, S. Corsaro, A. Murli (eds), “Numerical Mathematics and Advanced Applications - ENUMATH 2001”, Springer-Verlag, 2003, 503-512.
35. M. Falcone, R. Ferretti
Consistency of a large time--step scheme for mean curvature motion,
in F. Brezzi, A. Buffa, S. Corsaro, A. Murli (eds), “Numerical Mathematics and Advanced Applications- ENUMATH 2001”, Springer-Verlag, 2003, 495-502.
36. E. Carlini, M. Falcone e R. Ferretti,

An efficient algorithm for Hamilton-Jacobi equations in high dimensions,
Computing and Visualization in Science, 7 (2004), 15-29.

37. J.D. Durou, M. Falcone e M. Sagona
Numerical Methods for Shape from Shading: a new survey with benchmarks
Computer Vision and Image Understanding, Elsevier,
vol. 109, n. 1 (2008), p. 22-43.
38. M. Falcone
Numerical Methods for Differential Games via PDEs
International Game Theory Review, vol. 8, 2 (2006), 231-272.
39. M. Falcone, S. Finzi Vita
A finite difference approximation of a two-layers system for growing sandpile
SIAM J. Scientific Computing, Vol. 28, No. 3 (2006), 1120–1132.
40. E. Carlini, M. Falcone e R. Ferretti
A semi-Lagrangian scheme for the curve shortening flow in co-dimension 2
Journal of Computational Physics, vol. 225, n. 3 (2007), 1388-1408
41. E. Cristiani, M. Falcone
Fast semi-Lagrangian schemes for the eikonal equation and applications
SIAM J. Numer. Anal., vol. 45, n. 5 (2007), 1979-2011.
42. E. Cristiani, M. Falcone
A fully-discrete scheme for the value function of differential games with state constraints,
Annals of Dynamic Games, vol. 10 (2009), special issue "Advances in Dynamic Games and Their Applications: Analytical and Numerical Developments", Pierre Bernhard, Vladimir Gaitsgory, and Odile Pourtallier (eds), 179-210
43. E. Carlini, M. Falcone, N. Forcadel, R. Monneau
Convergence of a generalized fast marching method for a non-convex eikonal equation,
SIAM J. Numer. Anal. 46 (2008), 2920-2952.

44. E. Cristiani, M. Falcone,
A characteristics driven Fast Marching method for the eikonal equation,
in K. Kunisch, G. Of, O. Steinbach (eds.),
Numerical Mathematics and Advanced Applications (Proceedings of ENUMATH 2007, Graz, Austria, September 10-14, 2007), 695-702,
Springer, Berlin Heidelberg, 2008, 695-702.
45. M. Falcone, S. Finzi Vita,
A semi-Lagrangian scheme for the open table problem in granular matter theory,
in K. Kunisch, G. Of, O. Steinbach (eds.),
Numerical Mathematics and Advanced Applications
(Proceedings of ENUMATH 2007, Graz, Austria, September 10-14, 2007), Springer, Berlin Heidelberg, 2008, 711-718.
- 46.. M. Falcone, M. Rorro,
On a variational approximation of the effective Hamiltonian,
in K. Kunisch, G. Of, O. Steinbach (eds.),
Numerical Mathematics and Advanced Applications
(Proceedings of ENUMATH 2007, Graz, Austria, September 10-14, 2007), Springer Berlin Heidelberg, 2008, 719-726.
47. M. Falcone, C. Truini
A level-set algorithm for front propagation in the presence of obstacles, *Rendiconti di Matematica e delle sue Applicazioni*, vol. 29 (2009), 1-19
48. M. Falcone, M. Rorro,
Optimization techniques for the computation of the effective Hamiltonian,
M. Diehl, F. Glineur, E. Jarlebring and W. Michiels (eds.), "Recent Advances in Optimization and its Applications in Engineering" - Proceedings of the 14th Belgian-French-German Conference on Optimization, (Leuven, September 2009), Springer, 2010, 225-236
49. M. Falcone, M. Rorro,
On the computation of the effective Hamiltonian in the non convex case, *Trudy Instituta Matematiki i Mekhaniki UrO RAN*, 2010, v. 16, no.5, 253-260.
50. M. Breuss, E. Cristiani, J.-D. Durou, M. Falcone, O. Vogel,

Numerical algorithms for Perspective Shape from Shading,
Kybernetika, vol. 46 (2010), 207-225.

51. E. Carlini, M. Falcone, R. Ferretti
Convergence of a large time-step scheme for mean curvature motion,
Interfaces and Free Boundaries, vol. 12 (2010), 409-441.
52. M. Breuss, E. Cristiani, J.-D. Durou, M. Falcone, O. Vogel
Perspective Shape from Shading: ambiguity analysis and numerical
approximations, SIAM J. Imaging Sci., 5 (2012), 311-342.
53. S. Cacace, E. Cristiani, M. Falcone, A. Picarelli
A patchy dynamic programming scheme for a class of Hamilton-
Jacobi-Bellman equations, SIAM Journal on Scientific Computing, 34
(2012), 2625–2649.
54. Y. Achdou, M. Falcone
A numerical scheme for mean curvature motion with nonlinear
Neumann conditions, Interfaces and Free Boundaries 14 (2012),
455-485
55. E. Carlini, M. Falcone, Ph. Hoch
A Generalized Fast Marching Method on Unstructured Triangular
Meshes, SIAM J. Numerical Analysis, 51(6) (2013), 2999-3035.
56. M. Falcone, R. Mecca
Uniqueness and approximation of a Photometric Shape-from-Shading
model, SIAM Journal on Imaging Sciences, 6 (1) (2013), 616-659.
ISSN 1936-4954 (electronic)
57. M. Falcone, S. Finzi Vita, T. Giorgi, R. Smits
A Semi-Lagrangian Scheme for the Game p-Laplacian via p-
averaging, Applied Numerical Mathematics, 73 (2013), 63-80.
58. A. Alla, M. Falcone, D. Kalise
An Efficient Policy Iteration Algorithm for Dynamic Programming
Equations, PAMM · Proc. Appl. Math. Mech. 13 (2013), 467 – 468
59. A. Alla, M. Falcone, D. Kalise
An Efficient Policy Iteration Algorithm for Dynamic Programming
Equations, SIAM J. Sci. Comp., 37 (2015), n.1, 181–200.

59. A. Festa, M. Falcone
An approximation scheme for an eikonal equation with discontinuous coefficients, *SIAM J. Num. Anal.*, 52 (2014), 236-257
60. S. Cacace, E. Cristiani. M. Falcone
Can local single pass methods solve any Hamilton-Jacobi-Bellman equation?, *SIAM Journal on Scientific Computing*, 36 (2014), 570-587.
61. S. Cacace, E. Cristiani. M. Falcone,
Numerical approximation of Nash equilibria for a class of non-cooperative differential games
in L. Petrosjan e V. V. Mazalov (eds), *Game Theory and Applications*, vol. 16 (Chapter 4: pages 45-58), Nova Publishers, New York, 2013
62. S. Cacace, E. Cristiani. M. Falcone:
A local ordered upwind method for Hamilton-Jacobi and Isaacs equations
in *Proceedings of 18th IFAC World Congress 2011*.
IFAC Proceedings Volumes (IFAC-PapersOnline), 18 (2011), PART 1, 6800-6805
63. E. Carlini, M. Falcone, A. Festa
A brief survey on semi-Lagrangian schemes for Image Processing
in M. Breuss, A. Bruckstein, P. Maragos "Innovations for Shape Analysis: Models and Algorithms", *Proceedings of Dagstuhl Seminar 11142*, Springer Verlag, 2013, pp. 191-218.
64. A. Alla, M. Falcone.
An adaptive POD approximation method for the control of advection-diffusion equations, in Karl Kunisch, Kristian Bredies, Christian Clason and Gregory Von Winckel (eds.), "Control and Optimization with PDE Constraints", *International Series of Numerical Mathematics*, Birkhäuser, Basel, 2013, pp.1-18
65. A. Alla, M. Falcone.
A time -adaptive POD method for optimal control problems,
in Y. Le Gorrec (eds.), *Proceedings of the 1st IFAC Workshop on Control of Systems Governed by Partial Differential Equations (CPDE 2013)*, Curran Associates Inc., 2014 pp. -1-6

66. S. Bhattacharya, T. Basar, M. Falcone
Surveillance for Security as a Pursuit-Evasion Game,
in R. Poovendran, W. Saad (eds), Decision and Game Theory for
Security, GAMESEC 2014,
Lecture Notes in Computer Science, LNCS XXX, 2014, pp. 370-379
67. M. Falcone
Recent results in the approximation of nonlinear optimal control
problems,
in I. Lirkov, S. Margenov, J. Wasniewski (eds.), Large Scale Scientific
Computing, LNCS 8353, Springer Verlag, 2014, pp. 15-32
68. M. Falcone, M. Verani
Recent results in Shape Optimization and Optimal Control for PDEs,
in R. Hoppe (ed.), Optimization with PDE constraints,
Lecture Notes in Computational Science and Engineering, Vol. 101
Springer Verlag, 2014, pp. 65-94
69. M. Falcone
Optimal control and the Dynamic Programming Principle
in J. Baillieul, T. Samad (eds), Encyclopedia of Systems and Control,
Springer Verlag, 2015
70. A. Alla, A. M. Falcone, M. D. Kalise
An accelerated value/policy iteration scheme for optimal control
problems and games
Lecture Notes in Computational Science and Engineering,
103 (2015), 489-497
70. A. Festa, M. Falcone
 L^1 convergence of a SL scheme for the eikonal equation with
discontinuous coefficients,
in F. Ancona, A. Bressan, P. Marcati, A. Marson (eds), Hyperbolic
problems: theory, numerics, applications, AIMS on Applied
Mathematics, vol. 8, 2014, pp. 559-566
71. O. Bokanowski, M. Falcone, R. Ferretti, L. Grüne, D. Kalise, H. Zidani
Value iteration convergence of ε -monotone schemes for stationary
Hamilton- Jacobi equations, Discrete and Continuous Dynamical
Systems - Series A, 35 (9), 2015, pp. 4041-4070.

72. S. Cacace, M. Falcone
A dynamic domain decomposition for the eikonal-diffusion equation,
Discrete and Continuous Dynamical Systems, Series S 9 (1), 2016,
109-123
73. O. Bokanoswki, M. Falcone, S. Sahu
An efficient filtered scheme for some first order Hamilton-Jacobi-
Bellman equations, SIAM J. Sci. Comput. 38 (1), 2016, 171-195
74. S. Tozza, M. Falcone
Analysis and approximation of some shape-from-shading models for
non-Lambertian surfaces
J. Math. Imaging Vision, 55 (2), 2016, 153-178
75. M. Falcone and R. Ferretti, Numerical methods for Hamilton-Jacobi
type equations, in Handbook of Numerical Methods for Hyperbolic
Problems, R. Abgrall and C.W. Shu (eds), Elsevier, 2016
76. M. Castellano, D. Ottaviani, A. Fontana, E. Merlin, S. Pilo, M. Falcone
Improving Resolution and Depth of Astronomical Observations via
Modern Mathematical Methods for Image Analysis
in Taylor AR; Rosolowsky E (eds), ASTRONOMICAL DATA ANALYSIS
SOFTWARE AND SYSTEMS: XXIV, Astronomical Society of the Pacific
Conference Series, 495, (2015) 257-260
77. A. Alla, M. Falcone, S. Volkwein, Error analysis for POD
approximations of infinite horizon problems via the dynamic
programming approach, SIAM J. Control and Optim, 55 (2017),
3091-3115
78. A. Alla, A. G. Fabrini, M. Falcone,
Coupling MPC and DP methods for an efficient solution of
optimal control problems
IFIP Advances in Information and Communication Technology
494 (2016), 68-77
79. A. Alla, A. G. Fabrini, M. Falcone,
A HJB-POD approach to the control of the level set equation
in Rozza G.,Patera A.,Ohlberger M.,Urban K.,Benner P. (eds)
Modeling, Simulation and Applications
Volume 17, 2017, Pages 317-331, Springer Verlag,

80. A. Alla, M. Falcone, D. Kalise
A HJB-POD feedback synthesis approach for the wave equation
Bull. Braz. Math. Soc. 47 (1), 2016, 51-64
81. M. Falcone, M. and S. Finzi Vita,
A new mathematical model for traveling sand dunes: analysis and
approximation, Applied Numerical Mathematics, 155 (2020), 208-225
82. Alla, A. and M. Falcone, L. Saluzzi,
High-order approximation of the finite horizon control problem via a
tree structure algorithm, IFAC-PapersOnLine, (52) 2019,19-24
83. A. Alla, M. Falcone, L. Saluzzi,
An efficient DP algorithm on a tree-structure for finite horizon optimal
control problems, SIAM Journal on Scientific Computing, (41) 4, 2019,
A2384-A2406
84. M. Falcone, G. Paolucci, S. Tozza
Convergence of Adaptive Filtered schemes for first order evolutive
Hamilton-Jacobi equations, Numerische Mathematik, 145 (2020),
271-311
85. M. Falcone, G. Paolucci, S. Tozza,
Multidimensional smoothness indicators for first-order Hamilton-
Jacobi equations, Journal of Computational Physics, 409, (2020},
109360
86. M. Falcone, G. Paolucci, S. Tozza,
A High-Order Scheme for Image Segmentation via a modified Level-
Set method, SIAM J. Imaging Sciences, 13 (2020), 497-534
87. A. Alla, M. Falcone, L. Saluzzi
A tree structure algorithm for optimal control problems with state
constraints, Rendiconti di Matematica e sue Applicazioni, 41 (7), 2020,
193-221
88. M. Falcone, S. Finzi Vita,
A new mathematical model for traveling sand dunes: analysis and
approximation, Applied Numerical Mathematics}, 155 {2020}, 208-225

89. V. Roscani, S. Tozza, M. Castellano, E. Merlin, E. D. Ottaviani, M. Falcone, A. Fontana
A comparative analysis of denoising algorithms for extragalactic imaging surveys,
Astronomy and Astrophysics, 643 {2020}, A43
90. A. Pesare, M. Palladino, M. Falcone,
Convergence results for an averaged LQR problem with applications to reinforcement learning,
Mathematics of Control, Signals, and Systems, 33 {2021}, 379-411

Articles in Proceedings Volumes

1. M. Falcone, I. Capuzzo Dolcetta
Optimal stopping of a multivalued dynamical system and applications to a portfolio model,
in P. Caravani e K. Cichocki (eds.), System theory and mathematical economics, Pitagora ed., 1985
2. M. Falcone
Numerical solution of deterministic continuous control problems,
Proceedings of the International Symposium on Numerical Analysis, Madrid, 1985
3. M. Falcone
An N-step algorithm for a class of linear systems of equations,
Atti del Convegno Nazionale di Analisi Numerica, Roma, September 1988, 201-208
4. L. Corrias, M. Falcone e R. Natalini
On a class of large time-step schemes for conservation laws
in A. Donato e F. Olivieri (eds.), "Nonlinear Hyperbolic Problems: Theoretical, Applied and Computational Aspects",
Notes on Numerical fluid dynamics, 43 (1993), Vieweg, pp. 159-170
5. M. Falcone, R. Ferretti
High-order approximations for viscosity solutions of Hamilton-Jacobi-Bellman equations
in A. Marino e M.K.V. Murthy (eds.), "Nonlinear Variational Problems and Partial Differential Equations, vol. III", Pitman Research Series in Mathematics, Longman, 1995

6. M. Falcone, R. Rosace
Approximation of optimal control problems for delayed equations,
ICIAM/GAMM 95 Special Issue of Zeitschrift für Angewandte
Mathematik und Mechanik (ZAMM), vol. 2, O. Mahrenholtz and R.
Mennicken (eds.),
Applied Analysis, 197-201.
7. M. Falcone, P. Lanucara
Parallel algorithms for Hamilton-Jacobi equations
ICIAM/GAMM 95 Special Issue of Zeitschrift für Angewandte
Mathematik und Mechanik (ZAMM), vol. 3, O. Mahrenholtz, K. Marti
and R. Mennicken (eds.), Applied Stochastics and Optimization,
355-358.
8. M. Falcone, P. Lanucara, F. Massaioli, M. Rosati, C. Truini
The flame front propagation problem on the SIMD architecture
QUADRICS E. Hollander, G.R. Joubert, F.J. Peters and D. Trystram
(Eds.), "Parallel Computing: State-of-the-Art and Perspectives",
Elsevier, 1996, 85-92.
9. F. Camilli, M. Falcone
An approximation scheme for the maximal solution of the shape-from-
shading model, IEEE International Conference on Image Processing,
1 (1996), 49-52
10. M. Falcone, M. Sagona
An algorithm for the global solution of the Shape-from-Shading
model, in A. Del Bimbo (ed.), Image Analysis and Processing, Lecture
Notes in Computer Science n. 1310, 1997, 596-603
11. M. Falcone, L. Grüne, F. Wirth
A maximum time approach to the computation of robust
domains of attraction,
in B. Fiedler, K. Groger, J. Sprekels, eds., "EQUADIFF 99, Berlin
(1999)", World Scientific, Singapore (2000), 844-849
12. M. Falcone, R. Ferretti
A-priori estimates for a semi-Lagrangian approximation scheme
for the wave equation,
in E.F. Toro "Godunov Methods: Theory and Applications (Oxford
1999)", Kluwer/Plenum Academic Publishers, 2001, 293-300.

13. M. Falcone
An Introduction to Viscosity Solutions in Image Processing
Proceedings Conference ORASIS, Cahors, 2000
14. M. Falcone
An introduction to semi-Lagrangian schemes for second order
Hamilton-Jacobi equations,
Proceedings of the RIMS Conference on "Viscosity solutions
and Applications", Kyoto, September 2002
15. E. Cristiani, M. Falcone, A. Seghini
Numerical Solution of the Shape-from-Shading problem
Proceedings of Science POS (CSTNA2005) 008,1-17,
Electronic journal <http://pos.sissa.it/>
16. E. Cristiani, M. Falcone
Fast Marching Semi-Lagrangian Methods for the Eikonal Equation,
Proceedings SIMAI 2004, Venezia – Isola di San Servolo (Italy),
September 20-24, 2004.
17. M. Falcone, S. Finzi Vita
A numerical study for growing sandpiles on flat tables with walls,
F. Ceragioli et alia (eds), Proceedings of the 22th IFIP-TC7
Conference on System Modelling and Optimization, Torino 2005,
IFIP Series, vol. 202, Springer, 2006, 127-137
18. E. Carlini, M. Falcone e R. Ferretti
A time-adaptive semi-Lagrangian approximation to mean curvature
motion,
in Alfredo Bermudez de Castro, Dolores Gomez, Peregrina Quintela,
Pilar Salgado (eds), "Numerical Mathematics and Advanced
Applications -ENUMATH 2005", Springer 2006, 732-739.
19. E. Cristiani, M. Falcone
A Fast Marching Method for Pursuit-Evasion Games,
Proceedings SIMAI 2006, Baia Samuele, Ragusa (Italy), Maggio
22-26, 2006
20. E. Cristiani, M. Falcone, A. Seghini
Some Remarks on Perspective Shape-from-Shading models,
in F. Sgallari, A. Murli, N. Paragios (eds), Scale Space and Variational
Methods in Computer Vision, Lecture Notes in Computer Science, n.

4485, 2007, 276-287

21. E. Cristiani, M. Falcone
Numerical solution of the Isaacs equation for differential games with state constraints,
Proceedings of IFAC 2008, vol. 17, n. 1, Seul, 2008, 11352-11356
22. E. Cristiani, M. Falcone
Two fast marching methods for Hamilton-Jacobi equations,
in R. Jeltsch, G. Wanner (eds.) Proceedings of ICIAM 2007, 6th International Congress on Industrial and Applied Mathematics, Zurich, July, 2007
23. A. Alla, M. Falcone, D. Kalise
An accelerated value/policy iteration scheme for the solution of DP equations, in A. Abdulle, S. Deparis, D. Kressner, F. Nobile, M. Picasso (eds.), Numerical Mathematics and Advanced Applications, Proceedings of ENUMATH 2013, Lecture Notes in Computational Science and Engineering, Volume 103, 2015, 489-497
24. M. Falcone, D. Kalise
A high-order semi-Lagrangian/finite volume scheme for Hamilton-Jacobi-Isaacs equations,
in C. Pötzsche, C., Heuberger, C., Kaltenbacher, B., Rendl, F. (eds.), System Modeling and Optimization, CSMO 2013
IFIP Advances in Information and Communication Technology, vol. 443, 2014, pp. 105–117
25. S. Cacace, E. Cristiani, M. Falcone
Two Semi-Lagrangian Fast Methods for Hamilton-Jacobi-Bellman Equations in C. Pötzsche, C., Heuberger, C., Kaltenbacher, B., Rendl, F. (eds.), System Modeling and Optimization, CSMO 2013
IFIP Advances in Information and Communication Technology, vol. 443, 2014, pp. 74–84.
26. S. Tozza, M. Falcone
A semi-Lagrangian approximation of the Oren-Nayar PDE for the orthographic Shape-from-Shading problem
VISAPP 2014 - Proceedings of the 9th International Conference on Computer Vision Theory and Applications, 3, 2014, pp. 711-716

27. S. Bhattacharya, T. Basar, M. Falcone
Numerical approximation for a visibility based pursuit-evasion game, in Proceedings of the IEEE Conference "Intelligent Robots and Systems (IROS 2014)", IEEE, 2014, pp.68-75
28. M. Falcone, D. Kalise, A. Kröner
A semi-Lagrangian scheme for L^p -penalized minimum time problems, Proceedings of the 21st International Symposium on Mathematical Theory of Networks and Systems MTNS14, pp. 1798-1803.
29. M. Falcone, A. Seghini
Photos, objects and computer vision, *Imagine Math.* 3, 271-28, 2 Springer, 2015
30. M. Falcone, R. Ferretti, Numerical methods for Hamilton-Jacobi type equations, *Handbook of numerical methods for hyperbolic problems*, 603–626, *Handb. Numer. Anal.*, 17, Elsevier/North-Holland, Amsterdam, 2016.
31. G. Fabrini, M. Falcone, S. Volkwein
Coupling MPC and HJB for the computation of POD-based feedback laws, preprint, In: Radu, F.A., Kumar, K., Berre, I., Nordbotten, J.M., Pop, I.S. (Eds.), *Numerical Mathematics and Advanced Applications ENUMATH 2017, Lecture Notes in Computational Science and Engineering*, (126), Springer, 2019 941-949
32. M. Falcone, G. Paolucci, S. Tozza
Adaptive filtered schemes for first-order Hamilton-Jacobi equations
In: Radu, F.A., Kumar, K., Berre, I., Nordbotten, J.M., Pop, I.S. (Eds.), *Numerical Mathematics and Advanced Applications ENUMATH 2017, Lecture Notes in Computational Science and Engineering*, (126), Springer, 2019, 389-398
33. S. Tozza, S. and M. Falcone,
On the Segmentation of Astronomical Images via Level-Set Methods, In: Donatelli M., Serra-Capizzano S. (eds) *Computational Methods for Inverse Problems in Imaging. Springer INdAM Series*, vol 36. Springer, Cham, pp. 141-166, 2019

34. E. Carlini, M. Falcone, R. Ferretti,
Numerical Techniques for Level Set Models: an Image Segmentation
Perspective, in Ayman El-Baz, Jasjit S. Suri (eds), Level Set Method
in Medical Imaging Segmentation, Taylor and Francis, 2019
35. J.D. Durou, M. Falcone, Y. Queau, S. Tozza,
A Comprehensive Introduction to Photometric 3D-Reconstruction
in J.D. Durou, M. Falcone, Y. Queau, S. Tozza (eds) ,
Advances in Photometric 3d-reconstruction,
Series Advances in Computer Vision and Pattern Recognition
Springer 2020, 1-29

Edited Volumes and Journals Special Issues

1. M. Falcone, Ch. Makridakis (eds),
“Numerical Methods for Viscosity Solutions and Applications”,
World Scientific, Singapore, 2002.
2. M. Falcone, R. Ferretti (eds),
"Numerical methods for viscosity solutions and applications",
Special issue of Appl. Numer. Math., vol. 56 (2006). 1135-1135
Preface
3. F. Camilli, I. Capuzzo Dolcetta, M. Falcone
Special Issue on Mean Field Games,
NETWORKS AND HETEROGENEOUS MEDIA, 7 (2), 1-2
4. M. Falcone, R. Ferretti, I.M. Mitchell, H. Zhao (eds), "Numerical
methods for viscosity solutions and applications", Special issue of
Appl. Numer. Math., vol. 73 (2013). Foreword.
5. L. Bonaventura, M. Falcone, R. Ferretti, Special issue on new trends
in semi-Lagrangian methods, Comm. Appl. Ind. Math, 7 (2016), n. 3
Foreword
6. H. Dawid, M. Falcone
Special issue on Numerical methods for Dynamic Games
Preface, Dynamic Games and Applications, 2017
7. M. Falcone, R. Ferretti, L. Grüne, W. McEneaney
Numerical methods for optimal control problems
INDAM/Springer series, 29 Springer INdAM Series, 2018

8. M. Falcone, L. Lopez, A. Russo, V. Simoncini
Advanced computational Methods for PDEs
2020, Volume 79, Issue 7
 9. J.D. Durou, M. Falcone, Y. Queau, S. Tozza
Advances in Photometric 3d-reconstruction,
Series Advances in Computer Vision and Pattern Recognition
Springer 2020
- 