

## CURRICULUM VITAE LUCIA MADDALENA

### **Lucia Maddalena**

Full Professor

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Born in Troia (FG), on 18/07/1955



### **Education:**

1978: Degree in Mathematics (110/110 cum laude) University of Bari.

Thesis on "Maximum principle for parabolic equations and systems".

1979/1980: Graduate courses of the National Research Council (C.N.R.): Probability, Mathematical models in environmental management, Differential Equations of Physics - Mathematics, Biomathematics.

### **Academic positions**

1978 - 1981 Fellow-C.N.R at the Institute of Mathematics of the University of Bari;

1981 -1988 Assistant Professor in Mathematics from 1981 to 1988 at the Faculty of Sciences of University of Bari;

1988 -1991 Associate Professor in Mathematical Analysis at the Faculty of Sciences (MFN) of the University of Basilicata;

1991 - 1994 Associate Professor in Mathematics for economic and social sciences at the Faculty of Economics of the University of Bari;

1994-1999 Full Professor of Mathematics in Mathematics for Economic at the Faculty of Economics of the University of Bari;

1999 - *to present* Full Professor of Mathematics for Economic at the Faculty of Economics of the University of Foggia.

### **Institutional Roles**

1992-2002 Director of the MSc in Economics and Tourism Management.

2000-2001 Member of the Board of Directors of the University of Foggia

2002-2005 Member of the Academic Senate of the University of Foggia

2002-2005 Head of the Department of Economics, Mathematics and Statistics, University of Foggia

2009-2012 Head of the Department of Economics, Mathematics and Statistics, University of Foggia

2007- *to present* vice-President of the Scientific Committee of the Association of Mathematics for Economics and Social Sciences (AMASES).

Director of the graduate course in "Mathematics: Applications and technology innovation."

Director of the Master in "New Frontiers in the teaching of Mathematics."

Coordinator of training courses for teachers of Applied Mathematics.

### **Teaching exsperience**

Calculus, Differential Equations, Functional Analysis, Mathematics for Economics and Finance, Mathematical Methods for the management, Probability and Statistics, Mathematics Education in

Economics and Finance, History and Foundations of Mathematics, Logical-mathematical learning Laboratory.

### **Activities scientific**

Mathematical models that describe the evolution with time and the spatial structure of the phenomena: ordinary or partial differential equations, problems of existence, regularity of solutions, qualitative behaviour of solutions of systems of reaction-diffusion, equilibrium solutions, stability, periodic solutions. Models for the spread of epidemics, Models for combustion problems, Models for the diffusion of innovations. Reflections about the development of scientific thought and History of mathematics.

### **Coordination and direction higher education courses**

Member of the board for the Ph.D. in Mathematics for Economic Analysis and Finance (University of Naples), the PhD in Mathematics-Statistics for Finance and Geo-Statistics at the University of Lecce, the Ph.D. in Economics and Finance and of the Ph.D. in Law and Economics of the Environment, Land and Landscape, University of Foggia  
Coordinator of the PhD: Mathematical Methods for Applied Economics and Finance.  
Member of Teaching Committee of University of Foggia

### **Activity of evaluator**

Advisor and reviewer for 30 years of research projects in public and private universities, referee for scientific journals, referee for conference proceedings.

### **Affiliations:**

U.M.I. Italian Mathematical Union,  
A.M.A.S.E.S. Association for Mathematics Applied to Economics and Social Sciences  
E.M.S. The European Mathematical Society  
S.I.M.A.I. Italian Society for Industrial and Applied Mathematics  
A.M.S. American Mathematical Society.

### **Organization of Conferences and events**

Organization of the following conferences:

XIX Congress AMASES, Pugnochiuso. 1995

V-CSAET Society for the advancement of Economic Theory. Ischia. 2001

Once they were called service courses. The reorganization of the teaching of mathematics in university courses base. Pugnochiuso. 2002

The freedom of women in Europe and the Mediterranean. International meeting. Baia delle Zagare. 2003

Meeting of Young Researchers of the University of Puglia on the theme: Mathematical Methods for Economics and Finance. Foggia. 2004

A century dall'annus mirabilis Einstein. Foggia. 2005.

Workshop: Econofisica. Foggia. 2005

Matheverywhere, Milano. 2005

S.I.N.G. Foggia. June 2006

Conference A.M.A.S.E.S. Lecce. 2007

Study Day in honour of Luigi Albano. Bari 2010

The reorganization of secondary education and initiatives for mathematics. Foggia. October 2010

The development of the energy market in Puglia: renewable energy and implications for economic and financial Foggia, 2011

Conference A.M.A.S.E.S. 2012 Vieste.

Math Challenge 2013

### **Research contracts**

Recent research projects:

"Mathematical Methods and Models for Economics", 2000

PRIN "Models for Financial Mathematics" 1996-2000

"Methods and mathematical models for the economy and finance" 2001

"Mathematical Methods for the economic and financial decisions" 2002

"Dynamic programming applications and business administration" 2003

"Nonlinear models in economics and finance: complex dynamics, disequilibrium, strategic interactions" 2003

"Women and Mathematics" 2004

"Mathematics and Music" 2005

Project "Network of Laboratories" leader BIOAGROMED Interdepartmental Centre, University of Foggia, Apulia Region Funds

"The development of the energy market in Puglia: renewable energy and economic and financial implications" 2010

"A network inter-institutional violence against women. Feminine Plural" FSER 2010

Social pact of gender: "Courageous captains" of the Province of Foggia. Regional Funds 2011

"Regional Observatory on gender communication" 2011

"Mathematics between game and reality" 2011

Project LOGIN 2012

Project LAIFF 2012

Project PRIN 2012/2013

## **Publications**

### **Papers in journals**

- 1) Principio di massimo per sottosoluzioni di sistemi parabolici debolmente accoppiati quasi lineari. Rend. Accad. Sci. Fis. Mat., Napoli, 4, vol. XLVI (1979), 459-469.
- 2) Disuguaglianze di Harnack per sistemi parabolici quasi lineari debolmente accoppiati. Rend. Accad. Sci. Fis. Mat., Napoli, 4, vol. XLVII (1980), 5-18.
- 3) Asymptotic behaviour for a system of nonlinear diffusion equations modelling the spread of oro-faecal diseases. Rend. Accad. Sci. Fis. Mat., Napoli, 4, vol. XLVIII (1980/81), 475-495. (with V. Capasso).
- 4) Convergence to equilibrium states for a reaction-diffusion system modelling the spatial spread of bacterial diseases. J. of Math. Biol., 13 (1981), 173-184. (with V. Capasso).
- 5) Soluzioni periodiche per sistemi di reazione-diffusione. Quaderni dell'Istituto di Analisi Matematica, Bari (1981).
- 6) Saddle point behaviour for a reaction-diffusion system. Application to a class of epidemic models. Math. Comp. Simulation, 24 (1982), 540-547. Invited paper (with V. Capasso).
- 7) Periodic solution for a reaction-diffusion system modelling the spread of a class of epidemics. Siam J. App. Math., 43 (1983), 417-427. (with V. Capasso).
- 8) Existence of global solution for reaction-diffusion system with density dependent diffusion. Nonlinear Analysis T.M.A. vol. 8, n° 11 (1984), 1383- 1394.
- 9) Existence, uniqueness and qualitative properties of the solution of a degenerate non linear parabolic system. J. of Math. Analysis and Appl. , vol. 126, n° 2 (1987), 443-457.
- 10) A degenerate nonlinear diffusion system with boundary feedback. Applicable Analysis vol. 24 (1987), 265-289. (with V. Capasso).
- 11) Mathematical analysis of a chemical reaction with lumped temperature and strong absorption. J. of Math. Analysis and Appl. , vol. 163, n° 1 (1992), 86-103. (with A. Di Liddo).
- 12) Traveling waves for Distributed gas-solid reactions. J. of Differential Equations, 113, n.2 (1994), 452-472. (with A. Di Liddo, I. Stakgold).
- 13) Asymptotic Behaviour of a nonlinear model for the geographical diffusion of innovations. Dynamic System and Applications, 3 (1994), 207-220. (with V. Capasso, A. Di Liddo).
- 14) Nonlocal models for the spread of new products in spatially structured market, , Dynamic System and Applications, 6, (1997), 85-100. (with A. Di Liddo).

- 15) Econofisica: fondamenti di una nuova scienza. Lettera Matematica Pristem. 65. Springer. pp 13-22.(2007). (with Decio Cocolicchio)
- 16) The diffusion of photovoltaic systems in Italy. Quaderno del DSEMS. 10.(2008) .(with R. Padalino)
- 17) Misurare le disuguaglianze. Quaderno del DSEMS.n11.1-65.(2008) .(with S. Spadaccino )
- 18) A mathematical model for a new tecnology. Quaderno del DSEMS.n18.(2008) (with V.Fanelli).
- 19) Gendermainstreaming nella storia della matematica. Quaderno del DSEMS.n.25.(2008) (with M.A.De Martines)
- 20) Le scelte e gli esiti in relazione al genere nei diversi corsi di studi dell'Università di Foggia. Quaderno del DSEMS. n.7 (2009).( with S.Spadaccino)
- 21 ) A time delay model for the diffusion of a new technology.. Non Linear Analysis: Real World Applications. Vol. 13, pp 643- 649, (2012).(with V.Fanelli)
- 22) Investigating the diffusion of renewable energy technologies in Italy. Advances and Applications in Mathematical Sciences. **vol** 12, Issue 1, November 2012, pp 59-70 (with V.Fanelli and S.Musti)
- 23) Is the glass ceiling dead . Periodico di Matematiche .n. 3 Vol 4 Serie XI Anno CXXII .pp.95-103( 2012)
- 24) Suitability of bifidobacterium spp.and lactobacillus plantarum as probiotics intend for fruit juices. Journal of Food Science,vol78,Issue11,November 2013,pp1764-1771 (with A.Bevilacqua, D. Campaniello, M.R.Corbo and M. Sinigaglia)
- 25) A framework for an integral-differential system model for the tumour growth. 2013(submitted)

### **Book chapters**

- 1) A nonlinear diffusion system modelling the spread of oro-faecal deseases. Nonlinear Phenomena in the Mathematical Sciences (V. Lakshmikantham ed.) Academic Press, N.Y. (1981), 207-217. Invited paper (with V. Capasso).
- 2) Periodic solution for an epidemic model. Evolution Equations and their Applications (F. Kappel and W. Schappacher editors) Research Notes in Mathematics 68, Pitman, London (1982), 16-29. Invited paper. (with V. Capasso).
- 3)The influence of diffusion on an epidemic model. Atti del IV Simposio di Dinamica delle Popolazioni. Parma (1984) (with V. Capasso).

4) A non linear diffusion epidemic system with boundary feedback in Trends in Theory and Practice of Nonlinear Analysis, (V. Lakshmikantham ed.), Ed. North Holland, (1984). Invited paper (with V. Capasso).

5) " Donne e diritti fondamentali" in "Le libertà delle donne in Europa e nel Mediterraneo". Edizioni Laterza.Bari . (2003)

6) Matematica ed economia in "Econofisica .Metodi per l'economia." Esi Editore. (2006)

7) Diffusion trajectory of self-propagating photovoltaic systems. in Pensieri Complici della Collana:Popolazione, Ambiente e Salute. Cacucci Editore .Bari( 2012)(with R. Padalino )

8) Modelli matematici a confronto per la diffusione di tecnologie per la produzione di energia rinnovabile in " Lo sviluppo delle energie alternative. Il caso Puglia". Franco Angeli Editore. Milano. 2012. (with V. Fanelli, S. Musti)

9) Un modello per i prezzi forward nel mercato elettrico in " Lo sviluppo delle energie alternative. Il caso Puglia". Franco Angeli Editore. Milano. 2012 (with V. Fanelli, S. Musti)

### **Books**

1) Esercizi di Matematica Generale.Cacucci Editore.(1997) (with L. De Cesare).

2) Prove scritte di Matematica Generale. Claudio Grenzi Editore. (2000) (with L. De Cesare).

3) Metodi matematici per l'economia e la finanza(edited by L.Maddalena). Esi Editore. (2005)

4) Un secolo dall'annus mirabilis di Einstein.(edited by L.Maddalena). Esi Editore.( 2006)

5) Matematica ed economia in "Econofisica - Metodi per l'economia." (edited by D. Cocolicchio, L.Grilli, L.Maddalena ).Esi Editore. (2006)

6 ) Matematica. Giappichelli Editore. Torino. (2009)

7) Lo sviluppo delle energie alternative. Il caso Puglia. (edited by L.Maddalena). Franco Angeli Editore. Milano.( 2012)

### **Main Proceedings Papers**

1) A nonlinear model for the geographical spread of innovations, Proc. XVII Convegno AMASES (1993), 953-956, (with V. Capasso, A. Di Liddo).

2) Nonlinear PDE models for the geographical diffusion of innovations. Proc. II Congresso Nazionale SIMAI (1994), 87-89, (with. V. Capasso, A. Di Liddo).

3) Su alcuni modelli matematici per la diffusione di innovazioni tecnologiche. Proc. XIX Convegno AMASES (1995), 697-699 (with.A. Di Liddo).

4) Market penetration of new products in segmented population. Proc. XX Convegno Amases (1996), (with. L. De Cesare, A. Di Liddo).

- 5) Ottimizzazione di strategie pubblicitarie e di prezzo in un problema di diffusioni di innovazioni, Proc. IV Congresso SIMAI,(1998). Napoli.
- 6) “Crediti dell’area matematica nei nuovi ordinamenti didattici della facoltà di Economia”. Proc. Mathesis .Vieste. (2002).
- 7) La matematica che serve. Mathesis (2002).
- 8) La diffusione del fotovoltaico:sistemi dinamici (with.C. Gallo, M. De Bonis) Proc. Mathematica Italia User Group Meeting 2008,Roma,Università di Roma Tre,93-108 .
- 9) The glass ceiling for female mathematicians in Italy. Proc. European Mathematical Society. EMS Women in Maths. Barcelona .(2011) with Elisabetta Strickland
- 10) A mathematical model for renewable technology diffusion .Proc. Mathematica Italia User Group meeting.università di Torino, ISBN: 9788896810026 ( with V.Fanelli ) (2011)
- 11) The glass ceiling for female mathematicians in Italy . European Mathematical Society. EMS Women in Maths .Bonn 2-6 settembre 2013 . (with Elisabetta Strickland )