

Short Curriculum Vitæ (Date - August 2011)

Name - Isabel Maria Narra de Figueiredo (nationality: Portuguese).

Current Address

Departamento de Matemática
Universidade de Coimbra, Apartado 3008
3001-454 Coimbra, Portugal.

Phone (office): (+351) 239 791 192

Fax: (+351) 239 793 069

e-mail: isabelf@mat.uc.pt.

URL : <http://www.mat.uc.pt/~isabelf>

Public Key in FCT (Fundação para a Ciência e a Tecnologia) - J0138885YJ5

Education

- "*Agregação*" in Mathematics, University of Coimbra, Portugal, 2003 (grade: Unanimity).
- Ph.D. in Mathematics, speciality Applied Mathematics, University Pierre et Marie Curie, Paris, France, 1989, Supervisor: Philippe G. Ciarlet (grade: Très Honorable).
- M.S. in Mathematics, speciality Physics-Mathematics, University of Coimbra, Portugal, 1986 (grade: Very Good).
- B.S. in Mathematics, University of Coimbra, Portugal, 1982 (grade: 17 in 20).

Positions

- since October 7, 2005 – Full Professor at the Department of Mathematics of the Faculty of Science and Technology of the University of Coimbra.
- 1994-2005 – Associate Professor at the Department of Mathematics of the Faculty of Science and Technology of the University of Coimbra.
- 1990-1994 – Assistant Professor at the Department of Mathematics of the Faculty of Science and Technology of the University of Coimbra.
- 1986-1989 – Ph.D. student, Université Pierre et Marie Curie, Paris, France.
- 1982-1986 – Teaching Assistant, at the Department of Mathematics of the Faculty of Science and Technology of the University of Coimbra.

Current Research Interests - Applied Mathematics (variational methods, numerical analysis and optimization). Applications in mechanics: elasticity and piezoelectricity. Applications in bio-medicine: variational image processing, inverse problems, level set methods, convection-diffusion equations.

Research Funding / Grants

- Principal investigator : *Aberrant Crypt Foci and Human Colorectal Polyps: mathematical modelling and endoscopic image processing*, funded by the UTAustin|Portugal program (<http://www.utaustinportugal.org/>) in the 2008 call on Mathematics (duration: 48 months, starting date: July 2009). UTAustin/MAT/0009/2008.
- Principal investigator : *Mathematical Analysis of Piezoelectric Problems*, funded by the Science and Technology Portuguese Foundation (duration: 36 months, starting date: March 2005). POCI/MAT/59502/2004.
- Principal investigator : *Variational Models and Optimization*, funded by the Science and Technology Portuguese Foundation (duration: 36 months, starting date: July 1996). PRAXIS/PCEX/C/MAT/38/96.
- Principal investigator of the Portuguese Team : *Shells – Mathematical Modelling and Analysis, Scientific Computing*, funded by the European Community “Human Capital and Mobility” Program (duration: 36 months, starting date: January 1995, principal investigator: Philippe G. Ciarlet). Contract: ERBCHRXCT 940536.
- Member : *New materials, adaptive systems, and their nonlinearities: modelling, control and numerical simulation*, November 2002 - October 2006. This project was supported by the European Commission’s 5th Framework Programme <http://www.cordis.lu/fp5/> identifier number HPRN-CT-2002-00284 (Principal investigator: Bernadette Miara).
- Member : *Nonlinear Partial Differential Equations and Interfaces Problems*, funded by the Science and Technology Portuguese Foundation. POCTI/34471/MAT/2000, September 2000 - August 2003 (Principal investigator : José Francisco Rodrigues).
- Member : *Shells: Mathematical Modelling and Analysis, Scientific Computing*, January 1995 - December 1997. This project was supported by the European Community “Human Capital and Mobility” Program, contract ERBCHRXCT 940536 (Principal investigator: Philippe G. Ciarlet).
- Member : *Junctions in Elastic Multi-Structures*, January 1990 - December 1992. This project was supported by the European Community “S.C.I.E.N.C.E.” Program, EEC Project PL 890518, contract SC1 0473-C (EDB) (Principal investigator: Philippe G. Ciarlet).

Boards

- Member of the ECCAM (ECCOMAS Committee of Computational and Applied Mathematics), since April 2003.
(<http://www.eccomas.org/>)
- Executive board of APMTAC (Portuguese Association of Theoretical, Applied and Computational Mechanics), since 2004.
(<http://www-ext.lnec.pt/APMTAC/welcome.html>)
- Executive board of CIM (International Center for Mathematics), June 2008 – May 2011.
(<http://www.cim.pt/>)

Award - *Doutor João Farinha Award* of the Department of Mathematics of the Faculty of Sciences and Technology of the University of Coimbra, for the student who finishes a B.S. in Mathematics with the highest GPA.

Supervision experience - 2 Post-Doctoral, 4 PhD, and 2 Msc in Mathematics (a detailed list is available in FCT (Fundação para a Ciência e a Tecnologia) - Public Key : J0138885YJ5).

- Imaging sciences and medical applications (Post-Doctoral, in progress, starting date January 01, 2010, 12 months).
- Optimal control problems for piezoelectric plates (Post-Doctoral, October 2005 - July 2006).
- Imaging sciences and medical applications (PhD, in progress, starting date October 2009).
- Inverse problems in piezoelectricity (PhD, in collaboration with university of Santiago de Compostela, Spain, May 2008 - November 2011).
- Piezoelectric laminated plates (PhD, September 2005 - October 2008).
- Sensitivity analysis in adaptive elasticity (PhD, May 2004 - May 2007).
- Analysis and numerical solution of some problems in structural optimization (Msc thesis, February 2000-2002).
- Mathematical analysis of a laminated shell model (Msc thesis, February 1995 -1997).

Communications in scientific meetings - 39 talks (10 invited) in international congresses, 6 talks (3 invited) in national congresses and 15 seminars. (a detailed list is available in FCT (Fundação para a Ciência e a Tecnologia) - Public Key : J0138885YJ5).

Four Recent Communications

- 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, Canada, July 18-22, 2011. (<http://www.iciam2011.com/>)
Title- *Human colorectal polyp detection from wireless capsule endoscopy images.*
- SIAM Conference on Imaging Science, April 12-14, 2010, Chicago, USA.
(<http://www.siam.org/meetings/is10/>)
Title- *Physics-based image segmentation for endoscopic images.*
- Mathematical Aspects of Imaging, Modeling and Visualization in Multiscale Biology, March 31 - April 04, ICES, University of Texas at Austin, USA, 2009.
(<http://www.ma.utexas.edu/colab/>)
Title - *A multiscale model for tracking epithelial cells in colonic crypts.*
- 8th. World Congress on Computational Mechanics (WCCM8), Venice, Italy, 30 June - 4 July, 2008.
(<http://www.iacm-eccomascongress2008.org/frontal/>)
Title - *Detection of obstacles with a new piezoelectric plate model.*

Conference organizer and scientific committees -

Five Events

- Member of the *International Scientific Committee* do **10th World Congress on Computational Mechanics (WCCM 2012)**, São Paulo, Brazil, 8 -13 July 2012.
(<http://www.wcm2012.com/index.asp>)
- Co-organizer of the Iberian Congress **Congresso de Métodos Numéricos em Engenharia (CMNE|2011)**, June 14-17 Coimbra, Portugal, 2011.
(<http://www.itecons.uc.pt/cmne2011/pt/>)
- Main organizer of the **Summer School and Workshop on Imaging Sciences and Medical Applications**, June 15-23, Coimbra, Portugal, 2010.
(<http://www.mat.uc.pt/~isma2010/>)
- Co-organizer of the Iberian Congress **Congreso de Métodos Numéricos en Ingeniería**, June 29 – July 02, Barcelona, Spain, 2009.
(<http://congress.cimne.com/metnum09/frontal/>)
- Main organizer of the **Thematic Term 2003 - Mathematics and Engineering**, funded by the International Center for Mathematics (CIM). (<http://www.cim.pt/?q=events/older>)

Member of Academic Committees - 16 PhD juries, 10 Msc juries, 7 juries for academic positions, 7 Scientific prize juries, 6 juries of assessment of Postdoctoral research positions and PhD and Msc scholarships funded by FCT (Fundação para a Ciência e a Tecnologia of Portugal).

Courses taught - 7 Bsc courses (Elementary and Advanced Calculus, Functional Analysis, Measure Theory, Distributions, Mechanics, Differential Geometry, Fourier Analysis) and 3 Msc courses (Operator Theory, Finite Elements, Numerical Methods in Mechanics) at the University of Coimbra. Supervision of 16 monographs at the University of Coimbra. Supervision of 3 internships at High Schools.

Grants

- 1986-1989 (3 years) – PhD grant of the French Government.
- 1993 (4 months) – Post-doctoral grant of JNICT (Junta Nacional de Investigação Científica e Tecnológica of Portugal).
- 1994 (one month) – Post-doctoral grant of Fundação Calouste Gulbenkian.

Post-doctoral training

- *Exact controllability and asymptotic methods*, in collaboration with Enrique Zuazua, 1993. Universidad Complutense de Madrid (Departament of Applied Mathematics), Madrid, Spain.

- *Shape optimization problems*, in collaboration with Giuseppe Buttazzo, 1995. University of Pisa (Department of Mathematics), Pisa (Italy).

Languages

- Portuguese (mother tongue).
- French (Diplôme Supérieur d'Etudes Français Modernes, Alliance Française, 1979).
- English (First Certificate in English, University of Cambridge, 1978).

Refereeing -

- *Acta Bioteoretica*
- *Applied Mathematics and Computation*
- *Asymptotic Analysis*
- *Computers and Structures*
- *ESAIM: Control, Optimisation and Calculus of Variations*
- *IMA Journal of Numerical Analysis*
- *International Journal of Solids and Structures*
- *Investigação Operacional*
- *AMSE Journal of Applied Mechanics*
- *Applicable Analysis*
- *Journal of Elasticity*
- *Mathematical Models and Methods in Applied Sciences*
- *Mechanics Research Communications*
- *Optimization and Engineering*
- *Portugaliae Mathematica*

Publications - 58 publications : 1 PhD thesis, 1 Msc thesis, 4 books as editor, 5 articles in chapters of books, 30 articles in international scientific periodicals with referees, 11 articles in conference proceedings, 6 lectures notes (the complete publication list is available in <http://www.mat.uc.pt/~isabelf/publica.html>).

Six Recent Publications

- Isabel N. Figueiredo, Pedro Figueiredo, Nuno Almeida : Image-driven parameter estimation in absorption-diffusion models of chromoscopy, **SIAM Journal on Imaging Sciences**, in press (2011).
- I. N. Figueiredo, P. N. Figueiredo, G. Stadler, O. Ghattas, A. Araújo : Variational image segmentation for endoscopic human colonic aberrant crypt foci, **IEEE Transactions on Medical Imaging**, 9, 4 (2010) 998-1011.
- José A. Carvalho, Isabel N. Figueiredo, Rebeca Martínez : Plate-like smart structures: reduced models and numerical simulations, **Journal of Elasticity**, 97 (2009) 47-75.
- Isabel N. Figueiredo, G. Stadler : Frictional contact of an anisotropic piezoelectric plate, **ESAIM: Control, Optimisation and Calculus of Variations (COCV)** 15 (2009) 149-172.
- José R. Fernández, Isabel N. Figueiredo, Rebeca Martínez : A convergence result in the study of bone remodeling contact problems, **Journal of Mathematical Analysis and Applications** Vol. 343, 2 (2008) 951-964.
- L. Costa, I. Figueiredo, R. Leal, P. Oliveira, G. Stadler : Modeling and numerical study of actuator and sensor effects for a laminated piezoelectric plate, **Computers and Structures**, Vol. 85, 7-8 (2007) 385-403.

Two Books

- António M. Ferreira, Isabel N. Figueiredo, Juha Videman (Editors) : **International Conference on Mathematics and Continuum Mechanics**, CIM (Centro Internacional de Matemática), 30 (2008).
(available at http://www.cim.pt/files/proceedings_mechanics_2008.pdf).
- Isabel N. Figueiredo, José F. Rodrigues and Lisa Santos (Editors): **Free Boundary Problems: theory and applications**, Series: International Series of Numerical Mathematics Vol. 154, Birkhauser Verlag, Basel, 2007.

PhD Thesis

- Isabel M. Narra Figueiredo : **Modèles de Coques Elastiques Non Linéaires, Méthode Asymptotique et Existence de Solutions**, Université Pierre et Marie Curie, France (1989) 127 pages (in French).