CURRICULUM VITAE

Adriano De Cezaro[†]

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Contents

1 Summary

ADRIANO DE CEZARO,
has a bachelor degreem in Mathematics from Federal University of Rio Grande - FURG (2003), Master degree in Mathematics and Scientific Computation from Federal University of Sta. Catarina - UFSC (2006) and PhD in Mathematics from National Institute of Pure and Applied Mathematics - IMPA (2010). Actually has a Lecture and Research position at the Institute of Mathematics, Physics and Statistics, Federal University of Rio Grande, Brazil.

2 Personal Information

- Name: **Adriano De Cezaro**
- Date of birth: April 08^{th}, 1980
- Place of birth: David Canabarro - RS
- Nationality: Brasilian
- Marital Status: Married
- Address: Institute of Mathematics, Statistics and Physics, Federal University of Rio Grande - FURG, Av. Itália, km 8, Campus Carreiros, Rio Grande- RS, Brazil, 96.203-900.
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3 Education

- 2012/10 - 2013/06 Post-Doc at Institute of Computer Science, University of British Columbia (UBC), Vancouver, Canada. *(started in October of 2012)*
  Advisor: Dr. Uri M. Ascher (UBC).
  Project: Parameter Identification on PDEs Models: Regularization Theory and Numerical Schemes
  Sponsors: Science without Borders - CNPq process 200815/2012-1

- 2006-2010 Phd in Mathematics at IMPA, Brazil.
  Title: *On a Parabolic Inverse Problem Arising in Quantitative Finance: Convex and Iterative Regularization.*
  Advisor: Dr. Jorge P. Zubelli (IMPA).
  Sponsors: CNPq process 140286/2006-3

- 2004 - 2006 Master in Mathematics and Scientific Computing at Federal Uni. of Sta. Catarina (UFSC) - Brazil.
  Title: *Regularization Methods of Level Set Type for Inverse Problems.*
  Advisor: Dr. Antonio C. G. Leitão (UFSC).

- 1999 - 2002 Bachelor in Mathematics at Federal University of Rio Grande - FURG, Brazil.

4 Professional

2013 - currently Permanent member of the Master Program in Computer Modeling at Federal University of Rio Grande, Brazil.
2010 - currently Lecture and Research - Institute of Mathematics, Statistics and Physics - Federal University of Rio Grande - FURG, Brazil.
2008 - 2010 Assistant Professor - Institute of Mathematics, Statistics and Physics - Federal University of Rio Grande - FURG, Brazil.
Teaching courses: Calculus, Mathematical Analysis and Partial Differential Equations, Applied Mathematics, Inverse Problems.

4.1 Research Interest

Currently, my research interests are related to parameter identification in a variety of problems, usually modeled by differential equations. Such problems are classified as Inverse Problems. Inverse problems describe the need to infer information about specific parameters through the partial knowledge of solutions of certain models (usually determined differential equations) that are important both theoretically and in applications. Such problems are characterized by their intrinsic difficulty associated with instability (or ill-conditioning). Furthermore, data are usually obtained by measurements and hence, corrupted by noise, without mentioning the difficulties related to the massive volume of observations that must be processed. Techniques for dealing with the instability and noise in the data in order to find satisfactory solutions to such problems only recently have received attention. Such techniques are known as regularization methods in the theory of inverse problems. These tools involve interaction between theory (functional analysis, optimization methods), computational issues (scientific computing) and practice (iteration with professionals of many areas - industry and academia).

My experience is in Applied Mathematics, with emphasis in Inverse Problems and Applications, acting mainly in the following subjects: parameter identification, regularization methods for inverse problems, iterative regularization, level set type methods, variational regularization methods.

5 Bibliographical Production:

5.1 Articles published in indexed journals

1. De Cezaro, A. and Zubelli, J.P. *The Tangential Cone Condition for the Iterative Calibration of Local Volatility Surfaces*, IMA - Journal of Applied Mathematics. to appear (2014).

2. De Cezaro, A.; *Level-set method for ill-posed problems with piecewise non-constant coefficients*, Journal of Applied Mathematics, v.2013, pg. 1-15, (2013).

3. De Cezaro, A. and Leitão, A. and Tai, X-C.; *On piecewise constant level-set (PCLS) methods for the identification of discontinuous parameters in ill-posed problems*, Inverse Problems, v. 29, p. 015003, (2013).

4. De Cezaro, A. and Leitão, A.; *Corrigendum: Level-set approaches of L^2-type for recovering shape and contrast in inverse problems*, Inverse Problems in Science and Engineering, v. 21, n 4, p. 739-740, (2013).

5. De Cezaro and Leitão, A.; *Level-set approaches of L^2-type for recovering shape and contrast in inverse problems*, Inverse Problems in Science and Engineering, v. 20, p. 571-587, (2012).

6. De Cezaro, A. and Scherzer, O. and Zubelli, J.P.; *Convex Regularization Applied to the Option Pricing: Convergence Analysis and Rates*, Nonlinear Analysis, v. 75, p. 2398 -2415, (2012).

7. De Cezaro, A. and Baumeister, J. and Leitão, A.; *Modified iterated Tikhonov methods for solving systems of nonlinear ill-posed equations.* Inverse Problems and Imaging (IPI), V. 5, No. 1, p. 1- 17, (2011).

8. De Cezaro, A. and Leitão, A. and Tai, X-C.; *On Level-Set Type Methods for Recovering Piecewise Constant Solutions of Ill-Posed Problems.* Lecture Notes in Computer Science (LNCS), v. 5567, p. 50-62, (2009).

9. De Cezaro, A. and Leitão, A. and Tai, X-C.; *On multiple level-set regularization methods for inverse problems.* Inverse Problems, v. 25, p. 035004, (2009).

10. De Cezaro, A. and Haltemier, M and Leitão, A and Scherzer, O .; *On Steepest-Descent-Kaczmarz methods for regularizing systems of nonlinear ill-posed equations.* Applied Mathematics and Computation, v. 202, p. 596-607, (2008).

5.2 Books

1. De Cezaro, A. and Treavessini De Cezaro, F. *Inverse Problems In Tomography* - (In Portuguese) -**"Problemas Inversos em Tomografia"**, Notas em Matemática Aplicada, SBMAC, (2012).

5.3 Submitted Articles

1. with V.V Albani and J. P. Zubelli *Convex Regularization of Local Volatility Estimation in a Discrete Setting.* arXiv:1308.2659

2. with F. Travessini De Cezaro *Regularization approaches for quantitative photoacoustic tomography using the radiative transfer equation.* arXiv:1307.3201

5.4 Preprints

1. with A. Leitão and A. Osses *On regularization methods of level set type for crack detection in planar regions*, preprint (2014).

2. with A. Leitão and J. P. Agnelli and M. M. Alves *On regularization methods for optical tomography with piecewise constant coefficients*, preprint (2014).

5.5 Lectures Notes of Mini-Curses in Scientific Conferences

2012 with Travessini De Cezaro, F. and Marinho, A., *Parameter Identification in PDE's: Theory and Application* (In Portuguese) - *Identificação de Parâmetros em EDP's: Teoria e Aplicações*, Lecture Notes of Mini-courses in the Segundo Colóquio de Matemática da Região Nordeste, Federal University of Piauí- Brazil. **to appear 2012**.

2012 with Travessini De Cezaro, F., *Inverse Problems In Tomography* (In Portuguese) - *Problemas Inversos em Tomografias*, Lecture Notes of Mini-courses in the XXXIV CNMAC 2012.

2010 with Travessini De Cezaro, F., *Inverse Problems and the Mathematics of the Computer Tomography* (In Portuguese) - *Problemas Inversos e a Matemática da Tomografia Computadorizada*, Lecture Notes of Mini-courses in the V Bienal da Sociedade Brazileira de Matemática - Federal University of Paraíba - Brazil.

2010 with Leitão A., *Inverse Problems: An Introduction* (In Portugese) *Problemas Inversos: Uma Introdução*, Lecture Notes of Mini-courses in the Priemiro Colóquio de Matemática da Região Sul , Federal University of Santa Maria - Brazil.

2008 with Leitão A., *An Introduction to Linear Inverse Problems* (In Portuguese) *Introdução aos Problemas Inversos Lineares*, Lecture Notes of Mini-courses IV Bienal da Sociedade Brasileira de Matemática, Maringá - Brazil.

6 Research Visits and Collaborations

- Program Brazil Visitor Fellow Scheme with University of Birmingham, Birmingham, UK between June 02 to August 10 of 2012. In collaboration with Dr. Tomas Johansson (School of Mathematics, UOB).
- Research visitor at IMPA between January 03 to February 15 of 2012. In collaboration with Dr. Jorge P. Zubelli (IMPA) and Dr. Antonio Leitão (UFSC).
- Research visitor at IMPA between January 03 to February 27 of 2011. In collaboration with Dr. Jorge P. Zubelli (IMPA).
- Research visitor at University of Frankfurt between July 26 to August 04 of 2009. In collaboration with Dr. Johann Baumeister (Uni. Frankfurt) and Dr. Antonio Leitão (UFSC).
- ALFA (America Latina Formation Academica) grant for research collaboration with PhD. Prof. Otmar Scherzer in the Institute of Computer Science - Univestitat of Innsbruck, Innsbruck, Austria between October 02 to December 23 of 2006.

7 Distinctions

2012 PASI grant for participation of the INVERSE PROBLEMS and PDE CONTROL, January 16 to 27 of 2012 in Santiago, Chile. Pan-American Advanced Studies Istitute.

2010 Invitation to advanced graduate students and postdocs to join north-south research collaborations at: First Joint Meeting American Mathematical Society Sociedad de Matemática de Chile, Universidad de la Frontera, Pucón, Chile December 15 - 18, 2010 (AMS and Sociedad Matemática de Chile).

2010 Awards a Honorable Mention ODELAR LEITE LINHARES in the category best PhD theses promoted by Brazilian Society of Computational and Applied Mathematics (SBMAC).

2010 Highlights 2009 - Journal of Inverse Problems with the article *On multiple level-set regularization methods for inverse problems* in collaboration with A. Leitão and X-C. Tai.

2010 CIMPA grant for participation of CIMPA Summer school in Inverse Problems and applications - SANTIAGO -CHILE, (CIMPA).

2006 Awards ODELAR LEITE LINHARES as the best Master Dissertation promoted by Brazilian Society of Computational and Applied Mathematics (SBMAC).