CURRICULUM VITAE
TOMÁS CHACÓN REBOLLO

Part A. PERSONAL DATA

Date	03/09/2018

Name	Tomás Chacón Rebollo		
Age	58		
		Researcher ID	6506342880
		Orcid Code	0000-0002-0784-1174

A.1. Present professional status

Organism	Universidad de Sevilla			
	Instituto de Matemáticas			
Address	Campus de Reina Mercedes. Avda. Reina Mercedes, s/n			
Phone	+34 954557989	e-mail	chacon@us.es	
Position	Full Professor		Starting date	1993
Key words	Finite Elements, Fluid Mechanics, Reduced Order Modeling, Turbulence Modeling, Stabilized Methods			

A.2. Education

Diplome	University	Year
Degree in Mathematics	Seville	1981
Ph. D. in Matemáticas	Seville	1984
Doctor 3rd Cycle	Paris VI	1985

A.3. General indicators of scientific production

Number of research sexenials awarded by the Spanish Government: 5
Date of last sexenial awarded:01/01/2018.
Number of Ph. D. Thesis adviced in last 10 years: 5
Total citations: 471
Yearly citations average in the last 5 years: 38
Total number of publications/ in first quartile (Q1): 62/46
H Index : 11
Observation: Data obtained from **Scopus**.

Part B: SHORT CURRICULUM VITAE

Current Position: Full Professor of Numerical Analysis. Departamento de Ecuaciones Diferenciales y Análisis Numérico. University of Sevilla (Spain).
Education: Ph. D. in Mathematics. Universidad de Sevilla, 1984. (Advisor : Prof. A. Valle Sánchez.)
3eme. Cycle Ph. D. in Numerical Analysis: University of Paris VI, 1985. (Advisor : Prof. O. Pironneau.)

Main Positions
Doctoral Researcher. MENUSIN Project at INRIA-Rocquencourt. April 1983-Aug 1985.
Associate Professor. University of Sevilla, Facultad de Matemáticas. Oct 1985-May 1993.
Invited Research Scientist. Courant Institute, New York. Jan-Dec 1988.
Invited Professor. University of Paris VI, Laboratoire d'Analyse Numérique. Feb-July 1991 & Sept. 2013-Feb 2014.
Marie Curie Programme Senior Researcher. Dept. of Theoretical Aerodynamics. Dassault Aviation, Saint-Coud, France. April-Dec 1995 & Laboratoire d'Analyse Numérique, Université de Paris VI, Sept 2005-Sept 2006.
Director of BCAM (Basque Center for Applied Mathematics). Oct 2012-March 2013.
Excellence Researcher. University of Bordeaux. Laboratoire L2M. October to December 2014.

Managing Activities
Principal Investigator of 21 National Spanish and 7 International Research Projects.
Head of Research Team "Mathematical Modelling and Simulation of Environmental Flows". Univ. of Sevilla.
Director of Master "Technologies of Analysis for the Information Society". University of Sevilla, Academic years 2001/02, 02/03 and 03/04.
Director of the Department of Differential Equations and Numerical Analysis. Universidad de Sevilla, March 2010-Sept 2013, April-June 2013.
Chairman of ICIAM 2019 Congress (July 2013-).
Director of Institute of Mathematics of the University of Sevilla (IMUS) (March 2015-).

Research Interests

Numerical modelling of fluid flows, turbulence modelling.
Reduced order modelling.
Numerical simulation of environmental flows.

Publications

- 108 Publications in Journals and Proceedings with review committee (Data from Mathscinet).
- 3 Research books.
- Scientific Direction: Supervisor of 12Ph. D. Theses (two in progress).
- Editing: Editor of Mathematical Modelling and Numerical Analysis and Associate Editor of SEMA Journal.

Teaching: Since 1985.

UNDERGRADUATE TEACHING: Mathematics for the Graduation in Biochemistry, Chemistry, Mathematics, Pharmacy. Universities of Sevilla and Paris VI.

GRADUATE TEACHING: Numerical analysis of Navier-Stokes equations, Vortex Methods, Numerical approximation of elliptic, parabolic equations and hyperbolic conservation laws, Mathematical modelling of continuous systems. Univ. of Sevilla and Pôle Universitaire Leonard de Vinci.

Part C. RELEVANT ACHIEVEMENTS

Formation of Research Team "Mathematical Modelling and Simulation of Environmental Flows". I started to form a research team on numerical analysis, that did not exist at the University of Sevilla. The initial group was formed by 1992. We became interested by 1997 in the simulation of geophysical flows . This is today our main activity, although we continue to work on basic aspects of numerical analysis.

Development of System of Numerical Simulators of Geophysical Flows "DamFlow": This work was carried on since the beginning in 1997 as co-ordinated collaboration between the research team that I lead in Sevilla (mentioned in the point above) and that leaded at the University of Málaga by Dr. Parés, with a similar profile. We jointly developed the software system DamFlow (http://www.damflow.com), that integrates in a normalised way all 1D, 2D and 3D solvers developed by both teams, so as pre-processors (grid builders) and post-processors (visualizers).

Mathematical theory of analysis of numerical solution of incompressible flows by Stabilized Methods. Stabilized methods provide an alternative to the more classical mixed methods to solve incompressible flows, being computationally cheaper. For this reason they are widely used in engineering applications. I developed by 1998 a mathematical analysis theory in which both methods are analysed under a unified abstract framework. More recently I have applied it to the numerical analysis of Variational Multi-Scale methods.

Book "Mathematical and Numerical Foundations of Turbulence Models and Applications". This book is the synthesis of almost 20 years of scientific collaboration with Dr. R. Lewandoswky, specialist in theoretical analysis of flow problems. This book was published in 2014.

Direction of Basque Center of Applied Mathematics. October 2012 to March 2013. The BCAM is a research center funded by the Autonomous Basque Government devoted to research in applied mathematics and mathematical technology transfer.

Chairman of ICIAM 2019 Congress (Valencia, 15-19 July 2019). The International Coundil for Industrial and Applied Mathematics organizes every four years a world congress on these items. The Spanish Society for Applied Mathematics (SEMA) won the organization of the 2019 edition, that will take place in Valencia. I have been appointed by SEMA as the Chairman of this organization.

C.1. Selected Publications

1. Chacón Rebollo, Tomás; Gómez Mármol, Macarena; Hecht, Frédéric; Rubino, Samuele; Sánchez Muñoz, Isabel; A High-Order Local Projection Stabilization Method for Natural Convection Problems. *J. Sci. Comput.* 74 (2018), no. 2, 667–692.
2. Chacón Rebollo, Tomás; Delgado Ávila, Enrique; Gómez Mármol, Macarena; Ballarin, Francesco; Rozza, Gianluigi: On a certified Smagorinsky reduced basis turbulence model. *SIAM J. Numer. Anal.* 55 (2017), no. 6, 3047–3067.
3. Ahmed, Naveed; Chacón Rebollo, Tomás; John, Volker; Rubino, Samuele; A Review of Variational Multiscale Methods for the Simulation of Turbulent Incompressible Flows. *Arch. Comput. Methods Eng.* 24 (2017), no. 1, 115–164.
4. Azaïez, M.; Ben Belgacem, F.; Chacón Rebollo, T. Error bounds for POD expansions of parameterized transient temperatures. *Comput. Methods Appl. Mech. Engrg.* 305 (2016), 501–511.
5. Chacón Rebollo, T., Gómez Mármol, M., Rubino, S.: On the existence and asymptotic stability of solutions for unsteady mixing-layer models. *Discrete Contin. Dyn. Syst.* 34 (2014), no. 2, 421–436.
6. Chacón Rebollo, T., Gómez Mármol, M., Girault, V., Sánchez Muñoz, I.: A high order term-by-term stabilization solver for incompressible flow problems. *IMA J. Numer. Anal.* 33 (2013), no. 3, 974–1007
7. Casado-Díaz, J.; Chacón Rebollo, T.; Girault, V.; Gómez Mármol, M.; Murat, F.: Finite elements approximation of second order linear elliptic equations in divergence form with right-hand side in L1. *Numer. Math.* 105 (2007), no. 3, 337–374.
8. Chacón Rebollo, T., D. Rodríguez-Gómez: A stabilized space-time discretization for the primitive equations in oceanography. *Numer. Math.* 98 (2004), no. 3, 427–475.
9. Chacón Rebollo, Tomás; Domínguez Delgado, Antonio; Fernández Nieto, Enrique D.: A family of stable numerical solvers for the shallow water equations with source terms. *Comput. Methods Appl. Mech. Engrg.* 192 (2003), no. 1-2, 203–225.
10. Bernardi, C.; Chacón Rebollo, T.; Lewandowski, R.; Murat, F.: A model for two coupled turbulent fluids. II. Numerical analysis of a spectral discretization. *SIAM J. Numer. Anal.* 40 (2002), no. 6, 2368–2394 (electronic) (2003).

C.2. Projects with competitive public funding.

Title: Reduced order modeling aimed at eco-efficient design of buildings.
Reference: MTM2015-64577-C2-1-R, Spanish Government I+D+i Plan. Principal Investigator: Tomás Chacón Rebollo. Funding: 66.000€. Duration: 01/01/2016 to 31/12/2018.

Title: Development of reduced numerical models of aero-thermal flows in buildings,
Reference: MTM2012-36124-C02-01, Spanish Government I+D+i Plan. Principal Investigator: Tomás Chacón Rebollo. Funding: 46.000€. Duration: 01/01/2013 to 31/12/2015

Title: Numerical modeling of hydrodynamic flows with free surface
Reference: P12-FQM-454. Research Plan of Autonomous Government of Andalucia. Principal Investigator: Tomás Chacón Rebollo. Funding: 101.958€. Duration: 01/01/2013 to 31/12/2016

Title: Numerical modeling of turbulence by Variational Multiscale methods,
Reference: MTM2009-07719, Spanish Government I+D+i Plan. Principal Investigator: Tomás Chacón Rebollo. Funding: 96.945'86€. Duration: 01/01/2010 to 30/09/2013

Title: FreeFem3D: Applications to the simulation of environmental flows in the Andalucia area.
Reference: P07-FQM-02538. Research Plan of Autonomous Government of Andalucia. Principal Investigator: Tomás Chacón Rebollo. Funding: 141.130'54€. Duration: 31/01/2008 to 31/12/2012

C.3. Industrial contracts.

Title: Efficient (Numerical and Physical) turbulence models for aeronautics.
Participation: Researcher. Principal Investigator: Francisco Ortegón Gallego. Reference: BRITE-EURAM-2076/2032, European Union. Funding: 68.000€. Duration: 3 years, from 01/11/1992

Title: Development of a prediction algorithm for the luminic pollution in cities.
Participation: Principal Investigator. Company: IMES-API. Funding: 50.000€. Duration: 1 year, 2017.

Title: Development of a behaviour patron of chlorine concentration in ornamental sources. Participation: Principal Investigator. Company: IMES-API. Funding: 50.000€. Duration: 1 year, 2018.

C.4. Editing activities:

- Associate editor of M2AN Journal and of SEMA Journal.

C.5. Research management activities:

- Director of Master "Technologies of Analysis for the Information Society". University of Sevilla, Academic years 2001/02, 02/03 and 03/04.
- Director of the Department of Differential Equations and Numerical Analysis. Universidad de Sevilla, March 2010-Sept 2013, April-June 2013.
- Chairman of ICIAM 2019 Congress (July 2013-).
- Director of the Institute of Mathematics of the University of Sevilla, IMUS (March 2015-).

C.6. Scientific Direction

Supervisor of 12 Ph. D. Thesis: Ibrahim Bless Ranero, Daniel Franco Coronil, Antonio Domínguez Delgado, David Rodríguez Gómez, Enrique D. Fernández Nieto, Gladys Narbona Reina, Isabel Sánchez Muñoz, Samuele Rubino, Enrique Delgado Ávila, Cristina Caravaca (in progress), Carlos Constantino (in progress).

C.7. Teaching

- **Undergraduate Teaching:** Mathematics for the Graduation in Biochemistry, Chemistry, Mathematics, Pharmacy. Universities of Sevilla, Versailles and Paris VI.
- **Graduate Teaching:** Numerical analysis of Navier-Stokes equations, Vortex Methods, Numerical approximation of elliptic, parabolic and hyperbolic equations. Mathematical modelling of continuous systems. University of Sevilla and Pôle Universitaire Leonard de Vinci.