MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

CV date	19/09/2022

Part A. PERSONAL INFORMATION

First name	**Elena** Beatriz		
Family name	**Martín Ortega**		
Gender	Female		
e-mail	emortega@uvigo.es	URL Web: http://emortega.webs.uvigo.es/index.html	
Open Researcher and Contributor ID (ORCID)		0000-0002-3333-9970	
Scopus Author ID		55457007800	

A.1. Current position

Position	Associate Professor		
Initial date	12/05/2017		
Institution	Universidade de Vigo		
Department/Center	Fluid Dynamics Area/ Mechanical, Thermal and Fluid Engineering Dpt.	Escuela de Ingeniería Industrial. Escuela de Ing. Aeronáutica y del Espacio	
Country	Spain		
Key words	Numerical Simulation of fluid-dynamic processes with heat transfer, CFD, FSI, Reduced Order Modelling		

A.2. Previous positions (research activity interruptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
01/01/1997 – 31/08/1999	Research Fellow FPI/Universidad Politécnica de Madrid/Spain
01/09/1999 – 30/04/2006	Assistant Professor/Universidade de Vigo/Spain
01/03/2006 – 31/07/2006	Maternal leave
01/12/2015 – 31/04/2016	Maternal leave
01/05/2006 – 11/05/2017	Assistant Professor(Dr.)/Universidade de Vigo/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Ph. D. in Aeronautical Engineering	Universidad Politécnica de Madrid UPM/Spain	2002
Aeronautical Engineering (6-year program)	Universidad Politécnica de Madrid UPM/Spain	1996

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

I received the M. Sc. degree in Aeronautical Engineering (six-year program) in 1996 at the Technical University of Madrid (UPM), Spain, attaining the PhD. in 2002 in the Thermo-Fluid Dynamic departmental program at the same University. The PhD. Thesis *"Associated Mean flows in Faraday Waves"*, which dealt with the numerical simulation and stability analysis of fluid flows, was supervised by Professors Jose Manuel Vega and Carlos Martel and received the UPM Special Doctoral Thesis Award 2002/2003.

Continuing with this research line, I obtained in 2003 the international research award "David Crighton Fellowship" for international research students and postdoctoral fellows from the Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge (U.K.). In 2004 I stayed (for three months) at Mc Gill institute for advanced materials, Mc Gill University (Canada). This research led to several publications, two of them in the prestigious Journal of Fluid Mechanics, and enabled me to participate in two contracts with NASA (with Professor Edgar Knobloch, from Berkeley University, as lead researcher)

From September 1999 up to now, I work at the Mechanical, Thermal and Fluids Engineering Department of the University of Vigo (Spain) as Associate Professor of Fluid Dynamics. From 2018 I am also researcher at the Technological Institute for Industrial Mathematics ITMATI (Spain) (now CITMAga) and was also member of its Technical Scientic Committee. The research team I coordinate at the University of Vigo, formed mainly by PhD students, holds multidisciplinary lines which have fluid mechanics numerical modeling as the center core:

- CFD Numerical simulation of fluid flows, ranging from (i) wake analysis past structures and mixing enhancement past vortex promoters (fluid-structure interaction included) and (ii) simulation of industrial thermal processes in aeronautic, automotive, naval, wood and steel industries (with optional metallurgical analysis): combustion, gas furnace heating, melting, solidification, liquid quenching, tempering, air-cooling, drying, excimer laser treatment, among others.
- Reduced order models: Manipulation and compression of data bases generated by numerical simulation with Proper Orthogonal Decomposition (POD) techniques. Generation of steady and dynamic Reduced Order Models ROM for real time prediction of processes aimed to be embedded in Engineering Control tools (Model-Based Control). Process parameters optimization.

Therefore, collaborations with researchers from institutions of different countries are common (see coauthors in https://www.scopus.com/authid/detail.uri?authorId=55457007800)
Concerning the transfer of knowledge to the industry, I have been Lead Researcher of more than 16 R&D projects/contracts with companies with a total turnover of more than 1.2M€. At present, I'm the global project coordinator (and lead researcher) of a EU project and researcher in two European Space Agency (ESA) projects and lead 2 Spanish national projects, one of them coordinated by us. These projects deal with numerical simulation. Likewise, I participated as researcher in other 12 R&D projects/contracts (5 funded by the Spanish Ministry of Science and Innovation). Additionally, details of the (under demand) taught training courses in numerical simulation with open free software OpenFOAM for various companies, research institutes and universities are available at the following personal web page: http://emortega.webs.uvigo.es/training.html.
These research activities led to the supervision of 6 PhD thesis in the last 5 years (4 in co-supervision) with 3 more in progress, and to the supervision of more than 70 Undergraduate and Master Thesis. I am author of 51 publications: 32 articles in ISSN Scopus indexed journals (26 JCR) with 127 cites (source WoS, 7 h-index) and other 20 publications in international books (chapters) and workshops. The research activities helped me to get 3 positive research evaluations for the following periods: 2002-2007, 2008-2013 and 2014-2019.
Additionally, I collaborate as reviewer of several JCR Journals and project proposals for the Ministry of Science and Innovation (Spanish Government, ANEP), Pontificia Universidad Católica de Perú (PUCP) and Netherlands Organization for Scientific Research (NWO). I am also R&D project technical assesor for certification agencies such as AENOR and ACIE. I collaborate also with ANECA (Agencia Nacional de Evaluación de la Calidad y Acreditación) from July 2021 in the homologation procedures of University degrees for the Aeronautical Engineering Area.

Part C. RELEVANT MERITS

C.1. Publications *(only last 10 years)*

1. JCR-Q1: E. Martin, F. Sastre, A. Velazquez, A. Baïri, 2023, 3D active mixing of confined power law aqueous polymer solutions: a comparative numerical study, to appear in International Journal of Numerical Methods for Heat and Fluid Flow.
2. JCR-Q1: N. Alilat, E. Martin, F. Sastre, J.A. Millan-Garcia, 2023, Thermal behavior of a conical antenna cooled with nanofluid saturated porous media. Effects of the cavity's inclination and aspect ratio, to appear in International Journal of Numerical Methods for Heat and Fluid Flow.
3. JCR-Q1: A. Baïri, A. Martín-Garín, E. Martin, J.A. Millan-Garcia, A. Velazquez, 2022, Experimental study on the influence of a conical cavity's inclination angle and aspect ratio on thermal behavior of a cone cooled with nanofluid saturated porous media, Experimental Heat Transfer, https://doi.org/10.1080/08916152.2022.2084474

4. JCR-Q1: F. Sastre, E. Martín, A. Velázquez, A. Baïri, 2022, Comparison of three-dimensional flow mixing via pulsation and dynamical stirring: application to the mixing of parallel streams at different temperatures, International Journal of Numerical Methods for Heat & Fluid Flow. Vol. 32:6, pp. 1883-1910.
5. JCR-Q2: E. Martin, A. Valeije, F. Sastre, A. Velazquez, Impact of Channels Aspect Ratio on the Heat Transfer in Finned Heat Sinks with Tip Clearance. Micromachines 2022, 13, 599.
6. JCR-Q1: F. Sastre, A. Martin-Garin, E. Martin, A. Velazquez, A. Baïri, 2022, Experimental study on the thermal control of a roof-top collective building antenna using a porous matrix filled with Water-Copper nanofluid, Case Studies in Thermal Engineering, Vol. 32, 101869.
7. JCR-Q1: E. Martin, F. Sastre, A. Velazquez, A. Baïri, 2021, Heat transfer enhancement around finned vertical antenna by means of porous media saturated with Water-Copper nanofluid, Case Studies in Thermal Engineering, Vol. 28, 101555.
8. JCR-Q1: E. Martín, I. Viéitez, F. Varas, 2021, A predictive model for the industrial air-impingement drying of resin impregnated paper, Applied Thermal Engineering, Vol. 199, 117602.
9. JCR-Q1: A. Valeije, F. Sastre, E. Martín, A. Velázquez, 2020, Energy-efficient mixing generated by prescribed crosswise oscillations of a square prism in highly confined flows, Chemical Engineering Science, vol. 215, 115456.
10. JCR-Q3: J. Schlipf, E. Martín, M. Stchakovsky, A. Benedetti, I. A. Fischer, J. Schulze, S. Chiussi, 2019, Ellipsometric Analysis of Concentration Gradients Induced in Semiconductor Crystals by Pulsed Laser Induced Epitaxy, Journal of Vacuum Science and Technology B, 37, 061213,
11. JCR-Q1: I. Viéitez, F. Varas, E. Martín, 2019, An efficient computational technique for the prediction of wire rod temperatures under different industrial process conditions, Applied Thermal Engineering, vol. 149, pp. 287-297.
12. JCR-Q2: E. Martín, A. Velázquez, A Valeije, 2018, Heat transfer downstream of a 3D confined square cylinder under flow pulsation, Numerical Heat Transfer, Part A, vol. 74 (12), pp. 1747-1769.
13. JCR-Q1: F. Sastre, A. Valeije, E. Martin, A. Velazquez, 2018, Experimental and numerical study on the flow topology of finned heat sinks with tip clearance, International Journal of Thermal Sciences, vol. 132, pp. 146-160.
14. JCR-Q3: J. Sieres, E. Martin, J. A. Martínez Suárez, 2017, Condensation of superheated R134a and R437A inside a vertical tube, Science and Technology for the Build Environment, vol. 23:6, pp. 884-895.
15. JCR-Q2: Reyes, M., Velazquez, A.; Arias, J. R.; Martin, E., 2015, Experimental study on the flow regimes past a confined prism undergoing self-sustained oscillations, International Journal of Heat and Fluid Flow, 54, pp. 65-76
16. JCR-Q1: Reyes, M., Velazquez, A., Martin, E., Arias, J.R., 2013, Experimental study on the confined 3D laminar flow past a square prism with a high blockage ratio, International Journal of Heat and Fluid Flow, 44, pp. 444-457
17. JCR-Q1: Martin, E., Meis, M., Mourenza, C., F. Varas, 2012, Fast solution of direct and inverse design problems concerning furnace operation conditions in steel industry, Applied Thermal Engineering, 47, pp. 41-53
18. JCR-Q1: Conde, J. C., Martin, E., Stefanov, S., Alpuim, P., Chiussi, S., 2012, FEM numerical analysis of excimer laser induced modification in alternating multi-layers of amorphous and nano-crystalline silicon films, Applied Surface Science, 258 Issue: 23, pp. 9342-9346

C.2. Congress See the list of publications in conferences in the following link:
http://emortega.webs.uvigo.es/conferences.html

C.3. Research projects *(only last 10 years)*

European:

— FF4EuroHPC Grant Agreement No 951745, SIMPSEG: HPC Simulation of Metal Powder Segregation in the manufacturing of cored wire (CITMAga-C95-2022). Participants:

GOMPUTE, CEDIE, CITMAga in consortium with University of Stuttgart. ***Global Project Coordinator and Lead Researcher***: E. Martín, February 2022 - May 2023, 199221€

- Pulse Detonation Thruster (PDT), European Space Agency ESA, RFQ/ITT Code No.: ESA-TECMPA-SOW-016609, project partners: Von Karman Institute VKI (Belgium), UPM (Spain), COMOTI (Romania), IP: Angel Velázquez, Role: researcher
- Feasibility and Assessment of Rotating Detonation Engines (RDE), European Space Agency ESA, ITT AO/1-11123/22/NL/MG, project partners: Von Karman Institute VKI (Belgium), UPM (Spain), COMOTI (Romania), IP: Angel Velázquez, Role: researcher

National:

- Safe and efficient urban air mobility in vertiports based on tailored CFD microweather models (SAFE-VERTIPORT), Ministerio de Ciencia e Innovación. Proyectos de generación de conocimiento 2021, Area Energía y Transporte. ***Investigador Principal:*** E. Martín, H. González, PID2021-125060OB-I00, 2022-2024, 121000€.
- Airspace and marine environment digitalization for the deployment of unmanned aircraft systems applied to offshore wind farms maintenance (EAGLE-ENVIRONMENT), Ministerio de Ciencia e Innovación. Proyectos estratégicos TED 21, Subárea: Ingeniería mecánica, naval y aeronáutica. **Coordinated** by UVIGO. ***Investigador Principal:*** E. Martín, H. González, TED2021-129756B-C31, 2022-2024, Phase 1 passed, Requested Budget (UVIGO) 130300€.
- Modelado Matemático, Análisis y Simulación Numérica de Problemas en Finanzas y Seguros, Procesos Industriales, Biotecnología y Medioambiente (MTM2013-47800-C2-2-P), IP: Jose Durany, Ministerio de Economía y Competitividad, Oct 2014 a Oct 2017
- Modelo y método para promover el mezclado en flujos laminares confinados (Mix-flow) (MTM2013), IP: Angel Velázquez, Ministerio de Economía y Competitividad, Oct 2014 a Oct 2016
- Micro Sistema para Generación de Energía (Micro-flow) (DPI2009-07591), IP: Angel Velázquez, Ministerio de Ciencia e Innovación, 1-1-2010 a 31-12-2012

Regional (selection, only as lead researcher):

- Investigación en tecnologías de forja para la minoración del consumo de acero en el conformado en caliente de cigüeñales de automoción (CIVOLCE). Programa CDTI, Instituciones participantes: CIE Galfor S.A., Fundación CIE I+D+i, Universidad de Mondragón, Universidad de Vigo. ***Investigador principal:*** E. Martín, Enero 2022 Noviembre 2023, 85000€
- Investigación en técnicas de forja en caliente de alumio para fabricación de componentes estructurales de gran tamaño para automoción (FORJAL), Programa CDTI, Institución principal: CIE Galfor S.A., Instituciones participantes: Universidad de Vigo, ***Investigador Principal:*** E. Martín, Agosto 2017 - Mayo 2019, 74000€
- Investigación en nuevos procesos de conformado y tratamientos térmicos másicos y superficiales para la optimización de la forja por extrusión de componentes de transmisión de vehículos industriales (TEINEXT), ***Investigador Principal:*** E. Martín, Programa CDTI, CIE Galfor S.A., febrero 2017 a noviembre 2018, 65000€
- Investigación en nuevos procesos y aleaciones de aceros microaleados para la forja en caliente de cigüeñales de automoción (FORJACEMIC), ***Investigador Principal:*** E. Martín, Programa CDTI - FEDER INNTERCONECTA, CIE Galfor S.A, 01/04/2013 –31/12/2014, 90000€
- Desarrollo de nuevas tecnologías y estrategias de fabricación de lotes pequeños para componentes de automoción (Lead Time LT1). Estudio numérico del proceso de temple industrial de nueces, ***Investigador Principal:*** E. Martín, Programa CDTI - FEDER INNTERCONECTA, GKN Driveline, 01/04/2013 –31/12/2014, 65000€
- Nuevo diseño adaptativo del proceso de laminación en caliente para la fabricación flexible de productos corrugados y alambrón (FLEXITREN), ***Investigador Principal:*** E. Martín, Programa CDTI - FEDER INNTERCONECTA, CELSA Atlantic, 12/12/2011 a 12/12/2014, 95000€
- Herramienta de predicción del calentamiento de piezas en hornos industriales y su aplicación al diseño de condiciones de operación y control, ***Investigador Principal:*** E. Martín, XUNTA DE GALICIA, 10 DPI 303008PR, 01/08/2010 a 31/3/2013, 42090€