

# Daniel Fernández Martínez

PHD CANDIDATE IN FLUID MECHANICS

GRADUATE STUDIES	<b>University of Extremadura, Badajoz, Spain</b> <i>Master of Science, Simulation in Science and Engineering</i>	Nov' 21
	<b>University of Extremadura, Badajoz, Spain</b> <i>Bachelor of Science, Industrial Electronics and Control Engineering,</i>	Jul' 20
CURRENT POSITION	<b>Singular capillary flows of complex liquids: fundamentals and applications</b> Supervisor: Dr. JM. Montanero & Dr. C. Ferrera <ul style="list-style-type: none"> <li>- Position: PhD Student, Fluid Mechanics Group, School of Industrial Engineering (UEX), Badajoz, Spain</li> <li>- Funding: FPI Spanish National Grant</li> </ul>	Feb' 24 - Present
PREVIOUS RESEARCH EXPERIENCE	<b>Fluid dynamics technology applied to diagnosis and personalized treatment of high-mortality cardiovascular pathologies</b> Supervisor: Dr. Conrado Ferrera <ul style="list-style-type: none"> <li>- Position: Research Assistant, Fluid Mechanics Group, School of Industrial Engineering (UEX), Badajoz, Spain</li> <li>- Funding: Ayudas destinadas a la realización de proyectos de investigación en los centros públicos de I+D+I de la Comunidad Autónoma de Extremadura</li> </ul>	Feb' 22 - Jan' 24
	<b>An AI-based recommendation system for “green routes” in sustainable urban environments</b> Supervisor : Dr. Filippo Bistaffa <ul style="list-style-type: none"> <li>- Position: JAE Intro Fellow, Group of Multiagent Systems, Artificial Intelligence Research Institute (IIIA-CSIC), Spanish National Research Council, Barcelona, Spain</li> <li>- Funding: JAE Intro ICU Fellowship, Spanish National Research Council</li> </ul>	Oct' 21 - Nov' 21
	<b>Electrical load forecasting with advanced machine learning techniques</b> Supervisor: Dr. M.A. Jaramillo Morán <ul style="list-style-type: none"> <li>- Position: Research Support Engineer, Group of Industrial Applications of Artificial Intelligence, School of Industrial Engineering (UEX), Badajoz, Spain</li> <li>- Funding: Ayudas para el fomento de la contratación de personal de apoyo a la investigación en la Comunidad Autónoma de Extremadura</li> </ul>	Nov' 20 - Feb' 22
INDEXED JOURNAL PUBLICATIONS	Herrada, M.A., López-Herrera, J.M., <b>Fernández-Martínez, D.</b> , Cabezas, M.G., Montanero, J.M. Global linear stability of the bubble rising in the presence of a soluble surfactant. <i>Preprint</i> DOI: <a href="https://doi.org/10.48550/arXiv.2506.16933">10.48550/arXiv.2506.16933</a>	
	<b>Fernández-Martínez, D.</b> , Vega, E.J., Gañán-Calvo, A.M., Montanero, J.M. A new emitter for electrospray and electrohydrodynamic jet printing. <i>Physics of Fluids</i> 37, 042010 (2025) DOI: <a href="https://doi.org/10.1063/5.0257842">10.1063/5.0257842</a>	
	<b>Fernández-Martínez, D.</b> , Cabezas, M.G., López-Herrera, J.M., Herrada, M.A., Montanero, J.M. Transient bubble rising in the presence of a surfactant at very low concentrations. <i>International Journal of Multiphase Flow</i> . 188 (2025); 105205.	

DOI: [10.1016/j.ijmultiphaseflow.2025.105205](https://doi.org/10.1016/j.ijmultiphaseflow.2025.105205)

**Fernández-Martínez, D.**, González-Fernández, M.R., Nogales-Asensio, J.M., Ferrera, C. Impact of Minimal Lumen Segmentation Uncertainty on Patient-Specific Coronary Simulations: A Look at FFR<sub>CT</sub>. *International Journal for Numerical Methods in Biomedical Engineering*. 2024;e3822.

DOI: [10.1002/cnm.3822](https://doi.org/10.1002/cnm.3822)

**Fernández-Martínez, D.**, Jaramillo-Morán, M.A. Multi-Step Hourly Power Consumption Forecasting in a Healthcare Building with Recurrent Neural Networks and Empirical Mode Decomposition. *Sensors* 2022, 22, 3644.

DOI: [10.3390/s22103664](https://doi.org/10.3390/s22103664)

Jaramillo-Morán, M.A., **Fernández-Martínez, D.**, García-García, A., Carmona-Fernández, D. Improving Artificial Intelligence Forecasting Models Performance with Data Preprocessing: European Union Allowance Prices Case Study. *Energies* 2021, 14, 7845.

DOI: [10.3390/en14237845](https://doi.org/10.3390/en14237845)

## BOOK CHAPTERS

**Fernández-Martínez, D.**, Jaramillo-Morán, M.A., Carmona-Fernández, D, Rodríguez-Méndez, D. EIIGraph: conexiones Universidad - Empresa mediante la teoría de grafos. Propuestas y experiencias para mejorar la educación y el empleo. Octaedro, 01/07/2022. ISBN 978-84-19312-50-1

Jaramillo-Morán, M.A., **Fernández-Martínez, D.**, Carmona-Fernández, D, Rodríguez-Méndez, D. Predicción del precio de los derechos de emisión del CO2 con un Perceptron Multicapa (MLP). Propuestas y experiencias para mejorar la educación y el empleo. Octaedro, 01/07/2022. ISBN 978-84-19312-50-1

## CONFERENCE PUBLICATIONS

**Fernández-Martínez, D.**, Cabezas, M.G., López-Herrera, J.M., Herrada, M.A., Montanero, J.M. Growth of the dynamic adsorption layer in a bubble rising in water at very low concentrations. *3rd Spanish Fluid Mechanics Conference (SFMF)* Jun' 24 - Jun' 27, Málaga, Spain.

**Fernández-Martínez, D.**, Montanero, J.M., López-Herrera, J.M., Herrada, M.A. Evolution of the surfactant monolayer in a bubble rising in water with traces of surfactant. *10th International Bifurcations and Instabilities in Fluid Dynamics (BIFD) Symposium* Jun' 24 - Jun' 28, Edinburgh, Scotland.

**Fernández-Martínez, D.**, Nogales-Asensio, J.M., González-Fernández, M.R., Ferrera, C. Tuning patient-specific coronary lumped parameter models in presence of severe aortic stenosis. *28th Congress of the European Society of Biomechanics* Jul' 09 - Jul' 12, Maastricht, The Netherlands.

**Fernández-Martínez, D.**, Montanero, J.M., Nogales-Asensio, J.M., González-Fernández, M.R., Ferrera, C. Impact of interobserver lumen segmentation uncertainty in FFR<sub>CT</sub>: the location of the stenosis matters. *28th Congress of the European Society of Biomechanics* Jul' 09 - Jul' 12, Maastricht, The Netherlands.

**Fernández-Martínez, D.**, Montanero, J.M., González-Fernández, M.R., Nogales-Asensio, J.M., Ferrera, C. Quantitative assessment of the variability of FFR<sub>CT</sub> due to minimal uncertainty in lumen segmentation threshold. *VII ECCOMAS Young Investigators Conference YIC2023* Jun' 13 - Jun' 23, Porto, Portugal.

**Fernández-Martínez, D.**, Agujetas, R., Nogales-Asensio, J.M., Tena, A.F., Ferrera, C. Influence of the location point for the Fractional Flow Reserve measurement. A computational study. *SFMF22 I Spanish Fluid Mechanics Conference* Jun' 19 - Jun' 22, Cádiz, Spain

RESEARCH STAYS **Visiting PhD. Candidate**, Group of Mesoscale Chemical Systems, Faculty of Science and Technology, University of Twente, The Netherlands *Apr' 25 - Jul' 25*  
**Visiting Researcher**, MEtRICs Group, Faculty of Mechanical Engineering, Universidade do

FELLOWSHIPS & AWARDS	<b>FPI PhD Fellowship</b> , Spanish Ministry of Science, Innovation and Universities	<i>Dec' 23</i>
	<b>JuntaEx PhD Fellowship</b> , Junta de Extremadura, renounced due to incompatibility with FPI PhD Fellowship	<i>Sep' 24</i>
	<b>JAe Intro ICU</b> , Spanish National Research Council (CSIC)	<i>Oct' 21</i>
	<b>Erasmus Grant (Hybrid)</b> , European Commission	<i>Sep' 19</i>
	<b>SICUE National Exchange Programme</b> , CRUE Universidades Españolas	<i>Sep' 18</i>
SEMINARS & TALKS	<b>Characterization of the kinetics of an ultrafast surfactant by microjet impact on liquid pools</b> , MCS Seminars, University of Twente	<i>Jul' 25</i>
	<b>A new emitter for electrospray and electrohydrodynamic jet printing</b> , Advances in Fluid Mechanics, University of Extremadura	<i>Nov' 24</i>
	<b>Evolution of the surfactant monolayer in a bubble rising in water with traces of surfactant</b> , Advances in Fluid Mechanics, University of Extremadura	<i>Jun' 24</i>
	<b>FFR-CT: Role of Global Lumen Segmentation Uncertainty</b> , Advances in Fluid Mechanics, University of Extremadura	<i>Mar' 23</i>
	<b>FFR-CT as a non-invasive procedure for the detection of significant coronary lesions</b> , University Hospital of Badajoz	<i>Feb' 23</i>
	<b>Fluids in the era of Data: Opportunities and Challenges</b> , Advances in Fluid Mechanics, University of Extremadura	<i>Apr' 22</i>
TRAININGS	<b>Advances in fluid mechanics</b> , University of Extremadura	<i>Jan' 23</i>
	<b>Introduction to 3D printing</b> , University of Extremadura	<i>Jul' 21</i>
	<b>Deep Learning Specialization</b> , deeplearning.io	<i>Mar' 20 - May' 20</i>
	<b>Object Oriented Programming in JAVA</b> , University of Extremadura	<i>Feb' 16 - Jun' 16</i>
DISSEMINATION ACTIVITIES	<b>Participation in “Desayunos con la Ingeniería”</b> , Badajoz	<i>2025</i>
	<b>Noche Europea de Investigadores e Investigadoras</b> , Badajoz	<i>Sep' 23</i>
LANGUAGES	<b>Spanish</b> , Native proficiency	
	<b>English</b> , Full professional working proficiency	
	<b>Portuguese</b> , Elementary proficiency	