Part A. PERSONAL INFORMATION

CV date	07/02/2022

First name	Adrián		
Family name	Amor Martín		
Gender	Male	Date of Birth (dd/mm/yyyy)	17/05/1989
Social Security, Passport, ID number	47486795Y		
e-mail	aamor@ing.uc3m.es	URL Web: https://aamorm.github.io	
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-6123-4324		

A.1. Current position

Position	Profesor Ayudante Doctor		
Initial date	01/02/2021		
Institution	Universidad Carlos III de Madrid		
Department/Centre	Teoría de la Señal y Comunicaciones	http://www.tsc.uc3m.es	
Country	Spain	Phone number	661371641
Keywords	Computational electromagnetics, domain decomposition methods, finite element methods, high-performance computing		

A.2. Previous positions (research activity interruptions)

Period	Position/Institution/Country
2019-2020	Postdoctoral Fellow, Saarland University, Germany
2015-2018	FPU scholarship holder, University Carlos III of Madrid, Spain
2014-2015	PIF scholarship holder, University Carlos III of Madrid, Spain

A.3. Education

PhD, Graduate Degree	University/Country	Year
Doctorado Interuniversitario en Multimedia y Comunicaciones	Universidad Carlos III de Madrid	2018
Máster Interuniversitario en Multimedia y Comunicaciones	Universidad Carlos III de Madrid	2014
Ingeniero de Telecomunicación	Universidad Carlos III de Madrid	2012

Part B. CV SUMMARY

As general quality research indicators, I have authored or co-authored **13 JCR-indexed papers** (three Q1, six Q2, three Q3, and one Q4) and **28 conference contributions**. Also, I am the **Principal Investigator (PI)** of a public research project, I have been part of the team in **6 research projects** and **7 funded contracts**, and I have conducted **one Ph.D. thesis**, two **Master's thesis** and one **Bachelor's thesis.**

My main research interest is **computational electromagnetics** (CEM). I have contributed to the development of a code based on the **Finite Element Method** (FEM) focused on **High-Performance Computing** (HPC) infrastructures, with significant contributions to the development of **new curl-conforming basis functions** for different element shapes (tetrahedra, triangular prisms, hexahedra) to approximate the electromagnetic fields and techniques to tackle **large scale simulations** (e.g., Domain Decomposition Methods). Specifically, **I have been funded to visit** some of the main research groups in CEM: at the University of Macau for 2 months (produced a Q4 paper), at the **ElectroScience Laboratory** under the guidance of Prof. Jin-Fa Lee for **7 months** in two different stays (ref. 4), and as a postdoctoral researcher at **Saarland University** with Prof. Dyczij-Edlinger for **2 years** (with 8 papers to be submitted). Also, I have disseminated the results of my Ph.D. thesis in the most well-known conferences in my research field, allowing me to discuss my results with prestigious researchers and to visit them (e.g., the stay at ElectroScience Laboratory). In these

conferences, I have noticed the absence of a **standard benchmark** to compare different CEM solvers; so, I published in open access a testbench of arbitrary accuracy (ref. 6), and I enrolled in the **Working Group P2816 APS/SC/CEM of the IEEE**, devoted to writing a recommended practice for computational electromagnetics applied to modelling and simulation of antennas. I have also conducted two Master Thesis and one Bachelor Thesis, and I serve as a **reviewer in IEEE Transactions on Artificial Intelligence**, **IEEE Antennas and Propagation Magazine**, **IET Microwaves Antennas and Propagation**, **WIREs Data Mining and Knowledge Discovery,** and **SAGE Journal of Supercomputing**, among others.

Lately, I have benefited from my experience with **antenna measurements** (as the **laboratory coordinator** for antenna certification with Telefónica, see C.4) to be involved in the **design** and **manufacturing of sensors and antennas** for **microwave imaging** and **non-destructive testing**, tutoring **three M.Sc. students** with ongoing works. In the years to come, I will use my CEM background to solve the so-called **inverse problem** (focusing on the new possibilities that **Artificial Intelligence** have brought to our community in the last years) using the measurements provided by these manufactured circuits, following the **working plan** in the **public research project** where I am the **Principal Investigator**.

Since I was granted one of the **awards for start-ups** at the University Carlos III of Madrid (with an **HPC project**), I am committed to the scientific and **social impact** of my research, either with transfer or **dissemination activities**. Thus, I am the **coordinator** of an active working group (**GT Jóvenes**) at the Spanish professional college of Telecommunication Engineers (**COIT**), where I have organized a **mentorship program** (ment-it) that gives **professional advice** to young engineers. This program is now in its second edition and it has increased the feeling of community in the COIT, **reducing the gap between generations**. I have also **chaired** different **dissemination webinars**, e.g., "**Research in the Industry**", at the national conference of URSI 2021, to show the research activity of the Industry (with representatives of Huawei, Boeing, Erzia, and Sngular) to a mostly academic audience.

Regarding **international mobility**, I have opened a collaboration line with **Prof. Dyczij-Edlinger** (Germany), where my CEM background allowed me to interact and collaborate with a team of Ph.D. and M.Sc. students. Also, I have applied for **funding** to open a **new research line** with Prof. Vipiana (**Italy**) related to microwave imaging (we already have preliminary contacts), and I have been accepted by the **Pontificia Universidad Católica del Perú** to give a one-week course in CEM for M.Sc. and Ph.D. students in the call for **International Credit Mobility** of Erasmus+ program.

Part C. RELEVANT MERITS

C.1. Publications

1. Castillo-Reyes, Octavio (AC); Modesto, David; Queralt, Pilar; Marcuello, Alex; Ledo, Juanjo; **Amor-Martin, Adrian**; de la Puente, Josep; García-Castillo, Luis E. 2022. "3D Magnetotelluric Modeling Using High-Order Tetrahedral Nédélec Elements on Massively Parallel Computing Platforms." Computers & Geosciences. Vol. 160:105030.
2. Martínez-Fernández, Ignacio; **Amor-Martin, Adrian (AC)**; Garcia-Castillo, Luis E. 2021. "Test-Driven Development of a Substructuring Technique for the Analysis of Electromagnetic Finite Periodic Structures." Applied Sciences. Vol. 11(24): 11619.
3. **Amor-Martin, Adrian (AC)**; Luis E. Garcia-Castillo. 2021. "Adaptive Semi-Structured Mesh Refinement Techniques for the Finite Element Method." Applied Sciences. Vol. 11(8): 3683.
4. **Amor-Martin, Adrian (AC)**; Garcia-Castillo, Luis E.; Lee, Jin-Fa. 2021. "Study of Accuracy of a Non-Conformal Finite Element Domain Decomposition Method". Journal of Computational Physics. Vol. 429:109989.
5. Badía, José M; **Amor-Martin, Adrian (AC)**; Belloch, José A.; García-Castillo, Luis E. 2020. "GPU Acceleration of a Non-Standard Finite Element Mesh Truncation Technique for Electromagnetics." IEEE Access. Vol. 8: 94719–94730.

6. **Amor-Martin, Adrian (AC)**. 2019. “A Testbench of Arbitrary Accuracy for Electromagnetic Simulations.” International Journal of RF and Microwave Computer-Aided Engineering. Vol. 30: e22342.
7. González-Serrano, Francisco-Javier (AC); **Amor-Martin, Adrian**; Casamayón-Antón, Jorge. 2018. “Supervised Machine Learning Using Encrypted Training Data.” International Journal of Information Security. Vol. 17: 365–77.
8. González-Serrano, Francisco-Javier (AC); Navia-Vázquez, Ángel; **Amor-Martin, Adrian**. 2017. “Training Support Vector Machines with Privacy-Protected Data.” Pattern Recognition. Vol. 72: 93–107.
9. **Amor-Martin, Adrian (AC)**, García-Castillo, Luis E; Garcia-Donoro, Daniel. 2016. “Second-Order Nédélec Curl-Conforming Prismatic Element for Computational Electromagnetics.” IEEE Transactions on Antennas and Propagation Vol. 64: 4384–4395.
10. **Amor-Martin, Adrian (AC)**; Martinez-Fernandez, Ignacio; Garcia-Castillo, Luis E. 2015. “Posidonia: A Tool for HPC and Remote Scientific Simulations.” IEEE Antennas and Propagation Magazine. Vol. 57: 166–177.

C.2. Congresses

1. Falcón, Enderson; Santamaría-Botello Gabriel; **Amor-Martín, Adrian**; de la Rubia, Valentín; García-Muñoz, Luis E. “Analogous Maxwellian Algorithm for Photon Geodesic Calculation in General Static Isotropic Metrics.” Oral presentation. 51st European Microwave Conference (EuMC), 6 Apr. 2022, London, UK.
2. Castillo-Reyes, Octavio; Queralt, Pilar; Marcuello, Alex; Ledo, Juanjo; **Amor-Martin, Adrian**; García-Castillo, Luis E. “3D Electromagnetic Modeling and Inversion Using an Open-Source Paradigm: Experiences and Perspectives.” Oral presentation. SIAM Conference on Mathematical & Computational Issues in the Geosciences. 21 Jun. 2021, Online.
3. **Amor-Martin, Adrian**; Toth, Laszlo L.; Dyczij-Edlinger, Romanus. “H(Curl)-Conforming Hierarchical Basis Functions on Prisms and Hexahedra.” Oral presentation. Kleinheubacher Tagung. 23 Sep. 2019, Miltenberg, Germany.
4. Garcia-Donoro, Daniel; Mei, Wujie; **Amor-Martin, Adrian**; Garcia-Castillo, Luis E. “Electromagnetic Finite Element Solver for HPC Environments Using Direct Substructuring Method.” Oral presentation. 48th European Microwave Conference (EuMC), 24 Sep. 2018, Madrid, Spain.
5. **Amor-Martin, Adrian**; Garcia-Castillo, Luis E.; Garcia-Donoro, Daniel. “Towards a Scalable Hp Adaptive Finite Element Code Based on a Nonconformal Domain Decomposition Method.” Oral presentation. 48th European Microwave Conference (EuMC), 24 Sep. 2018, Madrid, Spain.
6. **Amor-Martin, Adrian**; Garcia-Donoro, Daniel; Garcia-Castillo, Luis E. “Non-Conformal Domain Decomposition Method Supporting hp Discretizations.” Oral Presentation. International Workshop on Finite Elements for Microwave Engineering, 10 Sep. 2018, Cartagena de Indias, Colombia.
7. Garcia-Donoro, Daniel; **Amor-Martin, Adrian**; Garcia-Castillo, Luis E. “Higher-Order Finite Element Electromagnetics Code for HPC Environments.” Oral Presentation. International Conference on Computational Science (ICCS), 1 Jun. 2017, Zurich, Switzerland.
8. **Amor-Martin, Adrian**; Garcia-Donoro, Daniel; Garcia-Castillo, Luis E. “Analysis of dispersion error of higher-order curl-conforming prismatic finite element.” Oral Presentation. IEEE MTT-S international conference on Numerical electromagnetic and multiphysics modeling and optimization for RF, microwave, and terahertz applications (NEMO), 16 May 2017, Sevilla, Spain.
9. **Amor-Martin, Adrian**; Garcia-Donoro, Daniel; Garcia-Castillo, Luis E. “A finite element mesh truncation technique for scattering and radiation problems in HPC environments.”

Oral Presentation. Computing and electromagnetics international workshop (CEM), 10 Jun 2017, Barcelona, Spain.

10. Garcia-Donoro, Daniel; Ting, Sio Weng; **Amor-Martin, Adrian**; Garcia-Castillo, Luis E. "Higher order finite element method solver for the analysis of microwave devices in planar technology." Oral presentation. 46th European Microwave Conference (EuMC), 4 Oct. 2016, London, UK.

C.3. Research projects

1. 2022/00024/001. MIMACUHSPACE-CM, "Microwave Materials Characterization Using Heterogeneous Systems-on-Chip for the Space Environment." Comunidad de Madrid. Convocatoria Proyectos Interdisciplinares de I+D - Jóvenes doctores/as Convenio plurianual CM-UC3M. Adrián Amor Martín (Universidad Carlos III de Madrid, UC3M). 01/01/2022-31/12/2023. 60.000 €. Principal Investigator.
2. AINDT-EMHPC, "Defect Classification in Series Production Using a Non-destructive Electromagnetic Material Characterization Tool with High Performance Computing and Artificial Intelligence." Ministerio de Ciencia e Innovación. Proyectos de Transición Ecológica y Transición Digital 2021. Luis Emilio García Castillo (UC3M). In evaluation. 169.200 €. Researcher.
3. S2018/NMT-4333. MARTINLARA-CM, "Millimeter wave Array at Room Temperature for INstruments in Leo Altitude Radio Astronomy." CAM, Consejería de Educación e Investigación. Programa de Actividades de I+D entre grupos de investigación en tecnologías 2018. Luis Enrique García Muñoz (UC3M). 01/01/2019-31/12/2022. 331.940,74 €. Researcher.
4. TEC2016-80386-P. "Electromagnetic Simulator for HPC Environments". Ministerio de Economía y Competitividad. Plan Nacional de I+D+I (Convocatoria EXCELENCIA). Luis E. García Castillo. (UC3M). 01/01/2017- 31/12/2019. 119.427 €. Part of the working team.
5. S2013/ICE-3004, DIFRAGEOS-CM, "Desarrollos instrumentales fotónicos y de radiofrecuencia y aplicación a técnicas experimentales de geodesia espacial". CAM. Consejería de Educación e Investigación. Guillermo Carpintero del Barrio (UC3M). 01/10/2014-31/12/2018. 411.952,31 €. Part of the working team.
6. TEC2010-18175/TCM, "Análisis de Estructuras Periódicas Finitas Regulares e Irregulares mediante Técnicas de Descomposición de Dominios en Paralelo con Adaptatividad hp Automática". Ministerio de Ciencia e Innovación. Plan Nacional de I+D+I. Luis E. García Castillo. (UC3M). 01/01/2012-31/12/2014. 168.432 €. Part of the working team.

C.4. Technology/Knowledge transfer

1. INDRA-UC3M chair in radiofrequency technologies. Indra Sistemas, S.A. Daniel Segovia Vargas (UC3M). 26/10/2021-26/10/2023. 29.011,76 €. Academic tutor that coordinates students' work with Indra's goals.
2. Antenna measurement from different manufacturers with Starlab Satimo given by Telefónica. Telefónica. Daniel Segovia Vargas (UC3M). From 01/06/2014. 343.269,04 €. Coordinator for the measurements part.
3. Design and implementation of directive antennas in the GPS band for the production of NOJAMZONE product. Centum Solutions S.L. Daniel Segovia Vargas (UC3M). 15/01/2018-15/07/2018. 30.400 €. Advisor for the simulation part.
4. RKAF Radar Cross Section Offset. Airbus Defense and Space. Luis E. García Castillo (UC3M). 29/01/2016-29/01/2017. 31.052,32 €. Computational Electromagnetics teacher for Radar Cross Section courses to international personnel.