



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

**Nombre:** FERNANDEZ FERNANDEZ, EDUARDO  
**Referencia:** RYC-2017-21910  
**Área Científica:** Tecnología Electrónica y de las Comunicaciones  
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#### Título:

Characterization, modelling and development of next-generation concentrator photovoltaic systems

#### Resumen de la Memoria:

I have around 10 years of experience in the field of Concentrator Photovoltaics (CPV) as product developer, research assistant, postdoctoral researcher, and nowadays, as senior researcher, being involved in national and international research projects with prestigious research institutes, universities and private companies working with the CPV technology. During this time, I have been mainly working in the following three research lines regarding CPV:

1. Characterization of CPV devices. This includes the characterization of multi-junction (MJ) solar cells, CPV modules and grid-connected systems, both at indoor and outdoor conditions. CPV is a relatively young technology and exhibits a much more complex performance than conventional photovoltaic (PV) technology due to the use of MJ solar cells and concentrator optical elements. Following this line, my work related with this topic has been fundamental to better understand the performance on this technology, and therefore, to promote its market expansion worldwide.
2. Modelling of CPV devices. This includes the use of analytical methods, artificial neural networks (ANN) based methods, as well as multiphysics approaches. The output of CPV devices depends on the concentrator cells, optical devices, thermal management, type of tracking mechanism, etc. Because of this, the models of conventional PV technology are not valid for CPV. This is a fundamental issue for designing, monitoring, performing life cycle assessments and to also analyse the economic profitability of such technology. In this sense, I have proposed key models that are currently being widely used by the CPV community.
3. Development of novel type of CPV devices. This includes optics, cells and cooling mechanisms (passive and thermal-hybrid). Despite the remarkable progress and high efficiencies of commercial concentrator systems, there is still room for huge improvements to develop new high-efficiency and low-cost competitive concentrator systems. In this sense, I have contributed to develop novel types of thermal-hybrid systems to further exploit the heat power produced by the cells, and proposed novel configurations to develop high and ultra-high concentrators aiming to increase the efficiency and decrease the cost.

The investigations conducted in the first two items have been crucial for achieving a better understanding and improving the modelling capabilities of CPV. Based on this experience, I also began to propose novel concentrators to increase the competitiveness of this type of systems.

#### Resumen del Currículum Vitae:

Dr. Eduardo F. Fernández (h-index: 21; citations: 1302; source Google Scholar). I am researcher in the field of concentrator photovoltaics (CPV). I obtained my PhD at the University of Santiago de Compostela (Spain) in 2012 with the thesis entitled "Modelling and characterization of III-V multi-junction solar cells and concentrator modules" (Summa Cum Laude and Best Thesis Award from the Faculty of Physical Sciences. As pre-doctoral researcher, I was also working in prestigious bodies related to CPV such as Guascor/Amonix Inc. (Spain/USA) and Fraunhofer ISE (Germany).

As postdoctoral researcher (postdoc grant: "Formación Posdoctoral" from the Xunta de Galicia (2013)), I have been working at the Environment and Sustainability Institute (ESI) of the University of Exeter (UK), and conduct research visits at the Institute of Energy (Cardiff University, UK), the FOSS Research Centre for Sustainable Energy (University of Cyprus, Cyprus) and the National Renewable Energy Laboratory (NREL, USA). My investigations conducted in the modelling and characterization of CPV have been crucial for achieving a better understanding of the performance of such technology. Based on this experience, I have also proposed novel concentrators to increase the competitiveness of CPV systems.

I have been awarded with the "Formación Posdoctoral 2013" (Juan de la Cierva-Formación) and the "Juan de la Cierva-Incorporación 2015" to work at the Centro de Estudios Avanzados en Energía y Medio Ambiente (CEAEMA) (University of Jaén) where I have established my own research team in the field. My research career in CPV has been reinforced by obtaining, as principal investigator, the project "SOLEF-UHCPV: New architectures for the development of systems at ultra-high concentration photovoltaic levels" funded by the MINECO



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(Spain). During this time, I have published over 60 peer-review papers (+90% in Q1;+25 as main author) and participated in 5 international/UE projects, 2 as co/principal investigator.



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**Nombre:** DURAN BOSCH, VICENTE  
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**Área Científica:** Tecnología Electrónica y de las Comunicaciones  
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#### Título:

DEVELOPMENT OF NOVEL PHOTONIC TECHNIQUES FOR ULTRAFAST AND MULTIDIMENSIONAL METROLOGY

#### Resumen de la Memoria:

For more than one decade, as a PhD student and a postdoc, I have been working on the development of cutting-edge techniques in the field of Photonics for performing ultrafast and multidimensional metrology. My research background covers a wide range of areas and relevant technologies: optical beam modulation, adaptive optics, multidimensional imaging, compressive sensing, imaging through scattering media, and ultrafast metrology using optical frequency combs.

My research career over the mentioned period has been carried out in several European research institutions, namely Universitat Jaume I in Spain, Chalmers University of Technology in Sweden and Université Grenoble-Alpes in France. In parallel with my PhD studies, I also participated in a European project funded by the 6th Framework Programme. During all these years, I collaborated with colleagues of other institutions, such as Universidad de Valencia, de Santiago de Compostela, de Zaragoza and Institute of Applied Optics in Warsaw. In 2014 I was awarded a Marie Curie fellowship (Excellence Science pillar of the EU Framework Programme). The result of my work can be summarized in 46 international papers (26 papers in indexed journals), 3 book chapters, around 70 communications in conferences, including 12 invited talks, and 4 patents as co-inventor. All this research activity was developed within 11 research projects (funded by European and national institutions). My activity as postdoc researcher also includes co-supervising 3 PhD students and 2 master theses (one of them in Sweden). My research background has been complemented by a long professional experience as laboratory technician (for 10 years) and adjunct professor (profesor asociado, 6 courses).

Two main branches can be distinguished in my research career. The first one was started at the Department of Microtechnology and Nanoscience at Chalmers University thanks to the Marie Curie fellowship. During this stay, I demonstrated a dual-comb interferometer working at a record speed for performing ultrafast measurements. After that, I was selected for a French-Canadian project at Grenoble, hired by the Centre National de la Recherche Scientifique (CNRS), to conduct high-precision frequency-comb spectroscopy. The second branch, carried out at Universitat Jaume I, encompasses a set of innovative computational imaging techniques. Among other achievements, I developed a model for describing liquid-crystal spatial light modulators, applied for the first time ghost imaging to optical encryption, proposed a compressive single-pixel camera for imaging through scattering media and experimentally demonstrated phase imaging by wavefront sampling. The impact of my research can be quantified by >830 citations of my papers and an h-index of 16 (in accordance to the freely available service Google Scholar).

#### Resumen del Currículum Vitae:

I received my PhD in 2007 at Universitat de València, but all my experimental work was conducted in the Optics Research Group of Castelló (GROC) at Universitat Jaume I. In my thesis, I developed a model for describing the modulation properties of liquid-crystal spatial light modulators. As a PhD student I collaborated with researchers at Universidad de Santiago de Compostela, Universidad de Zaragoza and the Institute of Applied Optics in Warsaw. These collaborations led to the implementation of adaptive optics systems, mainly for ophthalmology applications. In parallel, I worked as a scientific laboratory technician (2002-2004) in a European project funded by the 6th Framework Programme. Within this project, I played a principal role in the hardware design of a hyperspectral system based on an acousto-optic tunable filter. I was also involved in the foundation of a spin-off company. During this pre-doctoral period I published 9 papers in indexed journals, filed 2 patents and my work resulted in a book chapter published by Springer-Verlag.

As a postdoc at Universitat Jaume I, I focused on the field of computational imaging, especially when it is combined with the ground-breaking theory of compressive sensing. My contributions to that field were the application of ghost imaging to optical encryption, the implementation of single-pixel cameras for multidimensional imaging and their use for imaging through scattering media. During this period, my dedication to research, reconciled with my job as a lab technician (civil servant from 2004) and adjunct professor (from 2008), produced as a result 11 papers published in indexed journals, 9 invited talks to international conferences and 2 patents. I also was appointed as a thesis co-advisor of two PhD students and one master student, taking a leading role in one of the research lines of GROC.

In 2014, I was awarded a Marie Curie Intra-European fellowship for two years at Chalmers University of Technology in Sweden, working in the advanced fiber-optic laboratory headed by Professor Peter Andrekson. There, I demonstrated a dual-comb interferometer capable of working at rates orders of magnitude higher than conventional ones, applying it to high-speed vibrometry. After this first postdoc stay, I carried out a set of experiments on phase imaging using a novel wavefront sensing concept at Universitat Jaume I. In October 2016, I began to work at the Université Grenoble-Alpes (France), hired by the CNRS for one year. During this stay I performed a set of experiments on high-precision spectroscopy using acousto-optics frequency combs, a modality that provides thousands of modes without resorting to



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nonlinear broadening. In summary, during this period I published 6 papers in prestigious indexed journals, including Optica (currently, a flagship journal of the OSA), as well as 2 book chapters in Wiley and CRC press. I also participated in 14 international conferences, including 3 invited talks and 3 peer-reviewed communications in the top-notch conferences CLEO and CLEO/Europe. In parallel, I continued my co-supervision activity at Universitat Jaume I (three PhD student in total) and also at Chalmers University (one master student). Recently, I received a positive assessment to be assistant professor in Photonics at Aarhus University in Denmark (65th university in the world accordingly to Shangai ranking in 2017).



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#### Título:

Crystalline 3D Nanophotonics

#### Resumen de la Memoria:

The Research Line of Dr. Ródenas has pivoted over two main topics:

- 1.-The investigation on ultrafast laser microfabrication of crystalline 3D nanophotonic devices;
  - 2.-The theoretical and experimental development of 3D photonic instruments, for light generation, manipulation and detection, with a focus on the mid-infrared range for the direct interaction with biomolecules and chemicals through their molecular vibrational modes.
- For achieving the goal of developing nanophotonic sensing technologies such as astrophotonic devices or harsh-environment sensors, Dr. Ródenas has built independently his own international research collaboration network spanning:
- Infrared Nanophotonic SWIFTS spectrometers. With C. Bonneville (CEO of Resolution Spectra Systems, France) and G. Martin (CNRS, France).
  - 3D Photonic Bandgap Structures. With Prof. Sajeev John (Canada), Prof. B. Jia and Prof. M. Gu (Australia).
  - Infrared Astrophotonic Components. With G. Martin and P. Kern (France), Prof. L. Labadie (Germany), and R. R. Thomson and Prof. A. Kar (UK).
  - Industrial Photonic Sensors for Aircrafts. With B. Berton (Dassault Aviation, France), N. Rehfeld (Fraunhofer IFAM, Germany), T. Tanaka (FHI Ltd./Subaru, Japan), Prof. S. Kimura (Kanawaga Institute of Technology, Japan), and Prof. F. Díaz (URV, Spain).
  - Infrared Waveguide Lasers. With Prof. F. Díaz and X. Mateos (URV, Spain), and Prof. G. Lifante (UAM, Spain).
  - BioMedical-Sensing Optofluidics. With Prof. R. A. Álvarez-Puebla (Medcomtech Group, Spain), R. Osellame (IFN-CNR, Italy), and Prof. Laura Lechuga (CSIC, ICN2, Spain).
  - Mid-Infrared Biosensors. With Prof. Laura Lechuga (CSIC, ICN2, Spain).

During his initial PhD period (Universidad Autónoma de Madrid) he investigated the fundamental issues of 3D laser nanofabrication on optical crystals, specializing in the nanostructuring of nonlinear LiNbO<sub>3</sub> and YAG laser crystals towards fabricating nonlinear and laser 3D photonic crystals in these crystalline materials.

In his first postdoctoral period (2010-12, UK) he was awarded a Spanish MEC postdoctoral mobility Fellowship project, he developed the 1st 3D on-chip chalcogenide beam-combiners for the mid-infrared range for astrophotonic applications. He also discovered in parallel the technique 3D laser nanostructuring of YAG crystals.

In his 2nd postdoctoral period (Universitat Rovira I Virgili) he continued his research project on nanostructuring of YAG crystals, started the co-direction of 3 doctoral theses on the topics of mid-infrared photonic sensors and biosensors (2 defended in 2017, one in mid-2018), and also filed a patent on mid-IR sensors for aircrafts. He then performed a 6-months work in industry (2016) for the development of liquid biopsy biophotonics.

In October 2016 he moved as a senior associate researcher to the IFN-CNR (Italy), to develop his project on 3D Crystalline Nanophotonics which opened a new line within the CNR in Italy.

In May 2017 he was awarded a Marie Curie EU Individual Fellowship to develop his own project at the IFN-CNR and in collaboration with company Resolution Spectra (France), with the goal of achieving a technology-first on harsh-environment crystalline nanophotonic sensors (EXTREMELIGHT project: <https://extremelightblog.com/contact/home/>), with the goal of demonstrating inside-crystal supercontinuum generation and spectral detectors all on-chip.

#### Resumen del Currículum Vitae:

Dr. A. Ródenas leads his own research line on 3D crystalline nanophotonics at the Institute for Photonics and Nanotechnology (IFN) of the National Research Council of Italy (CNR). He is Principal Investigator of the H2020 project EXTREMELIGHT ([http://cordis.europa.eu/project/rcn/209559\\_en.html](http://cordis.europa.eu/project/rcn/209559_en.html)). He works in collaboration with Dr. Roberto Osellame in the Ultrashort laser pulse micromachining Lab in the IFN-CNR.

He has worked as postdoctoral academic researcher in three different research institutions in UK, Italy and Spain, and has worked for 5 months in the medical industry (Medcom Onco Science SL) on the development of liquid biopsy lab-on-chip biophotonics for oncology.



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He has a 8-year independent postdoctoral experience, leading his own original research, and with no professional relation with his PhD supervisor. Since May 2017 he is a European Union Marie Skłodowska-Curie Individual Fellow.

Previously, he has worked as postdoctoral researcher at Heriot Watt University (UK) for 2 years and a half, with his own Spanish Government Postdoctoral Fellowship on a project on fabrication of 3D Photonic Crystals. In September 2012 he joined the Universitat Rovira i Virgili (URV, Spain) for a period of 4 years working as associate professor and researcher, and joining a EU Collaborative FP7 project ([www.jediace.net](http://www.jediace.net)) as lead scientist in charge of developing novel photonic sensors from first concept to industrial environment testing.

He has co-directed 2 PhD theses and currently co-supervises a third PhD thesis on novel photonic IR sensors at the URV (defense expected 2018). He imparted university Degree and Master courses at the Universitat Rovira I Virgili in three different subjects from 2013 to 2015, and also taught at Heriot Watt University (UK) in 2011.

He has acted as Thesis Defense Tribunal Member and as External Thesis Reviewer. He also has the spanish ANECA certifications for Profesor Contratado Doctor, Ayudante Doctor, and Profesor de Universidad Privada.

His work in the field of 3D photonics and 3D laser nanoprocessing has led to the publication of over 70 papers with an h-index of 20 (Google Scholar). He has 3 invited talks in international conferences, and over 17 oral presentations in international conferences and seminars. He has participated in five H2020 international research projects, and 17 projects in total.

He is the inventor of one patent for photonic sensors for aircraft automated safety systems ([www.jediace.net](http://www.jediace.net)). A. Ródenas maintains collaboration with 18 groups from 11 countries (Italy, France, Germany, Japan, UK, Canada, Australia, China, Brazil, Argentina and Spain), 12 of these collaborations being done independently after his PhD period proving his independence. He maintains industrial collaborations in the fields of air transport (Dassault, Fuji Heavy Industries) and photonics (Resolution Spectra, Optoscribe). He has performed 7 visiting research stays, and has the experience of working as part of 8 different groups in 6 different countries.

Ramon y Cajal competition: He has been selected as Reserve candidate 2 times (2015 and 2016 calls).



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

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#### Título:

Advanced multi-antenna communications for 5G and beyond

#### Resumen de la Memoria:

The main research topic of Sandra Roger is the development of novel algorithms for the physical layers of wireless communication systems, especially those involving multiple-input multiple-output (MIMO) channels. Efficient data detection in MIMO systems, MIMO relaying, non-coherent communication and multi-antenna vehicle-to-vehicle communications are her main fields of expertise.

In November 2006 the applicant joined the Institute of Telecommunications and Multimedia Applications (iTEAM) of the Universitat Politècnica de València (UPV) with a collaboration scholarship thanks to her outstanding student record (graduated with honors). She started working on novel algorithms for MIMO wireless communications systems. After defending her final year project in 2007, she continued her research as a Master student. She developed a novel data detection algorithm for MIMO systems, published in 2008.

In 2008 she obtained a competitive Formación de Profesorado Universitario (FPU) national fellowship to pursue her Ph.D. studies. Her thesis focused on the design and implementation of data detection algorithms for MIMO systems, where she proposed novel tree-search algorithms outperforming the state-of-the-art in terms of computational efficiency and parallel implementation suitability. She contributed to a total of 26 publications during the PhD stage and received a regional research award in 2014.

The knowledge acquired during her PhD at UPV and stays at the Vienna University of Technology allowed her to join the Mobile Communications Group of the iTEAM-UPV in 2012 as a postdoctoral researcher. She has a tight daily interaction with renowned international colleagues to define the 5th Generation (5G) communication systems where she has been able to open new research lines inside the 5G framework. Dr. Roger has also proven her scientific independence with 20 publications non-coauthored by her thesis supervisors.

In particular, since 2012 she has participated in the European METIS and METIS-II projects, the flagship projects devoted to the definition of the 5G communication systems. METIS and METIS-II are consortiums of 29 and 23 partners, respectively, coordinated by Ericsson Sweden and including manufacturers, network telecommunications operators, academic institutions, automotive industry and research centers. Within these projects, Dr. Roger researched on key technology components such as non-coherent reception for high mobility scenarios, multi-hop MIMO communication and harmonization of 5G waveforms. She was the scientific coordinator at UPV for physical layer techniques. Her performance in METIS caught the attention of BMW Munich, Alcatel-Lucent Stuttgart and Huawei Munich, leading to important 5G collaboration projects. In 2016, she received a Merit Decoration Award as best young researcher by the Royal Academy of Engineering, thanks to her contributions to 5G.

In 2014 she was the scientific coordinator of a project funded by Bell-Labs Stuttgart to investigate on mmWave multi-antenna techniques for 5G. Since 2016 she is the current scientific coordinator of a project funded by Huawei GRC Munich, focused on V2V multi-antenna communication. Dr. Roger is an IEEE Senior Member and has published 26 very relevant papers according to CNEAI (JCR and CORE), 13 conference papers, 3 book chapters and 3 patents.

#### Resumen del Currículum Vitae:

Sandra Roger received the Degree in Telecommunications Engineering in 2007 from the Universitat Politècnica de València (UPV) with honors (first 10% of students). In 2008 she obtained the Masters in Technologies, Systems and Communication Networks imparted by the Department of Communications (DCOM) of the UPV, with an outstanding average grade of 9.5/10. She then started her PhD thesis at the Institute of Telecommunications and Multimedia Applications (iTEAM) of the UPV, highly recognized in the area of ICT. She carried out her PhD on the design of data detection algorithms for Multiple-Input Multiple-Output (MIMO) wireless systems, under the supervision of Prof. Alberto González. Her remarkable academic track, together with other merits such as the "Best Final Degree Project" awarded by the Telefonica Chair, allowed her to obtain in 2008 one of the most competitive undergraduate grants, the national PhD scholarship FPU. The PhD period was very productive, including two research stays at the Institute of Telecommunications of the Vienna University of Technology, both of them funded by the FPU program. The collaboration with this institution under the supervision of Prof. Gerald Matz resulted in a joint journal paper. During her PhD, the applicant started teaching undergraduate courses at the DCOM of the UPV and also supervising final degree and master's theses. She also complemented her technical education with training courses for young teachers as the Curso de Aptitud Pedagógica and the Programa de Acogida Universitaria. In 2012, Dr. Roger obtained her PhD with honors (Cum Laude) and International Mention. Her PhD Thesis was also recognized by a regional research award in 2014.

Since 2012, as a postdoctoral researcher, she has been involved in the European projects METIS and METIS-II, devoted to the definition of the 5G communication systems. METIS and METIS-II are consortiums of 29 and 23 partners, respectively, coordinated by Ericsson and including manufacturers, network telecom operators, academic institutions, automotive industry and research centers. Within these



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projects, Dr. Roger researched on key technology components such as non-coherent reception for high mobility scenarios, multi-hop MIMO communication and harmonization of 5G waveforms. She was the scientific coordinator at UPV for physical layer techniques. Her performance in METIS caught the attention of BMW Munich, Alcatel-Lucent Stuttgart and Huawei Munich, leading to important collaboration projects, the latter still active. In 2016, she received a Merit Decoration Award as best young researcher by the Royal Academy of Engineering, thanks to her contributions to 5G.

In 2015 the candidate joined the Departament d'Informàtica of the Universitat de València as a part-time lecturer (Prof. Asociada). Since then, she has been teaching undergraduate and master courses related to ICT. In 2016 she was recognized as the best professor of the Master in Telecom. Engineering according to student ratings. Besides, Dr. Roger is very active in teaching innovation projects at the UV, with several publications in the field.

Sandra Roger is an IEEE Senior Member, with a publication record of 26 very relevant papers according to CNEAI (JCR and CORE), 13 conference papers, 3 book chapters and 3 patents. Her scientific independence is proven by 20 publications non-coauthored by PhD supervisors.



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#### Título:

Analysis and Design of Real-Time Wireless Networks

#### Resumen de la Memoria:

My research is on the theory and development of wireless communication systems. I use mathematical tools to model and analyze emerging wireless communication architectures, leading to innovative, efficient and often theoretically optimal communication techniques.

My PhD thesis focused on cross-layer approaches for multiuser, multi-antenna (MIMO) downlink networks with limited feedback. Tackling the major fundamental challenges for achieving the promising capacity gains of multiuser MIMO, I proposed several novel joint precoding and scheduling techniques which rely on low-rate partial feedback. The major strength of my approach was that the proposed new technologies could achieve a significant fraction of the optimum capacity at very low cost in terms of feedback.

As a Research Associate at the University of Texas at Austin, USA, I have contributed in developing a general capacity theory for large-scale ad hoc networks. In particular, I have made significant contributions to the analysis and design of dense networks with spatial randomness using advanced mathematical tools (stochastic geometry and point process theory). That highly innovative approach (especially back in 2008) has changed radically the way performance evaluation for wireless networks is done today. The developed tools and approaches are part of a powerful theory, which can uniquely analyze so accurately wireless networks while providing crisp insights and design guidelines.

During my academic years as assistant and associate professor, I have focused on heterogeneous cellular networks and ultra-dense networks (UDNs). The general line of research has been to understand and characterize the fundamental limits of networks densification, a promising cellular deployment technique that leverages spatial reuse to enhance coverage and throughput. My research thrust focused not only on quantifying the aggregate inter- and intra-tier interference, but also on proposing and optimizing a large amount of novel techniques (exploiting MIMO, full duplex, mmWave systems, spectrum pooling, cognitive radio) for efficient operation of UDNs. Moreover, I have made significant contributions to cutting-edge transmission technologies (especially massive MIMO and precoding), device-to-device communications and wireless edge caching. Furthermore, I have obtained important new results for the stability region of multiuser wireless networks .

The last three years (as Head of the Architecture Modeling and Performance Analysis Team and Principal Scientist of Huawei Paris Research Center), I have gained a deeper understanding of wireless systems and have acquired a global view of wireless networks ranging from theory to real-world implementation. Motivated by the plethora of socially useful applications that are currently envisioned in areas such as industrial control, smart cities, automated driving, and healthcare, I am currently investigating wireless networks that can support ultra-reliable, low latency communications (URLLC) with strict requirements in terms of latency (millisecond order), reliability (higher than 99.9999%) and availability. My research therein goes from new theoretical tools for characterizing end-to-end latency (mainly stochastic network calculus, timely throughput) to agile algorithms for network slicing resource management problems with guaranteed performance.

#### Resumen del Curriculum Vitae:

Marios Kountouris is a Principal Scientist and Head of the Architecture Modeling and Performance Evaluation Team in the Mathematical and Algorithmic Sciences Lab of Paris Research Center, Huawei Technologies (since 2015). Prior to that, he has been an Assistant and Associate Professor at the Department of Telecommunications at SUPELEC (now CentraleSupélec), France, until July 2016. He has been an Adjunct Professor at Yonsei University, South Korea for a year.

He has been working and researching on wireless communications and networking since his undergraduate engineering years in 2000. He received the Diploma in Electrical and Computer Engineering from the National Technical University of Athens, Greece in 2002 with specialization in Telecommunications and an award winning diploma thesis on the performance of 3G/UMTS system. He pursued his M.Sc. and Ph.D. in France in the prestigious Ecole Nationale Supérieure des Télécommunications (Télécom ParisTech), France. His doctoral research on multiuser multi-antenna downlink systems with limited feedback was carried out at EURECOM Institute, funded by Orange Labs. In 2008, he joined the Department of ECE at The University of Texas at Austin, USA as a research associate. He worked on information theory and design of mobile ad hoc networks using advanced mathematical tools under DARPA's ambitious ITMANET program.



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Dr. Kountouris is a highly cited researcher (h-index 34, 6630 citations, i10 index 76) and has published more than 130 papers in top quality journals and international conferences with proceedings. He is co-editor of a book on Small Cell Networks and co-author of several book chapters. He holds 6 international patents and has 5 more patents pending (filed). He has been co-author of 4 best paper award recipients including the 2014 Best Paper Award for EURASIP Journal on Advances in Signal Processing (JASP) and the 2012 IEEE SPS Signal Processing Magazine Award. He has also been principal investigator for several international and national funded projects.

He has served as technical program committee and track/symposium chair for several top notch international conferences and has been the General Chair of the IEEE Communication Theory Workshop 2016. He currently serves as Associate Editor for the IEEE Transactions on Wireless Communications, the IEEE Transactions on Signal Processing, and the IEEE Wireless Communication Letters.

His research is on the theory and development of wireless communication systems. He uses advanced mathematical tools to model and analyze emerging wireless communication architectures, leading to innovative and/or theoretically optimal new communication techniques. He has achieved several scientific breakthroughs in multi-antenna (MIMO) systems and interference management for multicell networks. He has realized significant contribution in the analysis and design of heterogeneous cellular and ad hoc networks using stochastic geometry. He has also made important contributions in ultra reliable, low latency communications and real-time networking. For his research, he received the 2016 IEEE ComSoc Communication Theory Technical Committee Early Achievement Award and the 2013 IEEE ComSoc Outstanding Young Researcher Award for the EMEA Region. He is a Senior Member of IEEE and a Professional Engineer of the Technical Chamber of Greece.



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#### Título:

Vehicular Telematics for Next-Generation Moving Smart Spaces

#### Resumen de la Memoria:

José Santa Lozano holds a PhD in Computer Engineering by the University of Murcia (UMU) (2005-2009), supported by the Spanish FPU doctoral grant. In 2010 he earned an Assistant Professor position at the University School of Tourism in Cartagena, and then an Adjunct Professor position at UMU. In 2013 he was awarded with an Assistant Professor position at University Centre of Defence at the Spanish Air Force Academy (CUD), among 50 candidates. In 2016 he obtained a Senior Research Fellow position at University of Murcia (10 awarded among 140 candidates).

His main research line is framed on Intelligent Transportation Systems (ITS), in the areas of telematics and communications. He has 24 research papers in journals listed in JCR and SCOPUS, and he has published 33 contributions on high-quality international conferences in the area (including Wireless Days, IEEE ITS Conference, IEEE Vehicular Technology Conference or IEEE Intelligent Vehicles Symposium). His research work has attracted 870 citations (source: Google Scholar) up to now, computing an h-index of 17.

Dr. Santa has researched on:

- GPS improvement for ITS with satellite augmentation systems, by using Internet positioning corrections (mainly published in IEEE VTC)
- Overlay vehicular networks, by using P2P to create abstract communication pipes for services (mainly published in Computer Communications)
- Context-aware service provisioning for vehicles, by using ontology modelling of both users and environment (mainly published in IEEE Pervasive Computing).
- Performance assessment of mixed ad-hoc and infrastructure vehicular networks using IETF protocols (mainly published in EURASIP Journal on Advances in Signal Processing).
- IPv6-based network mobility with security and continuity improvements (mainly published in IEEE Transactions on Dependable and Secure Computing, and Transportation Research Part C).
- Cooperative two-wheel vehicles (mainly published in Pervasive and Mobile Computing).

Moreover, he has worked on parallel research lines in the areas of logistics and home automation, also with excellent results. He has authored two patents and three software registrations.

He has performed one doctoral stay at INRIA-Paris in 2008, and a postdoctoral one at University of Cyprus in 2013. Other international tasks include the participation as editor in journals (7), member of workshop organization committee (5), track chair (2), session chair (2), and technical program committee member (79). Moreover, he is a regular reviewer in relevant journals (24) and conferences in the area (24).

Regarding projects, he has participated in 8 European projects, in one of them as principal investigator (FP7 ITSSv6) and COST Spanish representative (WISE-ACT); 13 national projects, in one of them as principal investigator (S-CICLO); and 11 research contracts with companies. Also as part of his leading duties, he has been co-founder of the spin-off company OdinS, the communication architecture leader in the FP7 FOTsis project, and he has managed other national and international projects in the ITS area at UMU.

Dr. Santa has supervised three PhD students in the period 2010-2016, and one of them has already defended his PhD obtaining the maximum score (cum laude). He has also supervised 11 M.S. theses.

#### Resumen del Currículum Vitae:

##### EDUCATION

2009 European PhD in Computer Eng.  
2008 M.S. in Advanced Information and Telematics Technologies.  
2004 M.S. in Computer Eng.

##### POSITIONS



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

|      |                                                                                                             |                         |
|------|-------------------------------------------------------------------------------------------------------------|-------------------------|
| 2017 | Senior Research Fellow                                                                                      | at University of Murcia |
| 2013 | Assistant Professor on tenure track at University Centre of Defence at the Spanish Air Force Academy (CUD). |                         |
| 2010 | Adjunct Professor at UMU.                                                                                   |                         |
|      | Postdoc stay in 2013 at University of Cyprus.                                                               |                         |
| 2010 | Assistant Professor. University School of Tourism, Polytechnic University of Cartagena.                     |                         |
| 2009 | Postdoctoral Researcher at UMU.                                                                             |                         |
| 2006 | PhD Fellow granted by the Spanish Government (FPU program).UMU.                                             |                         |
|      | PhD stay in 2008 at INRIA Paris.                                                                            |                         |
| 2004 | PhD Fellow granted by the Murcia Government (Seneca program). UMU.                                          |                         |
| 1999 | Undergraduate Fellowship by the Spanish Government.                                                         |                         |

#### RESEARCH PRODUCTION AND PROJECTS

|                                            |                                          |
|--------------------------------------------|------------------------------------------|
| H-index (Google Scholar / Scopus):         | 17/12                                    |
| Citations (Google Scholar / Scopus):       | 870/466                                  |
| Publications in indexed journals:          | 24                                       |
| Publications in peer-reviewed proceedings: | 33                                       |
| Books:                                     | 2                                        |
| Book chapters:                             | 7                                        |
| Teaching publications:                     | 12                                       |
| Patents:                                   | 2                                        |
| Intellectual Property Registrations:       | 3                                        |
| European projects:                         | 8 (PI in ITSSv6 and MC in COST WISE-ACT) |
| National projects:                         | 13 (Principal Investigator in S-CICLO)   |
| Contracts with companies:                  | 11                                       |

#### SUPERVISION OF PHD STUDENTS

|      |                     |
|------|---------------------|
| 2012 | Cristian A. Nieto.  |
| 2011 | Pedro J. Fernández. |
| 2010 | Andrés S. García.   |

Moreover, Dr. Santa has supervised 12 M.S. theses (11 finished and 3 on the way).

#### TEACHING ACTIVITIES

|      |                                                                                                              |
|------|--------------------------------------------------------------------------------------------------------------|
| 2017 | Physics in Computer Engineering, Wireless Networks (PhD program). UMU.                                       |
| 2013 | Electric Technology, Automation and Electronics, Networks and Communication Services, Computer Science. CUD. |
| 2010 | Mobility-Aware Services (PhD program). UMU.                                                                  |
| 2010 | Physics in Computer Engineering, Wireless Networks (PhD program). UMU.                                       |
| 2010 | Electronic Distribution in the Touristic Sector. UPCT.                                                       |
| 2006 | Embedded Systems, and Microprocessor-Based Designs. UMU.                                                     |

#### SCIENTIFIC COMMITTEES

Editor in:

|      |                                                     |
|------|-----------------------------------------------------|
| 2016 | Wireless Comm. and Mobile Computing                 |
| 2015 | J. of Sensor and Actuator Networks                  |
| 2015 | Mobile Information Systems.                         |
| 2015 | Advances in Wireless Comm. and Networks..           |
| 2012 | J. of Comm. and Information Sciences.               |
| 2012 | Int. J. on Advances in Networks and Services.       |
| 2011 | Recent Advances in Comm. and Networking Technology. |

Conference committee member. Most relevant (79 in total): Track Chair in AINA-2016; TPC in GLOBECOMM 2015, VTC2015-Fall, CCNC 2015 or WIVEC 2014; Session Chair in Wireless Days 2013 and 2016 IEEE Vehicular Networking Conf.; General Chair of Vehi6 workshop (collocated with IEEE IV 2012); Co-organizer of two workshops about ITS.

PhD committee member in the thesis defences of Dr. Carolina Piñana (2017), Dr. Juan A. Martínez (2015), Dr. Cristina Sotomayor (2014), Antonio J. Jara (2013) and Fernando Terroso (2013). All in the ITS and IoT research fields.

#### ADMINISTRATIVE DUTIES

|      |                             |
|------|-----------------------------|
| 2017 | MC member in COST WISE-ACT. |
|------|-----------------------------|



MINISTERIO  
DE CIENCIA, INNOVACIÓN  
Y UNIVERSIDADES



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

|             |                                                                                   |
|-------------|-----------------------------------------------------------------------------------|
| 2015 ☐ 2016 | PI in S-CICLO project.                                                            |
| 2012 ☐ 2016 | Co-founder of the spin-off company OdinS.                                         |
| 2011 ☐ 2015 | Commutations architecture leader in European project FOTsis.                      |
| 2011 ☐ 2014 | PI in European project ITSSv6.                                                    |
| 2007 ☐ 2014 | Coordination of R+D tasks in projects Walkie-Talkie, OASIS, SEISCIENTOS and TIMI. |
| 2010 ☐ 2014 | Co-manager of the ITS research line at UMU.                                       |