

Part A. Personal Information

DATE	03/12/2019
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Surname(s)	Roldán Aranda	
Forename	Juan Bautista	
Social Security, Passport, ID number	26481062N	
Sex	Male	
Age	49	
Researcher codes	WoS Researcher ID (*)	C-6844-2012
	SCOPUS Author ID(*)	
	Open Researcher and Contributor ID (ORCID)	0000-0003-1662-6457

(*) At least one of these is mandatory

A.1. Current position

Post/Professional Category	Full profesor	
UNESCO Code	2203, 2211, 3307	
Key Words	Electronics, semiconductor materials, electron devices and circuits	
Name of the University/Institution	Universidad de Granada	
	Department	Electrónica y tecnología de computadores
	Full Address	Facultad de Ciencias. Avda. Fuente Nueva, s/n, 18071 Granada, Spain
	Email Address	jroldan@ugr.es
	Phone Number	+34 958244071
Start date	22/12/2016	

A.2. Education (*title, institution, date*)

Year	University	Degree	Title
1993	Granada	First degree	Physics
		Masters (if appropriate)	
1997	Granada	PhD	Physics

A.3. Indicators of Quality in Scientific Production (*See the instructions*)

Number of successful research evaluations: **4**. Date of concession of the last evaluation: **05/06/2019**

Doctoral thesis supervised in the last 10 years: **3**

Papers in journals in the Q1 of their JCR categories: **56**

Web of Science data.

Total cites: **1494**. Average cites per year in the last 5 years: **140**. H-index: **22**. i-10 index (papers with more than 10 cites): **44**

Google Scholar data.

Total cites: **2255**. Average cites per year in the last 5 years: **175**. H-index: **27**. i-10 index (papers with more than 10 cites): **59**

Part B. Free Summary of CV (*Max. of 3.500 characters, including spaces*)

My past and present research activity was based upon quality and internationalization principles. I have been focused on the simulation and modeling of electron devices from a physical viewpoint, considering different types of materials, technologies and devices. In our research group we have accounted for the technological details of the structures studied in order to incorporate the models obtained in software tools for application purposes at the industrial level. I have also been involved with activities linked to the private sector in terms

of contracts to develop technology for different companies. In general, in most of the research activities I have been involved, I have had a leading role by coordinating projects, supervising Ph. degrees, etc.

I have collaborated in more than twenty research project awarded in public calls. I have been coordinator of 5 projects linked to the Spanish Ministry of Science and 3 projects for the regional government of Andalucía. I have taken part in 5 projects of different European frameworks over the years. In the industrial facet, I have been a member of the research team in 12 contracts with companies, one public project “Retos-Colaboración” connected to the Spanish Science ministry of Science and a project in the Technological Corporation of Andalucía. As a result of these collaborations I have two patents and we have developed different products and software tools.

I have published more than 115 papers in JCR journals (56 are in the Q1 sector of the JCR categories corresponding to “Electrical and electronics engineering” and “Applied physics”). I have presented contributions to different international conferences (more than 150 contribution as invited talks, oral presentations and posters). I have been in the organizing committee of four international conferences and 2 monographic workshops. I have served as referee for some of the most important journals of my research topic and revised research project for the ministerial national evaluation agency and the EU. I have also served as editor in a journal of Hindawi publishing company.

Part C. Relevant accomplishments

C.1. Publications

M. Lanza, H.-S. P. Wong, E. Pop, D. Ielmini, D. Strukov, B.C. Regan, L. Larcher, M.A. Villena, J.J. Yang, L. Goux, A. Belmonte, Y. Yang, F. M. Puglisi, J. Kang, B. Magyari-Köpe, E. Yalon, A. Kenyon, M. Buckwell, A. Mehonic, A. Shluger, H. Li, T.-H. Hou, B. Hudec, D. Akinwande, R. Ge, S. Ambrogio, J.B. Roldan, E. Miranda, J. Suñe, K.L. Pey, X. Wu, N. Raghavan, E. Wu, W.D. Lu, G. Navarro, W. Zhang, H. Wu, R. Li, A. Holleitner, U. Wurstbauer, M. Lemme, M. Liu, S. Long, Q. Liu, H. Lv, A. Padovani, P. Pavan, I. Valov, X. Jing, T. Han, K. Zhu, S. Chen, F. Hui, Y. Shi, “Recommended methods to study resistive switching devices”, *Advanced Electronics Materials*, 5, 1800143, 2019.

D. Barrera, M.J. Ibáñez, F. Jiménez-Molinos, A.M. Roldán, J.B. Roldán, “A spline quasi-interpolation based method to obtain the reset voltage in Resistive RAMs in the Charge-Flux domain”, *Journal of Computational and Applied Mathematics*, 354, pp. 326-333, 2019.

C. Acal, J.E. Ruiz-Castro, A. M. Aguilera, F. Jiménez-Molinos, J.B. Roldán, “Phase-type distributions for studying variability in resistive memories”, *Journal of Computational and Applied Mathematics*, 345, pp. 23–32, 2019.

N. Rodriguez, D. Maldonado, F.J. Romero, F.J. Alonso, A.M. Aguilera, A. Godoy, F. Jimenez-Molinos, F.G. Ruiz, J.B. Roldan, " Resistive switching and charge transport in laser-fabricated graphene oxide memristors: a Time Series and Quantum Point Contact modelling approach", *Materials*, 12, 3734, 2019.

G. González-Cordero, M.B. González, A. Morell, F. Jiménez-Molinos, F. Campabadal, J.B. Roldán, "Neural network based analysis of Random Telegraph Noise in Resistive Random Access Memories", *Semiconductor Science and Technology*, in press, 2019.

J.B. Roldán, E. Miranda, G. González-Cordero, P. García-Fernández, R. Romero-Zaliz, P. González-Rodelas, A. M. Aguilera, M.B. González, F. Jiménez-Molinos, “Multivariate analysis and extraction of parameters in resistive RAMs using the Quantum Point Contact model”, *Journal of Applied Physics*, 123, 014501, 2018.

D. Barrera, M.J. Ibáñez, F. Jiménez-Molinos, A.M. Roldán, J.B. Roldán, “A spline quasi-interpolation based method to obtain the reset voltage in Resistive RAMs in the Charge-Flux domain”, *Journal of Computational and Applied Mathematics*, 354, 326-333, 2019.

S. Aldana , J.B. Roldán , P. García-Fernández , J. Suñe , R. Romero-Zaliz , F. Jiménez-Molinos , S. Long , F. Gómez-Campos , M. Liu, "An in-depth description of bipolar resistive switching in Cu/HfOx/Pt devices, a 3D Kinetic Monte Carlo simulation approach", Journal of Applied Physics, 123, 154501, 2018.

A. Rodríguez-Fernández, S. Aldana, F. Campabadal, J. Suñe, E. Miranda, F. Jiménez-Molinos, J. B. Roldán, M. B. Gonzalez, "Resistive Switching with Self-Rectifying Tunability and Influence of the Oxide Layer Thickness in Ni/HfO₂/n+Si RRAM Devices", IEEE Transactions on Electron Devices, 64, pp. 3159-3166, 2017.

S. Aldana, P. García-Fernández, A. Rodríguez-Fernández, R. Romero-Zaliz, M.B. González, F. Jiménez-Molinos, F. Campabadal, F. Gómez-Campos, J.B. Roldán, "A 3D Kinetic Monte Carlo simulation study of Resistive Switching processes in Ni/HfO₂/Si-n+-based RRAMs", Journal of Physics D: Applied Physics, 50, p. 335103, 2017.

G. González-Cordero, F. Jiménez-Molinos, J.B. Roldán, M.B. González, F. Campabadal, "An in-depth study of the physics behind resistive switching in TiN/Ti/HfO₂/W structures", Journal of Vacuum Science and Technology, 35, 01A110, 2017.

C.2. Research Projects and Grants

As coordinator:

Title: "Fabrication, characterization, simulation, modelling and applications of resistive switching devices". (TEC2017-84321-C4-3-R)

Institution: Ministerio de Ciencias, Innovación y Universidades

Time: 01/01/2018, 31/12/2020, Budget: 114950 €

Title: "Fabrication, characterization and simulation of resistive switching devices based on high-k dielectrics" (TEC2014-52152-C3-2-R)

Institution: Ministerio de Economía y Competitividad

Time: 01/01/2015, 31/12/2018, Budget: 58100 €

Title: "Laboratory for measurement and encapsulation of sensors and electron devices LEDES" (ie2017-5414)

Institution: Junta de Andalucía

Time: 01/01/2020, 12/12/2021, Budget: 96301 €

Title: "Compact modeling for the thermoelectric characterization of nanometric electron devices oriented to low power and radio frequency circuit design" (TIC-3580)

Institution: Junta de Andalucía

Time: 13/01/2009, 13/01/2013, Budget: 50750 €

Title: "Modeling development for SPICE and circuit simulation of devices based on emerging technologies (strained silicon, SIGE, SOI, GEOI)" (TEC2005-01948/MIC)

Institution: Ministerio de educación y ciencia

Time: 31/12/2005, 31/12/2008, Budget: 52241 €

Title: "Desarrollo de modelos para SPICE y simulación de circuitos fabricados con dispositivos SOI submicra" (TEC2004-03926)

Institution: Ministerio de educación y ciencia

Time: 13/12/2004, 13/12/2005, Budget: 17020 €

In the research team:

Title: "European platform for low-power applications on Silicon-on-Insulator Technology. EUROSIOI+". (FP7-ICT-216373)

Institution: 7º EU Framework program for research and development

Time: 01/01/2008, 30/06/2011, Budget: 363300 €

Coordinator: Francisco J. Gámiz Pérez

Title: "Silicon-based nanostructures and nanodevices for long term nanoelectronics applications, NANOSIL". (FP7-NOE-216171)
Institution: 7^o EU Framework program for research and development
Time: 01/01/2008, 30/06/2011, Budget: 54435 €
Coordinator: Francisco J. Gámiz Pérez

C.3. Contracts

Title: Development of solar cell panels for cubesats and small satellites: design, fabrication, characterization and validation (DEEPSAT RTC-2016-4644-3)
Institution: Ministerio de Economía y Competitividad (Proyectos Retos-Colaboración)
Budget: 92000 €
Time: 01/01/2017– 31/12/2018
Coordinator: Andrés Roldán Aranda
Company: DHV TECNOLOGÍA ESPACIAL AVANZADA MALAGUEÑA, S.L.

Title: Development of subsystem of power for CubeSats and nano-satellites (POWERNANOSAT) (CTA - 16/903)
Institution: Corporación Tecnológica Andalucía (CTA),
Budget: 30000 €
Time: 01/01/2017– 31/12/2018
Coordinator: Andrés Roldán Aranda

Title: Firmware development for the 18F4550 microcontroller for a hardware platform MAF-U (C-3253-00)
Institution: Universidad de Granada-Company General Foundation
Budget: 17259.76 €
Time: 15/03/2009 - 30/06/2010
Coordinator: Andrés Roldán Aranda
Company: Desarrollos y proyectos Mafer Electronics, S.L.

C.4. Patents and other IPR

Title: Position fixing device by using adjustable rings for drilling and milling tools
Authors: Andrés Roldán Aranda, Juan B. Roldán Aranda, Pedro Ortuño Cañizares
Applicant number: 201330502, concession date: April 30th, 2014
Priority country: España, Owner: Universidad de Granada

Title: Methodology for useful data extraction to prevent burns in dermatologic treatments by means of pulsed light
Authors: A. Roldán Aranda, J. B. Roldán Aranda, F. Arrebola Vargas, P. Ortuño Cañizares
Applicant number: 201430070, concession date: December 11th, 2015
Priority country: España, Owner: Universidad de Granada

C.5, C.6, C.7... Other

Editor with Scientific World Journal since 2013. Reviewer for the following journals: IEEE Transactions on Electron Devices, IEEE Electron Devices Letters, Semiconductor Science and Technology, Solid State Electronics, International Journal of Electronics, Journal of Applied Physics, Applied Physics Letters, Physica Scripta, Journal of computational electronics, Journal of Physics D