

Part A. PERSONAL INFORMATION

CV date

02/06/2023

First and Family name	Beatriz García Vasallo	
Researcher codes	ORCID ID	0000-0002-1275-3304
	WoS Researcher ID	I-6052-2016

A.1. Current position

Name of University/Institution	University of Salamanca		
Department	Applied Physics		
Address and Country	Salamanca, Spain		
Current position	Profesor Titular de Universidad	From	21/05/2018
Key words	Semiconductor devices, Monte Carlo simulation, nanoelectronics, electronic noise		

A.2. Education

PhD, Licensed, Graduate	University	Year
Degree in Physics	University of Salamanca	2000
PhD in Physics	University of Salamanca	2005

A.3. General indicators of quality of scientific production

Number of Sexenios: 3

Date of last sexenio: 17/07/2020

Papers in JCR journals: more than 30

In first quartile (Q1): 14

Total citations (WoS): 598 (502 without self citations)

h-index (WoS): 13

Part B. CV SUMMARY

Beatriz García Vasallo (scientific signature: B. G. Vasallo or B. García-Vasallo), Associate Professor at the Applied Physics Department of the University of Salamanca since 2018, works with Research Group on High-Frequency Nanoelectronic Devices (nanoelec.usal.es). She obtained the B.Sc. in 2000, and the Ph. D. with Honours in 2005, in the University of Salamanca. As postdoctoral researcher, she was with the Institut d'Électronique, de Microélectronique et de Nanotechnologies (IEMN), France, for two years. She is author or co-author of more than 30 scientific JCR articles (ISI h index: 13), more than 20 papers in peer-reviewed conference proceedings and 1 book chapter. She has participated in several research projects funded by different institutions: European Commission, Spanish Ministry of Science and Education, and Regional Government of Castile & Leon.

Her work has been mainly devoted to the study of the static, dynamic and noise performance of III-V semiconductor devices by means of Monte Carlo models, and, lastly, her scientific interest includes the application of typically semiconductor models to the study of ion transport through biological membranes for bio-inspired semiconductor devices.

Part C. RELEVANT MERITS

C.1. Publications

Relevant Publications:

S. García-Sánchez, M. Abou Daher, M. Leseq, L. Huo, I. Íñiguez-de-la-Torre, B. G. Vasallo, S. Pérez, T. González, and J. Mateos, "On the practical limitations for the generation of Gunn oscillations in highly doped GaN diodes", IEEE Transactions on Electron Devices (in press, 2023)

T. González, B. Orfao, S. Pérez, J. Mateos, and B. G. Vasallo, "Role of impact ionization and self-consistent tunnel injection in Schottky-barrier diodes operating under strong reverse-bias conditions", Applied Physics Express 16, 024003(1-5) (2023)

G. Paz-Martínez, I. Íñiguez-de-la-Torre, H. Sánchez-Martín, B. García-Vasallo, N. Wichmann, T. González, and J. Mateos, "Comparison of GaN and InGaAs High Electron Mobility Transistors as Zero-Bias Microwave Detectors", *Journal of Applied Physics* 132, 134501(1-11) (2022)

B. Orfao, B. G. Vasallo, S. Pérez, J. Mateos, D. Moro-Melgar, M. Zaknoune, and T. González, "Dielectric Passivation and Edge Effects in Planar GaN Schottky Barrier Diodes," *IEEE Transactions on Electron Devices* 9, 4296 (2021)

B. Orfao, B. G. Vasallo, D. Moro-Melgar, S. Pérez, J. Mateos, and T. González, "Analysis of surface charge effects and edge fringing capacitance in planar GaAs and GaN Schottky barrier diodes," *IEEE Transactions on Electron Devices* 67, pp. 3530-35635 (2020)

B. G. Vasallo, J. mateos, and T. González, "Interplay between channel and shot noise at the onset of spiking activity in neural membranes", *Journal of Computational Electronics* 19, 792-799 (2020)

B. G. Vasallo, T. González, V. Talbot, Y. Lechaux, N. Wichmann, S. Bollaert, and J. mateos, "Impact ionization and band-to-band tunneling in $\text{In}_x\text{Ga}_{1-x}\text{As}$ PIN ungated devices: A Monte Carlo analysis", *Journal of Applied Physics* 123, 034501 (2018)

B. G. Vasallo, J. mateos, and T. González, "Ion shot noise in Hodgkin-Huxley neurons", *Journal of Computational Electronics* 17, 1790-1796 (2018)

B. G. Vasallo, F. Galán-Prado, J. Mateos, T. González, S. Hedayat, V. Hoel, and A. Cappy "Stochastic model for action potential simulation including ion shot noise", *Journal of Computational Electronics* 16, 419-430 (2017)

D. Moro-Melgar, A. Maestrini, J. Treuttel, L. Gatilova, T. González, B. G. Vasallo, and J. Mateos, "Monte Carlo Study of 2-D Capacitance Fringing Effects in GaAs Planar Schottky Diodes," *IEEE Transactions on Electron Devices* 63, pp. 3900-3907 (2016)

J. Mateos, H. Rodilla, B. G. Vasallo and T. González (Invited paper), "Monte Carlo modelling of noise in advanced III-V HEMTs," *Journal of Computational Electronics* 14, pp. 72-86 (2015)

D. Moro-Melgar, J. Mateos, T. González, and B. G. Vasallo, "Effect of tunnel injection through the Schottky gate on the static and noise behavior of GaInAs/AlInAs HEMTs", *Journal of Applied Physics* 116, 234502 [1-7] (2014)

B. G. Vasallo, J. F. Millithaler, I. Íñiguez-de-la-Torre, T. González, G. Ducournau, C. Gaquiere and J. Mateos, "Monte Carlo study of the operation of GaN planar nanodiodes as sub-THz emitters in resonant circuits", *Semiconductor Science and Technology* 29, 115032 [1-9] (2014)

B. G. Vasallo, H. Rodilla, T. González, G. Moschetti, J. Grahn, and J. Mateos, "Kink effect and noise performance in isolated-gate InAs/AlSb High Electron Mobility Transistors", *Semiconductor Science and Technology* 27, 065018 [1-5] (2012)

B. G. Vasallo, H. Rodilla, T. González, G. Moschetti, J. Grahn, and J. Mateos, "Monte Carlo study of kink effect in isolated-gate InAs/AlSb high electron mobility transistors", *Journal of Applied Physics* 108, 094505 [1-7] (2010)

N. Wichmann, B. G. Vasallo, S. Bollaert, Y. Roelens, X. Wallart, A.Cappy, T. Gonzalez, D. Pardo and J. Mateos, "Fabrication and fundamentals of operation of an InAlAs/InGaAs velocity modulation transistor", *Applied Physics Letters* 94, 103504 [1-3] (2009)

B. G. Vasallo, N. Wichmann, S. Bollaert, Y. Roelens, A. Cappy, T. Gonzalez, D. Pardo and J. Mateos, "Comparison between the noise performance of double- and single-gate InP-based HEMTs", IEEE Transactions on Electron Devices 55, 1535-1540 (2008)

B. G. Vasallo, N. Wichmann, S. Bollaert, Y. Roelens, A. Cappy, T. Gonzalez, D. Pardo and J. Mateos, "Comparison between the dynamic performance of double- and single-gate AlInAs/InGaAs", IEEE Transactions on Electron Devices 54, 2815-2822 (2007)

C.2. Research projects

Title: Ultrafast and efficient nanodevices for THz communications and spectroscopy based on narrow and wide bandgap semiconductors (PID2020-115842RB-I00)

Funding institution: MICCIN – Agencia Estatal de Investigación

Years: 2021-2024 Budget: 118.580 €

Principal investigator: Javier Mateos López y Beartz García Vasallo

Title: Simulación y caracterización de efectos electro térmicos en dispositivos de subterahercios para comunicaciones de alta velocidad (SA254P18)

Funding institution: Junta de Castilla y León (Consejería de Educación)

Years: 2019-2021 Budget: 120.000 €

Principal investigator: Tomás González Sánchez

Title: Technologies of GaN diodes for generation and detection of subterahertz waves (TEC2017-83910-R)

Funding institution: MINECO – Agencia Estatal de Investigación

Years: 2018-2020 Budget: 160.930 €

Principal investigator: Javier Mateos López and M^a Susana Pérez Santos

Title: Emisores y detectores de terahercios basados en nanodiodos semiconductores para comunicaciones e imagen médica y de seguridad (SA022U16)

Funding institution: Junta de Castilla y León (Consejería de Educación)

Years: 2016-2018 Budget: 119.999 €

Principal investigator: Tomás González Sánchez

Title: Narrow and wide bandgap nanoelectronics for improved efficiency in RF and THz applications (TEC2013-41640-R)

Funding institution: MINECO - Dirección General de Investigación

Years: 2014-2017 Budget: 126.324 €

Principal investigator: Javier Mateos López and M^a Susana Pérez Santos (USAL)

Title: Estudio de efectos térmicos en dispositivos de RF. Modelado y caracterización experimental (SA052U13)

Funding institution: Junta de Castilla y León (Consejería de Educación)

Years: 2013-2016 Budget: 34.980 €

Principal investigator : Tomás González Sánchez (USAL)

Title: Nanodispositivos semiconductores para la emisión y detección de radiación de THz a temperatura ambiente (SA183A12-1)

Funding institution: Junta de Castilla y León (Consejería de Educación)

Years: 2012-2013 Budget: 29.900 €

Principal investigator : Javier Mateos López (USAL)

Title: Advanced diodes and transistors for generation, detection and processing of millimeter and submillimeter signals (TEC2010-15413)

Funding institution: Ministerio de Ciencia e Innovación - Dirección General de Investigación

Years: 2011-2013 Budget: 160.204 €
Principal investigator : Tomás González Sánchez (USAL)

Title: Semiconductor nanodevices for room temperature THz emission and detection (FP7-243845)

Funding institution: European Commission

Partners: Universidad de Salamanca - IEMN, Université des Sciences et Technologies de Lille (France) - The University of Manchester (UK) - Chalmers University of Technology (Sweden)

Years: 2010-2013 Budget: 1.567.109 € (376.372 € for USAL)

Coordinator: Javier Mateos López

Title: Dispositivos semiconductores para aplicaciones en el rango de THz: nuevos materiales y arquitecturas (GR270)

Funding entity: Junta de Castilla y León (Consejería de Educación)

Grupos de Excelencia

Period: 2009-2011 Funding received: 136.380 €

Principal investigator: Tomás González Sánchez (USAL)

Title: Modelización de HEMTs avanzados basados en semiconductores III-V de gap estrecho (InAs) y gap ancho (GaN) (SA019A08)

Funding entity: Junta de Castilla y León (Consejería de Educación)

Period: 2008-2010 Funding received: 13.700 €

Principal investigator: Javier Mateos López (USAL)

Title: Modelización de HEMTs Avanzados para Aplicaciones de Alta Frecuencia: Nuevos Materiales, Estructuras y Conceptos (TEC2007-61259/MIC)

Funding entity: Ministerio de Educación y Ciencia - Dirección General de Investigación

Period: 2008-2010 Funding received: 157.421 €

Principal investigator: Javier Mateos López (USAL)

C.3. Contracts, technological or transfer merits

Title: Development of a Monte Carlo Simulator of the transport of ions through a biological membrane (Art. 83)

Funding institution: Institut de recherche sur les composants logiciels et matériels pour l'information et la communication avancée (IRCICA), Lille, France

Years: 2014-2015 Budget: 4.091 € PI: Beatriz García Vasallo

C.8 Miembro de comités internacionales

Member of the Organizing Committee de la *19th International Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures* (EDISON'19), 2015, Salamanca.

C.9 Review-evaluation tasks

Reviewer for the journals: Applied Physics Letters, IEEE Transactions on Electron Devices, IEEE Transactions on Device and Materials Reliability, Semiconductor Science and Technology, Journal of Computational Electronics, Microelectronics Journal, Solid State Electronics, Engineering Science and Technology, ETRI Journal, and Journal of Alloys and Compounds.