FÁBIO MOREIRA DE PASSOS

Born in Lisbon, Portugal in October 31st 1989

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📍 1900-248, Lisboa, Portugal in http://linkedin.com/in/fmdepassos/

◈ IEEE Member

🎓 Google Scholar: https://bit.ly/2zE3Aeh 🎓 73 citations with an h-index of 5

R^G Research Gate: https://bit.ly/2LhYGsc

🆔 ORCiD: https://orcid.org/0000-0002-5638-7377

SHORT BIO

Fábio Passos received the Ph.D. degree from Universidad de Sevilla, Seville, Spain, in 2018, while conducting his work at Instituto de Microelectrónica de Sevilla (IMSE-CNM), Seville, Spain.

He has performed research stays is several academic institutions such as IMEC (2016), Instituto de Telecomunicações (2017) and University of Barcelona (2017). In 2018 he was an intern at Analog Devices (as part of a technology transfer collaboration between IMSE and ADI) developing automated design methodologies for mm-Wave systems (77GHz transceiver) in an industrial and challenging environment.

He is now a post-doctoral researcher in Instituto de Telecomunicações, Lisbon, Portugal. Dr. Passos has authored or co-authored over 30 publications, including books, book chapters, international journals and conferences papers. Dr. Passos was the SMACD 2016 EDA Competition Winner and received the Best Paper Award in SMACD 2018. He was the Competition Chair of SMACD 2019.

His current research interests include the design and modeling of RF passive devices using analytical and machine learning techniques and automated design methodologies for RF and mm-Wave circuits.

EDUCATION

PhD

Universidad de Sevilla, Seville, Spain

📅 1 May 2015 – 13 April 2018

- PhD Thesis: A Multilevel Approach for the Systematic Design of Radio-frequency Integrated Circuits
- PhD Grade: *Summa Cum Laude*   Thesis directors: Prof. Francisco V. Fernández & Dr. Elisenda Roca

MSc on Electrical and Computer Engineering

Universidade Nova de Lisboa, Lisbon, Portugal

📅 1 September 2007 – 1 September 2013

- MSc Thesis: Modeling of integrated inductors for RF circuit design
- Dissertation Grade: 20/20
- MSc Grade: 18/20   Thesis director: Prof. Maria Helena Fino

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher

Instituto de Telecomunicações

📅 1 May 2019 – Ongoing   📍 Lisbon, Portugal

- Passive component modeling and optimization-based methodologies for RF and mm-Wave circuits. Referee: Prof. Nuno Horta (nuno.horta@lx.it.pt).

RF/mm-Wave Designer (Intern)

Analog Devices

📅 15 October 2018 – 15 December 2018   📍 Valencia, Spain

- Technology transfer stay (Collaboration between IMSE-CNM and ADI). Developing optimization-based methodologies for mm-Wave circuits (up to 120 GHz). Referee: Javier Calpe (Javier.Calpe@analog.com).

Postdoctoral Researcher

Instituto de Microelectronica de Sevilla – Centro Nacional de Microelectrónica

📅 14 April 2018 – 14 April 2019 📍 Seville, Spain

- Studying reliability issues in nanometer technologies – Project MARAGDA (https://bit.ly/2ml4vXI). Referee: Prof. Francisco Fernandez (pacov@imse-cnm.csic.es).

PhD Researcher

Instituto de Microelectronica de Sevilla – Centro Nacional de Microelectrónica

📅 1 May 2015 – 13 April 2018 📍 Seville, Spain

- The PhD research topics were the modeling of passive RF devices and systematic design of circuits using evolutionary single- and multi-objective optimization algorithms (VCOs, LNAs, Mixers, etc..). Referee: Prof. Francisco Fernandez (pacov@imse-cnm.csic.es).

Guest Researcher

Radio-Frequency Group, Electronics Department – University of Barcelona

📅 1 June 2017 – 1 August 2017 📍 Barcelona, Spain

- Research internship at the radio-frequency group at University of Barcelona. Main research topics were related to the design of RF blocks such as LNAs, VCOs, Mixers, filters and RF layout techniques. Referee: Prof. J. M. López-Villegas (j.m.lopez_villegas@ub.edu).

Guest Researcher

Integrated Circuits Group, IT – Instituto Superior Técnico (IST)

📅 1 December 2016 – 1 February 2017 📍 Lisbon, Portugal

- Research internship at the integrated circuits group at the Instituto de Telecomunicações, Instituto Superior Técnico. Main research topics were related to layout-aware automatic design of RF circuits. Referee: Prof. Nuno Horta (nuno.horta@lx.it.pt).

Guest Researcher

SumoLab, Ghent University, iMinds –- IMEC

📅 6 January 2016 – 6 March 2017 📍 Ghent, Belgium

- Research internship at the SUMO (SUrrogate MOdeling) Lab, which is part of the IBCN research group of the Department of Information Technology (INTEC) at Ghent University - iMINDS. Main research topics were related with the surrogate modeling of passive RF devices. Referee: Prof. Tom Dhaene (tdhaene@intec.ugent.be).

Technical Specialist

University of Seville

📅 1 September 2014 – 1 May 2015 📍 Seville, Spain

- Support in simulation and characterization of RF devices (transistor characterization in a 65nm technology, measurement of passive components and RF circuits (e.g., LNAs) in hybrid technologies such as LTCC). Projects 2011/TIC-178 and P12-TIC-1481 from Junta de Andalucia, Spain. Referee: Prof. Adoración Rueda Rueda (rueda@imse-cnm.csic.es).

Researcher

Centre of Technology and Systems (CTS – UNINOVA)

📅 1 July 2013 – 1 July 2014 📍 Lisbon, Portugal

- Integrated in the Micro- and Nano-Electronic Group, mainly working with subjects related to the modeling of RF passive devices. Referee: Prof. João Goes (jg@uninova.pt).

Research Internship

Instituto de Microelectronica de Sevilla – Centro Nacional de Microelectrónica

📅 1 February 2013 – 1 June 2013   📍 Seville, Spain

- Developed the final project of the master thesis along obtaining a strong technical training in the field of electronics. With specific training in the design and modeling of integrated inductors and electromagnetic simulations. Referee: Prof. Francisco Fernandez (pacov@imse-cnm.csic.es).

TEACHING EXPERIENCE

Teaching Assistant

Faculty of Physics – University of Seville

📅 1 October 2017 – 1 April 2019   📍 Seville, Spain

- Lecturing classes of Electrical Circuits and Instrumentation. Topics included basic analog circuits (OpAmp, wien bridge, etc). Referee: Prof. Jorge Berni (berni@imse-cnm.csic.es). Lecturing classes of Electronics. Topics included digital circuits, basic combinational circuits, basic analog electronic circuits (OpAmps, Rectifiers, etc.). Referee: Prof. Adoración Rueda Rueda (rueda@imse-cnm.csic.es).

Teaching Assistant

Faculty of Science and Technology – New University of Lisbon

📅 1 September 2012 – 1 June 2013   📍 Lisbon, Portugal

- Lecturing classes of Digital Systems. Topics included Boolean algebra, logical functions, basic combinational circuits, memory elements and sequential circuits. Referee: Prof. Luis Gomes (lugo@fct.unl.pt). Lecturing classes of Electrical Circuits Theory. Topics included Kirchhoff laws, Thevnín and Norton theorems, sinusoidal regime and three-phase electric power systems. Referee: Prof. Helena Fino (hfino@fct.unl.pt).

PUBLICATIONS

📘 Books and Book Chapters

- Passos, F., E. Roca, R. Castro-López, and F. V. Fernandez (2019). *On the usage of machine learning techniques for the accurate modeling of integrated inductors for RF applications.* Ed. by M. B. Yelten and G. Dundar. IET (in production).

- Passos, F., E. Roca, R. Castro-López, and F. V. Fernández (2019). *Automatic Hierarchical Synthesis of Radio-Frequency Integrated Circuits and Systems.* Springer (in production).

- Pereira, P., F. Passos, and M.H.Fino (2015). *Optimization-Based Design of RF-VCOs with Tapered Inductors.* Ed. by Maria Helena Fino Mourad Fakhfakh Esteban Tlelo-Cuautle. IGI Global.

- Passos, F., M. H. Fino, and E. Roca (2014b). *Single-Objective Optimization Methodology for the Design of RF Integrated Inductors.* Ed. by Luis M. Camarinha-Matos, Nuno S. Barrento, and Ricardo Mendonça. Berlin, Heidelberg: Springer Berlin Heidelberg.

- Passos, F., M.H. Fino, and E. Roca (2013). *Modeling of Integrated Inductors for RF Circuit Design.* Lambert Academic Publishing. ISBN: 9978-3-659-57428-3.

📄 Journal Articles

- Passos, F., M. Chanca, et al. (2019). "Synthesis of mm-Wave Wideband Receivers in 28nm CMOS Technology for Automotive Radar Applications". In: *IEEE TCAD (currently under revision).*

- Passos, F., E. Roca, R. Martins, et al. (2019). "Ready-to-Fabricate RF Circuit Synthesis using a Layout- and Variability-Aware Optimization Methodology". In: *IEEE TMTT (currently under revision).*

- Passos, F., E. Roca, J. Sieiro, et al. (2019). "A Multilevel Bottom-up Optimization Methodology for the Automated Synthesis of RF Systems". In: *IEEE TCAD.*
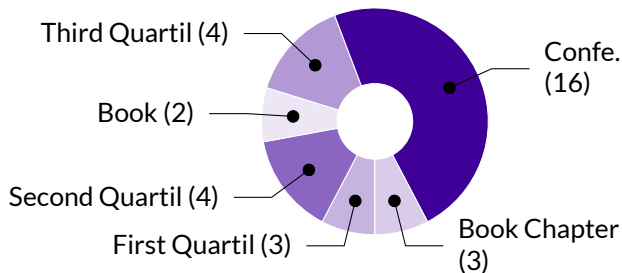
- Martins, R., N. Lourenço, F. Passos, R. Póvoa, A. Canelas, E. Roca, et al. (2018). "Two-Step RF IC Block Synthesis with Pre-Optimized Inductors and Full Layout Generation In-the-loop". In: *IEEE TCAD*.
- Passos, F., R. González-Echevarría, E. Roca, R. Castro-López, and F. V. Fernandez (2018). "A two-step surrogate modeling strategy for single-objective and multi-objective optimization of radiofrequency circuits". In: *Soft Computing*.
- Passos, F., E. Roca, R. Castro-López, and F. V. Fernández (2018). "A Comparison of Automated RF Circuit Design Methodologies: Online Versus Offline Passive Component Design". In: *IEEE TVLSI*.
- Passos, F., R. Martins, et al. (2017). "Enhanced systematic design of a voltage controlled oscillator using a two-step optimization methodology". In: *Integration, the VLSI*.
- Passos, F., E. Roca, R. Castro-López, and F.V. Fernández (2017). "An inductor modeling and optimization toolbox for RF circuit design". In: *Integration, the VLSI Journal*.
- Passos, F., E. Roca, R. Castro-Lopez, et al. (2017). "Radio-frequency inductor synthesis using evolutionary computation and Gaussian-process surrogate modeling". In: *Applied Soft Computing*.
- Passos, F., Y. Ye, et al. (2017). "Parametric macromodeling of integrated inductors for RF circuit design". In: *Microwave and Optical Technology Letters*.
- Passos, F., M. H. Fino, and E. Roca (2014a). "Fully Analytical Characterization of the Series Inductance of Tapered Integrated Inductors". In: *International Journal of Electronics and Telecommunications*.

👥 Conference Proceedings

- Lourenco, N. et al. (2019). "Using Polynomial Regression and Artificial Neural Networks for Reusable Analog IC Sizing". In: *SMACD*.
- Passos, F., E. Roca, R. Castro-López, N. Horta, et al. (2019). "Synthesis of mm-Wave circuits using EM simulated passive structure libraries". In: *SMACD*.
- Passos, F., N. Lourenço, et al. (2018). "Handling the Effects of Variability and Layout Parasitics in the Automatic Synthesis of LNAs". In: *SMACD*.
- Saraza-Canflanca, P. et al. (2018). "Design considerations of an SRAM array for the statistical validation of time-dependent variability models". In: *SMACD*.
- Lourenço, N. et al. (2017). "New mapping strategies for pre-optimized inductor sets in bottom-up RF IC sizing optimization". In: *SMACD*.
- Martins, R., N. Lourenço, F. Passos, R. Póvoa, A. Canelas, N. Horta, et al. (2017). "Layout-aware challenges and a solution for the automatic synthesis of radio-frequency IC blocks". In: *SMACD*.
- Passos, F., E. Roca, R. Castro-López, and F. V. Fernández (2017). "An algorithm for a class of real-life multi-objective optimization problems with a sweeping objective". In: *IEEE CEC*.
- Passos, F., E. Roca, R. Castro-López, F. V. Fernández, J. Sieiro, et al. (2017). "A strategy to efficiently include electromagnetic simulations in optimization-based RF circuit design methodologies". In: *IEEE NEMO*.
- Passos, F., R. González-Echevarrıa, et al. (2016). "Accurate Synthesis of Integrated RF Passive Components Using Surrogate Models". In: *DATE*.
- Passos, F., E. Roca, R. Castro-López, and F. V. Fernández (2016). "SIDe-O: A toolbox for surrogate inductor design and optimization". In: *SMCAD*.
- Passos, F., E. Roca, R. Castro-López, F. V. Fernández, Y. Ye, et al. (2016). "Frequency-dependent parameterized macromodeling of integrated inductors". In: *SMACD*.
- Passos, F., R. González-Echevarría, E. Roca, R. Castro-López, and F. V. Fernández (2015). "Surrogate modeling and optimization of inductor performances using Kriging functions". In: *SMACD*.
- Passos, F., M. Kotti, et al. (2015). "Physical vs. surrogate models of passive RF devices". In: *IEEE ISCAS*.
- Passos, F., M. H. Fino, and E. Roca (2013). "A wideband lumped-element model for arbitrarily shaped integrated inductors". In: *ECCTD*.
- Passos, F., M. H. Fino, E. Roca, et al. (2013). "Lumped element model for arbitrarily shaped integrated inductors - A statistical analysis". In: *IEEE COMCAS*.

- Passos, F., M. Helena Fino, and E. Roca Moreno (2013). "Analythical characterization of variable width integrated spiral inductors". In: *MIXDES.*

PUBLICATION RESUMEÉ

Third Quartil (4)
Book (2)
Second Quartil (4)
First Quartil (3)
Confe. (16)
Book Chapter (3)

LANGUAGES

Portuguese ●●●●●
English ●●●●○
Spanish ●●●●○

AWARDS AND FELLOWSHIPS

€   SMP Erasmus Fellowship
€   SMS Erasmus Fellowship
€   PhD Fellowship (Grant awarded by the Spanish Ministry of Economy and Competitiveness through subprogram FPI-MICINN 2014 (grant reference BES-2014-068216))

🏆   Outstanding Paper Award – MIXDES 2013 (https://bit.ly/2uDKdfQ)
🏆   EDA Competition Winner – SMACD 2016 (https://bit.ly/2uq5b2j)
🏆   Best Paper Award Nominee – SMACD 2017 (https://bit.ly/2LaJf4R)
🏆   Best Paper Award – SMACD 2018 (https://bit.ly/2uxCyiZ)

ACTIVITIES AND ACHIEVEMENTS

- **Seal of Excelence** for a project proposal which was labeled as high-quality in a highly competitive evaluation process. – Certificate delivered by the European Commission, as the institution managing Horizon 2020, following evaluation by an international panel of independent experts (MSCA IF 2018).
- **Technology transfer** with Analog Devices (Valencia, Spain) developing automated design methodologies for mm-Wave circuits (65-95GHz)
- **Technical Program Committee** of SMACD Conference – www.smacd2019.com
- EDA Competition Chair (SMACD 2019) – www.smacd2019.com
- **Journal Reviewer:** IEEE Transactions on Industrial Electronics; VLSI, The integration Journal; Springer Soft Computing; International Journal of Electronics and Communications.
- **Conference Reviewer:** ISCAS 2015,2017; DATE 2016; SMACD 2016,2017,2018,2019.
- **Part of M.Sc. Thesis Jury:** João Rosas, "Using ANNs to Size Analog Integrated Circuits", IST-UTL, 2018.
- Local Organizing Committee of International Symposium on Circuits and Systems (ISCAS) 2015
- **Presentations in international conferences:** DATE, ISCAS, SMACD, COMCAS, ECCTD, DoCEIS, NEMO, etc.