

CV – SUMMARY

Hugo Enrique Hernández Figueroa

ResearchID: F-4692-2015

ORCID: 0000-0003-2419-6979

<https://scholar.google.com/citations?user=kA9oak0AAAAJ&hl=pt-BR>

Education				
Degree	Time	Country	University	Major
Bachelor	1978-1982	Brazil	Federal University of Rio Grande Do Sul	Electrical Engineering
Specialization	1983	Brazil	Federal University of Rio Grande Do Sul	Mathematics (Numerical Analysis)
Master	1984-1986	Brazil	Pontifical Catholic University of Rio de Janeiro	Electrical Engineering (Antennas, Telecommunications)
Master	1986-1988	Brazil	Pontifical Catholic University of Rio de Janeiro	Computer Science (Numerical Methods)
PhD	1989-1992	England	Imperial College London	Physics (Photonics: Integrated Devices and Fibers)
Professional Experience				
Position		Time	Country	Institution
Teaching assistant		1979-1982	Brazil	Federal University of Rio Grande Do Sul
Research assistant		1984-1986	Brazil	Pontifical Catholic University of Rio de Janeiro
Assistant Professor		1985-1989	Brazil	Military Institute of Engineering
Senior Research Fellow		1992-1995	England	University College London
Assistant Professor		1995-1999	Brazil	University of Campinas
Visiting Professor		1998-1998	USA	University of New Mexico
Associate Professor		1999-2005	Brazil	University of Campinas
Full Professor		2005-	Brazil	University of Campinas
Director		2014-2023	Brazil	National Institute of Photonics for Communications (FOTONICOM)
Advisory Committee Member (Engineering)		2014-	Brazil	The Sao Paulo Research Foundation (FAPESP)
Dean		2023-2027	Brazil	School of Electrical and Computer Engineering, UNICAMP
Field of Specialty and Representative Achievements				
<p>Field of Specialty: study novel devices and phenomena in photonics and/or microwaves, applied to communications and biotechnology.</p> <p>Academic Achievements:</p> <ol style="list-style-type: none"> 1. Published 160 journal papers, the majority in well-renowned journals, 260+ international conference papers, 2 books, and 16 patents. His work has been cited more than 5000 times, H index of 36, and i10 index of 109 (Google). 2. Supervised to completion 20 Post-Doc projects, 38 PhD and 63 MSc students. All of them occupy key academic and industry positions in Brazil or in other countries, mainly in US and Europe. 3. Delivered more than 100 invited international research (in-person) talks worldwide, more recently (2018-2024) in: Switzerland (University of Zurich), United Arab Emirates (Technology Innovation Institute, TII), China (Zhejiang University), England (City University of London), Spain (IFCO and Polytechnic University of Valencia), India (Indian Institute of Technology Delhi and Lovely Professional University, Jalandhar), USA (NASA/JPL, NASA AMEs, and Advanced Radar Research Center, University of Oklahoma), Colombia (Javeriana University, Bogota), and Peru (National University of Engineering and National University of Trujillo). Last 24 months in-person invited talks: Talk: “Integrated Photonic Devices for Sensing and Telecom Applications”, The Basque Nanoscience Cooperative Research Center (NanoGune), San Sebastian, Spain, June 7, 2022. Talks: “Integrated Photonic Devices for Sensing and Telecom Applications” and “Drone-borne Radar Survey for Inventory, Soil Moisture Mapping and Ant Nests Location in an Industrial Forest”, King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia, July 8-9, 2022. 				

Talks: “Drone-borne Tri-band SAR System for Remote Sensing and Imaging Applications” and “Integrated Photonic Devices for Sensing and Telecom Applications”, Technology Innovation Institute (TII) Advanced Materials Seminar, Abu Dhabi, UEA. February 2-3, 2023.

Talk: “Metasurfaces as Key Components for Photonics Devices”, Institut National de Recherche en Informatique et en Automatique (INRIA), Sophia Antipolis, France, November 4, 2023.

Talk: “Integrated Photonic Devices for Sensing and Telecom Applications”, International Center of Photonics and Optics (ICFO), Castelldefels, Barcelona, Spain, November 10, 2023.

Talks: “Multimode Transducers and Nonreciprocal Devices for Integrated Photonics Applications” and “Airborne-Drone Synthetic Aperture Radars Applied to Underground Tomography”, Zhejiang University, Hangzhou, China, December 13-15, 2023.

Talks: “Airborne-Drone Synthetic Aperture Radars Applied to Underground Tomography”, NASA Ames Earth Science Research Center, Mountain View, CA, USA, January 30, 2024, and NASA Jet Propulsion Laboratory (JPL), Pasadena, CA, USA, February 01, 2024.

Talk: “UAV-based SAR Sensing of Vegetation: Status Quo”, at the *UAV-based Remote Sensing Methods for Monitoring Vegetation Workshop* (Sep 30 – Oct 01, 2024), organized by University of Cologne, Cologne, Germany.

2. He served as member of the IEEE Photonics Society Publications Council (2022-2024). He serves as TPC member of the “Smart Photonic and Optoelectronic Integrated Circuits” Conference, SPIE Photonics West 2023, 2024 and 2025.
3. Associate editor of two important journals in Photonics: IEEE/OSA Journal of Lightwave Technology (IF 4.7), 2004-2009, and IEEE Photonics Journal (IF 2.7), 2011-2017; and chief guest editor of special issues organized by the IEEE Transactions on Microwave Theory and Techniques (IF 4.3), 2002, IEEE/OSA Journal of Lightwave Technology (IF 4.7), 2007, and IEEE Journal of Selected Topics on Quantum Electronics (IF 4.9), 2021.
4. A competitive record of research funding (about \$ 20 M) from Brazilian, UK research councils and from Brazilian and international industries such as SAMSUNG, EMBRAER, IBM, NEC, TIM and others.
5. According to the Stanford University’s science-wide author databases, Prof. Hernández Figueroa has been included in the list of the 100 thousand most influential scientist of the world (less than 2% of fulltime researchers in the world), in 2019, 2020, 2021, 2022, 2023, and 2024.
6. 2023 Member of the “Fellow Members Committee”, OPTICA (formerly OSA).

Personal Academic Contributions:

1. Made pioneering contributions in the numerical modeling of guided-wave photonic devices providing a variety of formulations and techniques (Beam Propagation Methods and Machine Learning schemes), with emphasis to the conception and design of novel silicon photonic integrated devices and novel specialty optical fibers, applied mainly to optical communications and biotechnology. He has contributed also with the design and implementation of several original devices such as the first ultra-compact broadband dielectric nanoantenna (2016) and the first highly sensitive integrated photonics biosensor based on SU8 waveguides (2015). For such contributions and research leadership in photonics, he has received several important international recognitions such as the OPTICA (OSA) Fellowship (2011) and Electromagnetics Academy Fellowship (2001).

2. Made pioneering contributions in the wave-phenomena area with emphasis to the theory of the so-called localized waves, introducing the concept of “frozen waves” (2005). Localized waves are beams or pulses capable of resisting diffraction and dispersion in non-guiding media, which find applications in a wide range of applications, such as free-space communications, acoustics, bio-medical imaging, and optical tweezers. His leadership in this subject is demonstrated through the publication of two edited books: “Localized Waves” (2008) and “Non-Diffracting Waves” (2013), which together with the pioneer paper of 2005 have received more than 660 citations.

3. His leadership in Brazil as researcher and educator is evident: he has led several research projects along his career including the National Institute of Photonics Research for Optical Communications – FOTONICOM, founded in 2009 with a budget of about US\$ 1 Million per year; it congregates a network of 11 Brazilian Universities, and 40 professors. He was its vice-Director (2009-2014) and Director (2015-2023). He has also led several industry-university research projects and has been instrumental for the creation in 2014 of the first silicon photonics company in Latin America, the BrPhotonics, located in Campinas, Brazil, and co-founder of RADAZ in 2017, one of the few drone-borne synthetic aperture radar companies in the world.

Main R&D Projects

Period	Title and Source of the Project	Budget	No of Participants	Position
Jun/19 – May/20	Development of an integrated photonic biosensor. SAMSUNG	US\$ 400 k	12	Head
Jan/19 –Dec/21	Plasmonic biosensor based on Trimodal Interferometry. Brazilian Government. CNPq Agency.	US\$ 300 k	10	Head
Nov/18 – Oct/20	Precision Agriculture in Sugarcane based on Drone-Borne Radar. São Paulo Research Foundation (FAPESP) and IBM.	US\$ 250 k	13	Head
Apr/17 – Mar/ 22	Photonics for next generation Internet. São Paulo Research Foundation (FAPESP).	US\$ 850 k	25	Head
Nov/13 – Oct/17	Advanced Nanophotonic Biosensor Devices for Healthcare and Agricultural Protection. Brazilian Government. CNPq Agency.	US\$ 300 k	12	Head
May/22 – Apr/27	Research Center for Energy Transition Studies. FAPESP. Responsible for the Research Line: Smart Counties.	US\$ 2.5 M	80	PI – Partnerships Coordinator
Feb/22 – Jan/24	Strongly resonant fully dielectric metasurfaces based on quasi-dark and toroidal modes. FAPESP and National Research Council (CNR), University of Rome, Italy.	US\$ 75 k	75	PI and Brazilian team’s leader
Aug/23 – Jul/30	Acquisition of Transmission and Characterization Equipment for Ultra-High-Speed Data Links. FAPESP. Responsible for the complete sub-THz system (up to 500 GHz), which is 45% of the total equipment purchased in this project.	US\$ 4.0 M	10	PI
Apr/23 – Mar/33	SMART NETworks and ServiceS for 2030 (SMARTNESS). FAPESP. Responsible for the research line: wireless communication at very high rates: 5G and 6G.	US\$ 5.0 M	30	PI – Partnerships Coordinator
Mar/09 – Feb/14	National Institute of Photonics Research for Optical Communications – FOTONICOM. Brazilian Government. CNPq Agency.	US\$ 3.3 M	80	Vice-Director
Mar/14 – Feb/19	National Institute of Photonics Research for Optical Communications – FOTONICOM. Brazilian Government. CNPq Agency.	US\$ 5.2 M	90	Director
Books				
Date	Title	Publisher		Author Rank
Feb 2008	Localized Waves	Wiley and Sons		Leader
Sep 2013	Non-Diffracting Waves	Wiley-VCH		Leader
Main Patents (Total Patents 16)				
Date of Filling	Publication Number	Patent Title	State or Organization	Assignee
May 16, 2017	WO/2018/064731	Passive RFID Label with Fractal-Pattern Antenna and Use Thereof	WIPO/PCT	University of Campinas
May 23, 2005	US 2011/0100880 A1	Method and Apparatus for Producing Stationary Intense Wave Fields of Arbitrary Shape	United States of America	Bracco Imaging S.p.A., Milan (Italy)
Product (Technology Transfer)				
Jan 2017: Disruptive Drone-borne Synthetic Aperture Radar System. Commercialized by the company RADAZ. Co-founder of RADAZ. (https://radaz.com.br/).				
Prizes and other Achievements				

1. Hugo E. Hernandez Figueroa, UNICAMP Inventors Award 2016, Licensed Technology Category, granted by the INOVA/UNICAMP agency on May 23, 2016. Technology transferred to the Brazilian company EMBRAER related to the patent: "Methods for reducing the dimensions of VHF and UHF antennas".
2. Hugo E. Hernandez Figueroa, UNICAMP Inventors Award 2023, Licensed Technology Category, granted by the INOVA/UNICAMP agency on September 11, 2023. Technology transferred to the Brazilian company EMBRAER related to the patent: "High-Power Microwave Filter with Coaxial Resonant Cavities".
3. Attílio José Giarola Medal of Academic Merit. Awarded by the Brazilian Microwave and Optoelectronics Society (SBMO), 2013. <https://www.sbmo.org.br/sbmo/8/medalha-giarola>
4. **Fellow of OPTICA (former The Optical Society - OSA), USA, 2011.** "For significant contributions in computational guided-wave electromagnetics and the conception and design of novel integrated photonic and plasmonic devices and optical fibers". https://www.osa.org/en-us/awards_and_grants/fellow_members/recent_fellows/2011_fellows/
5. Institute of Electrical and Electronics Engineers (IEEE) **Millennium Medal**, 2000, for outstanding achievements and contributions.
6. **Fellow of the Electromagnetics Academy** (founded by Prof. J. A. Kong, MIT, USA), USA, 2002. "In recognition of his scholarly accomplishments and significant contributions to the field of Electromagnetics and its various applications". <http://emacademy.org/TEA/fema.php?id=000000729>
7. Awarded the title of Doctor Honoris Causa from Universidad Intercultural de la Selva Central Juan Santos Atahualpa (UNICSISA), La Merced, Peru, on the 17th of November 2021.
8. Recognized as Distinguished Investigator by the *Registro Nacional Científico, Tecnológico y de Innovación Tecnológica* RENACYT, of the *Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica* (CONCYTEC), Peru, 2023. This achievement represents the highest level in the scientific researchers' scale of CONCYTEC.
9. Founding member of the Brazilian Society of Optics and Photonics (SBFoton) and served as the Institutional Relations Officer (Equivalent to Vice President) from 2017 to 2022. Currently, serving as SBFoton's Special Advisor since 2023. Since SBFoton's foundation he has been the responsible for establishing Sister Society agreements between SBFoton and IEEE Photonics Society (IPS), OPTICA, and SPIE. These agreements have been in force since 2018.
10. Member of the OPTICA's Fellow Members Committee, 2023. This Committee recommends suitable candidates for advancement to the class of Fellow in the Society to the Optica Awards Council and Board of Directors.
11. IEEE Journal of Selected Topics on Quantum Electronics (JSTQE), Chief Guest Editor – Special Issue on Photonics Antennas. Period: 2019-2021. <https://ieeexplore.ieee.org/document/9321231>
12. IEEE Photonics Journal, Associate Editor - Area: Integrated Optics, Term: January 2011 – December 2017.
13. IEEE / OSA Journal of Lightwave Technology, Associate Editor - Area: Integrated Optics, Period: January 2004 – December 2009.
14. IEEE / OSA Journal of Lightwave Technology, Chief Guest Editor - Special Issue: Modeling of Guide-Wave Photonic Devices, September 2007. <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=4298968>
15. IEEE Transactions on Microwave Theory and Techniques, February 2002. Chief Guest Editor of Special Issue based on selected articles of IEEE International Microwave and Optoelectronics Conference '99 (IMOC'99). <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=981234>
16. TPC Member of the "Smart Photonic and Optoelectronic Integrated Circuits" Conference, part of SPIE Photonics West, 2023, 2024, 2025.
17. General Chair of the 2023 OMN (Optical MEMS and Nanophotonics)/SBFoton IOPC (International Optics and Photonics Conference) organized by the SBFoton and the IEEE Photonics Society, with the support of OPTICA and SPIE Societies, UNICAMP's Convention Center, July 30-August 03, 2023. <https://conference2023.sbfoton.org.br/>

18. General Chair of the OSA-LAOP 2018 - Latin American Optics and Photonics Conference, organized by the Optical Society of America (OSA), Lima, Peru, November 12-15, 2018.

https://www.osa.org/en-us/meetings/osa_meeting_archives/2018/osa_latin_america_optics_photonics_conference/

19. Co-General Chair, IPNRA 2008, Integrated Photonics and Nanophotonics Research and Applications, Topical Meeting organized by the Optical Society of America (OSA), Boston, Massachusetts, USA. July 13-16, 2008.

<https://www.osa.org/osaorg/media/osa.media/Meetings/Archives/2008/IPNRA/IPNRA%20Web%20Archive.pdf>

LIST OF JOURNAL PUBLICATIONS

(TOTAL: 160)

- 1 H. E. Hernández-Figueroa and G. Pagiatakis, "Shape Function Optimization in the Finite Element Analysis of Waveguides", *IEEE Transactions on Microwave Theory and Techniques*, Vol. MTT 41, pp. 1235-1238, June/July 1993. DOI: [10.1109/22.238554](https://doi.org/10.1109/22.238554)
- 2 F. Di Pasquale and H. E. Hernández-Figueroa, "Pump Controlled All-Optical Switching by using High-Concentration Er³⁺ Doped Nonlinear Waveguides", *IEE Electronics Letters*, Vol. 30, No 3, pp. 232-233, February 1994. DOI: [10.1049/el:19940164](https://doi.org/10.1049/el:19940164)
- 3 H. E. Hernández-Figueroa, "Nonlinear Nonparaxial Propagation Method", *IEE Electronics Letters*, Vol. 30, No 4, pp. 352-353, March 1994. DOI: [10.1049/el:19940228](https://doi.org/10.1049/el:19940228)
- 4 H. E. Hernández-Figueroa, F. Di Pasquale, R. Ettinger, F. A. Fernández, and J. B. Davies, "Controlled Spatial Bright Soliton Emission from a Nonlinear Waveguide", *OSA Optics Letters*, Vol. 19, No 5, pp. 326-328, March 1994. <https://doi.org/10.1364/OL.19.000326>
- 5 H. E. Hernández-Figueroa, "Simple Nonparaxial Beam-Propagation Scheme for Integrated Optics", *IEEE/OSA Journal of Lighthwave Technology*, Vol. 12, No 4, pp. 644-649, April 1994. DOI: [10.1109/50.285359](https://doi.org/10.1109/50.285359)
- 6 H. E. Hernández-Figueroa, "Improved Split-Step Schemes for Nonlinear-Optical Propagation", *Journal of the Optical Society of America B (JOSA B)*, Vol. 11, No 5, pp. 798-803, May 1994. <https://doi.org/10.1364/JOSAB.11.000798>
- 7 F. Di Pasquale and H. E. Hernández-Figueroa, "Improved All-Optical Switching in a Three-Slab Nonlinear Directional Coupler", *IEEE Journal of Quantum Electronics*, Vol. 30, No 5, pp. 1254-1258, May 1994. DOI: [10.1109/3.303690](https://doi.org/10.1109/3.303690)
- 8 H. E. Hernández-Figueroa, F. A. Fernández, and J. B. Davies, "Finite Element Approach for the Modal Analysis of Open-Boundary Waveguides", *IEE Electronics Letters*, Vol. 30, No 24, pp. 2031-2032, November 1994. DOI: [10.1049/el:19941412](https://doi.org/10.1049/el:19941412)
- 9 H. E. Hernández-Figueroa, F. A. Fernández, Y. Lu, and J. B. Davies, "Vectorial Finite Element Modelling of 2D Leaky Waveguides", *IEEE Transactions on Magnetics*, Vol. 31, No 3, pp. 1710-1713, May 1995. DOI: [10.1109/20.376364](https://doi.org/10.1109/20.376364)
- 10 E. González, H. E. Hernández-Figueroa, and F. A. Fernández, "Marching Methods for the Solution of the Generalized Nonlinear Schrödinger Equation", *IEEE Transactions on Magnetics*, Vol. 31, No 3, pp. 1741-1744, May 1995. DOI: [10.1109/20.376372](https://doi.org/10.1109/20.376372)
- 11 E. Recami, H. E. Hernández-Figueroa, L. C. Kretly, A. P. López-Barbero, P. Ammiraju and W. A. Rodrigues Jr., "Hadronic Mass Spectra in a Unified Approach to Strong and Gravitational Interactions", *Communications in Theoretical Physics*, Vol. 5 No. 2, pp. 125-144, 1996.
- 12 H. E. Hernández-Figueroa and M. Silveira, "Efficient Finite Element Modelling of Optical Waveguides with Arbitrary Curved Interfaces", *Journal of The Brazilian Telecommunications Society*, Vol. 11, No 1, pp. 41-52, December 1996. <https://jcis.sbrt.org.br/jcis/article/view/202>
- 13 H. E. Hernández-Figueroa and M. L. Brandão, "Efficient 3-D Split-Operator Finite-Element Algorithm for Scalar Integrated Optics", *IEEE Photonics Technology Letters*, Vol. 9, No 3, pp. 351-353, March 1997. DOI: [10.1109/68.556070](https://doi.org/10.1109/68.556070)
- 14 E. Recami, L. C. Kretly, H. E. Hernández-Figueroa e A. P. López-Barbero, "Some Information About the Four Experimental Sectors of Physics in which Superluminal Motions Seem to Appear", *Bull. of the Calcutta Mathematical Society*, Vol.6, No. 2, pp.67-72, 1998.
- 15 E. Recami, H. E. Hernández-Figueroa and A. P. López-Barbero, "Superluminal Microwave Propagation and Special Relativity", *Annalen der Physik*, Vol. 7 (8th series) / Vol. 510 of the Complete Series, pp. 764-773, July-August 1998. [https://doi.org/10.1002/\(SICI\)1521-3889\(199812\)7:7/8<764::AID-ANDP764>3.0.CO;2-H](https://doi.org/10.1002/(SICI)1521-3889(199812)7:7/8<764::AID-ANDP764>3.0.CO;2-H)
- 16 H. E. Hernández-Figueroa and C. E. Rubio-Mercedes, "Transparent Boundary for the Finite-Element Simulation of Temporal Soliton Propagation", *IEEE Transactions on Magnetics*, Vol. 34, No 5, pp. 3228-3331, September 1998. DOI: [10.1109/20.717757](https://doi.org/10.1109/20.717757)
- 17 Sirkova and H. E. Hernández-Figueroa, "Local Transparent Boundary Condition Applied to the Modeling of Tropospheric Ducting Propagation", *Microwave and Optical Technology Letters*, Vol. 21, pp. 343-346, 05 June 1999. [https://doi.org/10.1002/\(SICI\)1098-2760\(19990605\)21:5<343::AID-MOP11>3.0.CO;2-O](https://doi.org/10.1002/(SICI)1098-2760(19990605)21:5<343::AID-MOP11>3.0.CO;2-O)

- 18 A. P. López-Barbero and H. E. Hernández-Figueroa, "Efficient Stationary Model for Erbium Doped Optical Amplifiers: Numerical and Experimental Comparisons", *Microwave and Optical Technology Letters*, Vol. 23, pp. 261-263, 05 December 1999. [https://doi.org/10.1002/\(SICI\)1098-2760\(19991205\)23:5<261::AID-MOP1>3.0.CO;2-X](https://doi.org/10.1002/(SICI)1098-2760(19991205)23:5<261::AID-MOP1>3.0.CO;2-X)
- 19 H. F. Pinheiro and H. E. Hernández-Figueroa, "Novel Finite-Element Formulation for Vectorial Beam Propagation Analysis in Anisotropic Medium", *IEEE Photonics Technology Letters*, Vol. 12, pp. 155-157, February 2000. DOI: [10.1109/68.823501](https://doi.org/10.1109/68.823501)
- 20 A. P. López-Barbero, H. E. Hernández-Figueroa, and P. Torres, "Numerical Modeling of Multimode Doped Optical Waveguides", *International Journal of Advances in Engineering Software*, Vol. 31, pp. 235-240, March 2000. [https://doi.org/10.1016/S0965-9978\(99\)00055-1](https://doi.org/10.1016/S0965-9978(99)00055-1)
- 21 H. F. Pinheiro, A. P. López-Barbero, and H. E. Hernández-Figueroa, "Full-Vectorial FE-BPM Approach for the Analysis of Anisotropic Medium with Off-Diagonal Permittivity Terms", *Microwave and Optical Technology Letters*, Vol. 25, pp. 12-14, 05 April 2000. [https://doi.org/10.1002/\(SICI\)1098-2760\(20000405\)25:1<12::AID-MOP4>3.0.CO;2-5](https://doi.org/10.1002/(SICI)1098-2760(20000405)25:1<12::AID-MOP4>3.0.CO;2-5)
- 22 A. P. López-Barbero, W. A. Arellano-Espinoza, H. L. Fragnito, and H. E. Hernández-Figueroa, "Tellurite-Based Optical Fiber Amplifiers Analysis using the Finite-Element Method", *Microwave and Optical Technology Letters*, Vol. 25, pp. 103-107, 20 April 2000. [https://doi.org/10.1002/\(SICI\)1098-2760\(20000420\)25:2<103::AID-MOP6>3.0.CO;2-T](https://doi.org/10.1002/(SICI)1098-2760(20000420)25:2<103::AID-MOP6>3.0.CO;2-T)
- 23 A. P. López-Barbero, H. E. Hernández-Figueroa, and Erasmo Recami, "Propagation Speed of Evanescent Modes", *Physical Review E*, Vol. 62, No. 6, pp. 8628 - 8635, December 2000. <https://doi.org/10.1103/PhysRevE.62.8628>
- 24 M. I. Davanço, C. E. Rubio-Mercedes and H. E. Hernández-Figueroa, "New Boundary Condition for the Finite-Element Solution of Arbitrary Planar Optical Junctions", *IEEE Photonics Technology Letters*, Vol. 13, pp. 46-48, January 2001. DOI: [10.1109/68.903216](https://doi.org/10.1109/68.903216)
- 25 V. F. Rodríguez-Esquerre and H. E. Hernández-Figueroa, "Novel time-domain step-by-step scheme for integrated optical applications", *IEEE Photonics Technology Letters*, Vol. 13, pp. 311-313, April 2001. DOI: [10.1109/68.917835](https://doi.org/10.1109/68.917835)
- 26 M. Zamboni Rached and H. E. Hernández-Figueroa, "A Rigorous Analysis of Localized Wave Propagation in Optical Fibers", *Optics Communications*, Vol. 191, pp. 49-54, May 2001. [https://doi.org/10.1016/S0030-4018\(01\)01050-1](https://doi.org/10.1016/S0030-4018(01)01050-1)
- 27 D. Correia, V. F. Rodríguez-Esquerre and H. E. Hernández-Figueroa, "Genetic-Algorithm and Finite-Element Approach for the Synthesis of Dispersion-Flattened Fiber", *Microwave and Optical Technology Letters*, Vol. 31, pp. 245-248, 20 November 2001. <https://doi.org/10.1002/mop.10000>
- 28 M. Zamboni-Rached, K. Z. Nóbrega, E. Recami, and H. E. Hernández-Figueroa, "Superluminal X-Shaped Beams Propagating without Distortion along a Coaxial Guide", *Physical Review E*, Vol. 66 (4): art. no. 046617 Part 2 October 2002, 10 pages. <https://doi.org/10.1103/PhysRevE.66.046617>
- 29 M. Zamboni-Rached, E. Recami, and H. E. Hernández-Figueroa, "New Localized Superluminal Solutions to the Wave Equations with Finite Total Energies and Arbitrary Frequencies", *The European Physical Journal D*, 2002, Vol. 21, pp. 217-228, October 2002. DOI: [10.1140/epjd/e2002-00198-7](https://doi.org/10.1140/epjd/e2002-00198-7)
- 30 M. Marrone, V. F. Rodríguez-Esquerre, and H. E. Hernández-Figueroa, "A Novel Numerical Method for the Analysis of 2D Photonics Crystals: The Cell Method", *OSA / Optics Express*, Vol. 10, No 22, pp. 1299-1304, 4 November 2002. <https://doi.org/10.1364/OE.10.001299>
- 31 A. M. F. Frasson and H. E. Hernández-Figueroa, "Envelope Full-Wave 3D Finite Element Time Domain Method", *Microwave and Optical Technology Letters*, Vol. 35, pp. 351-354, 5 December 2002. <https://doi.org/10.1002/mop.10604>
- 32 E. Recami, M. Zamboni-Rached, K. Z. Nóbrega, C. A. Dartora, and H. E. Hernández-Figueroa, "On the Localized Superluminal Solutions to the Maxwell Equations", (INVITED), *IEEE Journal of Selected Topics in Quantum Electronics*, Special Issue on *Nontraditional Forms of Light*, Vol. , pp. 59-73, Vol. 9, No 1, January/February 2003. DOI: [10.1109/JSTQE.2002.808194](https://doi.org/10.1109/JSTQE.2002.808194)
- 33 J. P. da Silva, H. E. Hernández-Figueroa, and A. M. F. Frasson, "Improved Vectorial Finite-Element BPM Analysis for Transverse Anisotropic Media", *IEEE/OSA Journal of Lightwave Technology*, Vol. 21, No 2, pp. 567-576, February 2003. DOI: [10.1109/JLT.2003.808760](https://doi.org/10.1109/JLT.2003.808760)
- 34 Leonardo Lorenzo Bravo-Roger, M. Zamboni-Rached, K. Z. Nóbrega, A. Pablo López-Barbero and Hugo E. Hernández-Figueroa, *Comment on "Efficient Time-Domain Beam-Propagation Method for Modeling Integrated Optical Devices"*, *IEEE/OSA Journal of Lightwave Technology*, Vol. 21, No 2, pp. 577, February 2003. DOI: [10.1109/JLT.2003.811155](https://doi.org/10.1109/JLT.2003.811155)
- 35 D. Correia, J. P. da Silva, and H. E. Hernández-Figueroa, "Genetic Algorithm and Finite Element Design of Short Single-Section Passive Polarization Converter", *IEEE Photonics Technology Letters*, Vol. 15, pp. 915-917, July 2003. DOI: [10.1109/LPT.2003.813407](https://doi.org/10.1109/LPT.2003.813407)
- 36 C. Dartora, M. Zamboni-Rached, K. Z. Nóbrega, E. Recami, and H. E. Hernández-Figueroa, "General Formulation for the Analysis of Scalar Diffraction-Free Beams Using Angular Modulation: Mathieu and Bessel Beams", *Optics Communications*, Vol. 222, pp. 75-80, 2003. [https://doi.org/10.1016/S0030-4018\(03\)01564-5](https://doi.org/10.1016/S0030-4018(03)01564-5)
- 37 M. Zamboni-Rached, K. Z. Nóbrega, H. E. Hernández-Figueroa, "Localized Superluminal solutions to the wave equation in (vacuum or) dispersive media, for arbitrary frequencies and with adjustable bandwidth", *Optics Communications*, Vol. 226, pp. 15-23, 2003. <https://doi.org/10.1016/j.optcom.2003.08.022>

- 38 C. A. Dartora, K. Z. Nóbrega, H. E. Hernández-Figueroa, and E. Recami, "Properties of Localized Pulses through the Analysis of Temporal Modulation Effects in Bessel Beams and the Convolution Theorem", *Optics Communications*, Vol. 229, pp. 99-107, 2004. <https://doi.org/10.1016/j.optcom.2003.11.003>
- 39 L. L. Bravo-Roger, K. Z. Nóbrega, H. E. Hernández-Figueroa, and A. P. López-Barbero, "Spatio-Temporal Finite-Element Propagator for Ultrashort Optical Pulses", *IEEE Photonics Technology Letters*, Vol. 16, No 1, pp. 132-134, January 2004. DOI: [10.1109/LPT.2003.818949](https://doi.org/10.1109/LPT.2003.818949)
- 40 C. E. Rubio-Mercedes and H. E. Hernández-Figueroa, "Padé Boundary Conditions for the Finite-Element Modeling of Arbitrary Planar Optical Junctions", *IEEE/OSA Journal of Lightwave Technology*, Vol. 22, No 2, pp. 669-676, February 2004. DOI: [10.1109/JLT.2003.822549](https://doi.org/10.1109/JLT.2003.822549)
- 41 V. F. Rodríguez-Esquerre, M. Koshiba, and H. E. Hernández-Figueroa, "Finite-Element Time-Domain Analysis of 2-D Photonic Crystal Resonant Cavities", *IEEE Photonics Technology Letter*, Vol. 16, No. 3, pp. 816-818, March 2004. DOI: [10.1109/LPT.2004.823760](https://doi.org/10.1109/LPT.2004.823760)
- 42 K. Z. Nóbrega and H. E. Hernández-Figueroa, "Optical Bistability in Nonlinear Waveguides with Photonic Crystal", *Microwave and Optical Technology Letters*, Vol. 41, Issue 1, pp. 40-43, April 2004. 2004 <https://doi.org/10.1002/mop.20040>
- 43 C. A. Dartora and H. E. Hernández-Figueroa, "Properties of a Localized Mathieu Beam", *Journal of the Optical Society of America A (JOSA A)*, Vol. 21, No. 4, pp. 662-667, April 2004. <https://doi.org/10.1364/JOSAA.21.000662>
- 44 M. Zamboni-Rached, H. E. Hernández-Figueroa, and E. Recami, "Chirped optical X-shaped pulses in material media", *Journal of the Optical Society of America A (JOSA A)*, pp. 2455-2463, Vol. 21, No 12, December 2004. <https://doi.org/10.1364/JOSAA.21.002455>
- 45 C. A. Dartora, K. Z. Nóbrega, A. Dartora, and H. E. Hernández-Figueroa, "Superposition of Monochromatic Bessel Beams in (k_x, k_z) -Plane to Obtain Wave Focusing: Spatial Localized Waves", *Optics Communications*, Vol. 249, No. 4-6, pp. 407-413, 2005. <https://doi.org/10.1016/j.optcom.2005.01.030>
- 46 C. A. Dartora, K. Z. Nóbrega, and H. E. Hernández-Figueroa, "New Analytical Approximations for the Mathieu Functions", *Applied Mathematics and Computation (AMC)*, Elsevier, Vol. 165, No. 2, pp. 447-458, June 2005. <https://doi.org/10.1016/j.amc.2004.06.023>
- 47 V. F. Rodríguez-Esquerre, M. Koshiba, and H. E. Hernández-Figueroa, "Frequency-Dependent Finite-Element Time-Domain Formulation for Dispersive Materials", *Microwave and Optical Technology Letters*, Vol. 44, No. 1, pp. 13 -16, January 05, 2005. <https://doi.org/10.1002/mop.20533>
- 48 V. F. Rodríguez-Esquerre, M. Koshiba, and H. E. Hernández-Figueroa, "Finite Element Analysis of Photonic Crystal Cavities: Time and Frequency Domains", *IEEE/OSA Journal of Lightwave Technology*, Vol. 23, No 3, pp. 1514-1521, March 2005. DOI: [10.1109/JLT.2005.843441](https://doi.org/10.1109/JLT.2005.843441)
- 49 V. F. Rodríguez-Esquerre, M. Koshiba, and H. E. Hernández-Figueroa, "Power Splitters for Waveguides Composed by Ultralow Refractive Index Metallic Nanostructures", *Journal of Applied Physics Letters*, Vol. 87, No 9, 091101, August 2005. <https://doi.org/10.1063/1.2033132>
- 50 M. Zamboni-Rached, H. E. Hernández-Figueroa, and E. Recami, "Theory of "Frozen Waves": Modeling the Shape of Stationary Wave Fields", *Journal of the Optical Society of America A (JOSA A)*, Vol. 22, pp. 2465-2475, November 2005. DOI: [10.1109/LPT.2005.860071](https://doi.org/10.1109/LPT.2005.860071)
- 51 M. S. Gonçalves, H. E. Hernández-Figueroa, and A. C. Bordonalli, "Time-Domain Full-Band Method Using Orthogonal Edge Basis Functions", *IEEE Photonics Technology Letters*, Vol. 18, No. 1, pp. 52-54, January 2006. DOI: [10.1109/LPT.2005.860071](https://doi.org/10.1109/LPT.2005.860071)
- 52 J. W. Menezes, L. Cescato, V. F. Rodriguez-Esquerre, H. E. Hernández-Figueroa, and R. D. Mansano, "Band gap of Hexagonal 2D Photonic Crystals with Elliptical Holes recorded by Interference Lithography", *OSA / Optics Express*, Vol. 14, No. 11, pp. 4873-4879, May 2006. <https://doi.org/10.1364/OE.14.004873>
- 53 L. A. Ambrósio, H. E. Hernández-Figueroa, and H. Torres-Silva, Ingeniare – Chilean Journal of Engineering, "Guided Modes of Metamaterial Slabs", Vol. 14, No 3, pp. 35-45, September-December 2006. <http://dx.doi.org/10.4067/S0718-33052006000200013>
- 54 M. S. Gonçalves, H. E. Hernández-Figueroa, and A. C. Bordonalli, "New Set of 3D Orthogonal Edge Basis Functions for the Vector Wave Equation Solution", *Microwave and Optical Technology Letters*, Vol. 49, No. 9, pp. 2224-2228, September 2007. <https://doi.org/10.1002/mop.22690>
- 55 V. Toccafondo, F. Di Pasquale, S. Faralli, N. Daldosso, L. Pavesi, and H. E. Hernandez-Figueroa, "Study of an efficient longitudinal multimode pumping scheme for Si-nc sensitized EDWAs", *OSA / Optics Express*, Vol. 15, No. 22, pp. 14907-14913, October 2007. <https://doi.org/10.1364/OE.15.014907>
- 56 Arismar Cerqueira S. Jr., K. Z. Nobrega, H. E. Hernandez-Figueroa, and F. Di Pasquale, "PCFDT: An accurate and friendly photonic crystal fiber design tool", *Optik - International Journal for Light and Electron Optics*, In Press, Available online 27 July 2007. Vol. 119 No. 15, pp. 723-732, 2008. <https://doi.org/10.1016/j.ijleo.2007.04.016>

- 57 Arismar Cerqueira S. Jr., J. M. Chavez Boggio, A. A. Rieznik, H. E. Hernández-Figueroa, H. L. Fragnito, and J. C. Knight, "Highly efficient generation of broadband cascaded four-wave mixing products", *OSA / Optics Express*, Vol. 16, No 4, pp.2816-2828, February 2008. <https://doi.org/10.1364/OE.16.002816>
- 58 M. Nalin, J. W. Menezes, L. Cescato, E. S. Braga, H. E. Hernandez-Figueroa, S. J. L. Ribeiro, Y. Messaddeq, and M. Siu Li, "Two-dimensional photonic crystals in antimony-based films fabricated by holography", *Journal of Applied Physics*, No 103, pp 106101 1-3, 19 May 2008. <https://doi.org/10.1063/1.2921603>
- 59 Hugo R. Jimenez Grados, Leandro T. Manera, Ricardo Cotrin Teixeira, Marcia Rautemberg, José A. Diniz, Ioshiaki Doi, Peter Jurgen Tatsch, H. E. Hernandez- Figueroa, and Jacobus W. Swart, "DC Performance and Low Frequency Noise in n-MOSFETs using Self-Aligned Poly-Si/SiGe Gate", *ECS Transactions*, Vol. 14, Issue 1, pp. 137-146, September 2008. <https://iopscience.iop.org/article/10.1149/1.2956027>
- 60 Arismar Cerqueira S. Jr. , C. M. B. Cordeiro, F. Biancalana, P. J. Roberts, H. E. Hernandez- Figueroa, and C. H. Brito Cruz, "Nonlinear interaction between two different photonic bandgaps of a Hybrid Photonic Crystal Fiber", *OSA / Optics Letters*, Vol. 33, No 18, pp. 2080-2082, 15 September 2008. <https://doi.org/10.1364/OL.33.002080>
- 61 D. Marconi, S. Arismar Cerqueira Jr., J. T. Robinson, N. Sherwood-Droz, Y. Okawachi, H.E. Hernandez-Figueroa, M. Lipson, A. L. Gaeta, H. L. Fragnito, "[Performance investigation of microphotonic-silicon devices in a field-trial all-optical network](https://doi.org/10.1016/j.optcom.2008.11.018)", *Optics Communications*, Vol. 282, Issue 5, pp. 849-855, March 2009. <https://doi.org/10.1016/j.optcom.2008.11.018>
- 62 C. H. Silva-Santos, Kleucio Claudio, Marcos S. Gonçalves, Juliano Rodrigues Brianeze and H. E. Hernández-Figueroa, "Bio-inspired Algorithms Applied to Microstrip Antennas Design", *JCIS, Journal of Computational Interdisciplinary Sciences*, Vol 1, No 2, pp.141-147, June 2009. DOI:[10.6062/JCIS.2009.01.02.0017](https://doi.org/10.6062/JCIS.2009.01.02.0017)
- 63 Hugo R. Jimenez Grados, Leandro T. Manera, Márcia Rautemberg Finardi, José Alexandre Diniz, Ioshiaki Doi, Peter Jurgen Tatsch, H. E. Hernández- Figueroa, and Jacobus W. Swart, "The Influence of Poly-Si/SiGe Gate in Threshold, Sub-Threshold Parameters and Low Frequency Noise in p-MOSFETs", *ECS Transactions*, Vol. 23, Issue 1, pp. 371-380, August 2009. <https://iopscience.iop.org/article/10.1149/1.3183741>
- 64 Arismar Cerqueira Sodré Jr, J. D. Marconi H. E. Hernández-Figueroa, and H. L. Fragnito, "Broadband cascaded four-wave mixing by using a three-pump technique in optical fibers", *Optics Communications*, Vol. 282, No. 22, pp. 4436-4439 November, 2009. <https://doi.org/10.1016/j.optcom.2009.08.017>
- 65 C. E. Rubio-Mercedes, V. F. Rodriguez-Esquerre, Antônio Manoel Ferreira Frasson, and H. E. Hernandez-Figueroa, "Novel FEM Approach for the Analysis of Cylindrically Symmetric Photonic Devices", *IEEE/OSA Journal of Lightwave Technology*, Vol. 27, No. 21, pp. 4717-4721, November, 2009. DOI: [10.1109/JLT.2009.2025779](https://doi.org/10.1109/JLT.2009.2025779)
- 66 Leonardo André Ambrosio and H. E. Hernandez-Figueroa, "Trapping Double Negative Particles in the Ray Optics Regime Using Optical Tweezers with Focused Beams", *OSA / Optics Express*, Vol. 17, No 4, pp. 21918-21924, 23 November 2009. <https://doi.org/10.1364/OE.17.021918>
- 67 Lucas H. Gabrielli, H. E. Hernández-Figueroa, and Hugo L. Fragnito, "Robustness Optimization of Fiber Index Profiles for Optical Parametric Amplifiers", *IEEE/OSA Journal of Lightwave Technology*, Vol. 27, No 24, pp. 5571-5579, December 2009. DOI: [10.1109/JLT.2009.2032138](https://doi.org/10.1109/JLT.2009.2032138)
- 68 J. R. Brianeze, C. H. Silva-Santos, and H. E. Hernández-Figueroa, "Multiobjective Evolutionary Algorithms Applied to Microstrip Antennas Design", *Ingeniare*, Vol.17, N.3, pp. 288-298, ISSN 0718-3305, December 2009. <http://dx.doi.org/10.4067/S0718-33052009000300002>
- 69 H. R. Jimenez Grados, L. T. Manera, M. F. Rautemberg, J. A. Diniz, I. Doi, P. J. Tatsch, H. E. Hernández-Figueroa, and J. W. Swart, "The influence of poly-Si/SiGe gate in CMOS transistors for RF and microwave circuit applications", *Physica Status Solidi (c)*, Wiley-VCH, Volume 7, Issue 2, pp. 440 – 443, February, 2010. <https://doi.org/10.1002/pssc.200982424>
- 70 H. R. Jimenez Grados, L. T. Manera, R. Wada, J. A. Diniz, I. Doi, P. Jurgen Tatsch, H. E. Hernandez-Figueroa, and J. W. Swart, "DC Improvements and Low-Frequency 1/f Noise Characteristics of Complimentary Metal–Oxide–Semiconductor Transistors with a Single n⁺-Doped Polycrystalline Si/SiGe Gate Stack", *Japanese Journal of Applied Physics*, Vol. 49, Paper 04DC04, 2010. (4 pages). <https://iopscience.iop.org/article/10.1143/JJAP.49.04DC04>
- 71 L. A. Ambrosio and H. E. Hernandez-Figueroa, "Inversion of gradient forces for high refractive index particles in optical trapping", *OSA / Optics Express* Vol. 18, No 6, pp. 5802-5808, 15 March 2010. (Published also in the *Virtual Journal for Biomedical Optics* (VJBO)). <https://doi.org/10.1364/OE.18.005802>
- 72 J. R. Brianeze, A. Cerqueira S. Jr., and H. E. Hernández-Figueroa, "Tridimensional Yagi Antenna: Shaping Radiation Pattern with Non-planar Array", *IET Microwave, Antennas & Propagation*, Vol. 4, No 9, pp. 1434-1441, September 2010. DOI: [10.1049/iet-map.2009.0480](https://doi.org/10.1049/iet-map.2009.0480)
- 73 V. Donzella, V. Toccafondo, S. Faralli, F. Di Pasquale, C. Cassagnettes, D. Barbier, and H. E. Hernández-Figueroa, "Ion-exchanged Er³⁺/Yb³⁺ Co-doped Waveguide Amplifiers Longitudinally Pumped by Broad Area Lasers", *OSA Optics Express*, Vol. 18, No. 12, pp. 12690-12701, 07 June 2010. <https://doi.org/10.1364/OE.18.012690>

- 74 C. H. Silva-Santos, M. S. Gonçalves, and H. E. Hernández-Figueroa, "Designing Novel Photonic Devices by Bio-Inspired Computing", *IEEE Photonics Technology Letters*, vol. 22, No 15, August 1, 2010. DOI: [10.1109/LPT.2010.2051222](https://doi.org/10.1109/LPT.2010.2051222)
- 75 E. F. Chillce, R.E. Ramos-Gonzales, C.M.B. Cordeiro, L. Gutierrez-Rivera, H. L. Fragnito, C. H. de Brito Cruz, A.C. Bordonalli, H. E. Hernández-Figueroa, R. L. Braga and L. C. Barbosa, "Luminescence of PbS quantum dots spread on the core surface of a silica microstructured optical fiber", *Journal of Non-Crystalline Solids*, Vol. 356, Issues 44–49, pp. 2397-2401, October 2010. <https://doi.org/10.1016/j.jnoncrysol.2010.03.025>
- 76 J. P. da Silva, Diego S. Bezerra, Vitaly F. Rodríguez-Esquerre, Iguatemi E. da Fonseca, Hugo E. Hernández-Figueroa, "Ge-Doped Defect-Core Microstructured Fiber Design by Genetic Algorithm for Residual Dispersion Compensation", *IEEE Photonics Technology Letters*, Vol. 22, No 18, pp. 1337-1339, September 15, 2010. DOI: [10.1109/LPT.2010.2055235](https://doi.org/10.1109/LPT.2010.2055235)
- 77 J. A. Mores Jr., G. N. Malheiros-Silveira, H. L. Fragnito, and H. E. Hernández-Figueroa, "Efficient Calculation of Higher-Order Optical Waveguide Dispersion", *OSA Optics Express*, Vol. 18, No 19, pp. 19522-19531, 13 September 2010. <https://doi.org/10.1364/OE.18.019522>
- 78 M. Zamboni-Rached, L. A. Ambrosio, and H. E. Hernandez-Figueroa, "Diffraction-Attenuation Resistant Beams: their Higher Order Versions and Finite-Aperture Generations", *OSA Applied Optics*, Vol. 49, No 30, 5861-5869, 20 October 2010. <https://doi.org/10.1364/AO.49.005861>
- 79 L. A. Ambrosio and H. E. Hernandez-Figueroa, "Gradient Forces on Double-Negative Particles in Optical Tweezers using Bessel Beams in the Ray Optics Regime", *OSA Optics Express*, Vol. 18, No. 23, pp. 24287-24292, 08 November 2010. (Published also in the *Virtual Journal for Biomedical Optics* (VJBO)). <https://doi.org/10.1364/OE.18.024287>
- 80 L. A. Ambrosio and H. E. Hernandez-Figueroa, "Fundamentals of Negative Refractive Index optical trapping: forces and radiation pressures exerted by focused Gaussian beams using the generalized Lorenz-Mie theory", *OSA Biomedical Optics Express*, Vol. 1, No 5, pp. 1284-1301, 01 December 2010. <https://doi.org/10.1364/BOE.1.001284>
- 81 Arismar Cerqueira S. Jr., D. G. Lona, I. de Oliveira, H. E. Hernandez-Figueroa, and H. L. Fragnito, "Broadband single-polarization guidance in hybrid photonic crystal fibers", *OSA Optics Letters*, Vol. 36, No. 2, pp. 133-135, 15 January 2011. <https://doi.org/10.1364/OL.36.000133>
- 82 M. S. Gonçalves, C. H. Silva-Santos, H. E. Hernández-Figueroa, and A. C. Bordonalli, "Parallel Three-Dimensional Full-Time Domain Applied to Photonic Structures", *IET Optoelectronics* – Vol. 5, Issue 1, p.40–45, February 2011. doi: [10.1049/iet-opt.2009.0086](https://doi.org/10.1049/iet-opt.2009.0086)
- 83 G. N. Malheiros-Silveira, V. F. Rodriguez-Esquerre, and H. E. Hernández-Figueroa, "A Strategy of Search and Refinement by GA in 2-D Photonic Crystals with Absolute PBG", *IEEE Journal of Quantum Electronics*, Vol. 47, No 4, pp. 431-438, April 2011. DOI: [10.1109/JQE.2010.2091107](https://doi.org/10.1109/JQE.2010.2091107)
- 84 D. G. Lona, Arismar Cerqueira S. Jr., G. Stefanini, H. E. Hernandez Figueroa, and H. L. Fragnito, "Applicability of low macrobending loss hollow-core PCF to FTTH applications", *Journal of Microwaves, Optoelectronics and Electromagnetic Applications*, June 2011. <http://dx.doi.org/10.1590/S2179-10742011000100023>
- 85 L. A. Ambrosio and H. E. Hernandez-Figueroa, "Integral localized approximation description of ordinary Bessel beams and application to optical trapping forces", *OSA Biomedical Optics Express*, Vol. 2, No 7, pp. 1893-1906, 01 July 2011. <https://doi.org/10.1364/BOE.2.002354>
- 86 L. A. Ambrosio and H. E. Hernandez-Figueroa, "Spin angular momentum transfer from TEM₀₀ focused Gaussian beams to negative refractive index spherical particles", *OSA/ Biomedical Optics Express*. Vol. 2, No 5, pp. 2354-2363, 01 August 2011. <https://doi.org/10.1364/BOE.2.002354>
- 87 Leonardo A. Ambrosio, Michel Zamboni-Rached, and Hugo E. Hernández-Figueroa "Overcoming diffraction in FSO systems using (GRIN) axicons for approximating the longitudinal intensity profiles", *IEEE/OSA Journal of Lightwave Technology*, Vol. 29, No. 17, pp. 2527-2532, September 1, 2011. DOI: [10.1109/JLT.2011.2160152](https://doi.org/10.1109/JLT.2011.2160152)
- 88 Leonardo A. Ambrosio and Hugo E. Hernández-Figueroa, "Radiation pressure cross sections and optical forces over negative refractive index spherical particles by ordinary Bessel beams", *OSA Applied Optics*, Vol. 50, No. 22, pp. 4489-4498, 1 August 2011. (Published also in the *Virtual Journal for Biomedical Optics* (VJBO)). <https://doi.org/10.1364/AO.50.004489>
- 89 Ivan T. Lima, Jr., Anshul Kalra, Hugo E. Hernández-Figueroa, and Sherif S. Sherif, "Fast calculation of multipath diffusive reflectance in optical coherence tomography", *OSA Biomedical Optics Express*, Vol. 3, No 4, pp. 692-700, 01 April 2012. <https://doi.org/10.1364/BOE.3.000692>
- 90 Roddy E. Ramos-González, Enver Fernandez-Chillce, Luiz C. Barbosa, and, Hugo E. Hernández-Figueroa, "Efficient Technique to Control the Zero-Dispersion Wavelength of a Microstructured Optical Fiber", *Fiber and Integrated Optics*, Vol. 31, pp. 186–195, June 2012. <https://doi.org/10.1080/01468030.2011.652803>
- 91 Gilliard N. Malheiros-Silveira, Vitaly F. Rodríguez-Esquerre, and Hugo E. Hernández-Figueroa, "Photonic Bandgap Inspection in 2-D Sublattices", *IEEE/OSA Journal of Lightwave Technology*, Vol. 30, No. 15, pp. 2527-2532, August 1, 2012. DOI: [10.1109/JLT.2012.2202213](https://doi.org/10.1109/JLT.2012.2202213)

- 92 Gilliard N. Malheiros-Silveira and Hugo E. Hernández-Figueroa, "Prediction of Dispersion Relation and PBGs in 2-D PCs by Using Artificial Neural Networks", *IEEE Photonics Technology Letters*, Vol. 24, No. 20, pp. 1799-1801, October 15, 2012. DOI: [10.1109/LPT.2012.2215846](https://doi.org/10.1109/LPT.2012.2215846)
- 93 Leonardo A. Ambrosio and Hugo E. Hernández-Figueroa, "Optical forces in lossless arbitrary refractive index optical trapping and micromanipulation", *Metamaterials*, Vol. 6, Issues 1–2, 51-63, November 2012. <https://doi.org/10.1016/j.metmat.2012.09.001>
- 94 Leonardo A. Ambrosio and Hugo E. Hernández-Figueroa, "RLC circuit model for the scattering of light by small negative refractive index spheres", *IEEE Transactions on Nanotechnology*. Vol. 11, No. 6, 1217-1222, November, 2012. DOI: [10.1109/TNANO.2012.2221739](https://doi.org/10.1109/TNANO.2012.2221739)
- 95 Daniel G. Lona, Raphael M. Assumpção, Omar C. Branquinho, Marcelo L.F. Abbade, H. E. Hernández-Figueroa, and Arismar Cerqueira Sodré Jr., "Implementation and performance investigation of radio-over-fiber systems in wireless sensor networks", *Microwave and Optical Technology Letters*, Vol. 54, No. 12, 2669-2675, December, 2012. <https://doi.org/10.1002/mop.27168>
- 96 T. P. Villena Andrade, Arismar Cerqueira S. Jr., Marcelo L. F. Abbade, H. E. Hernandez-Figueroa, and Hugo L. Fragnito, "Generation of Quaternary-Amplitude Microwave Signals by Using a New Optical Heterodyne Technique", *Microwave and Optical Technology Letters*, Vol. 54, No. 12, 2738-2743, December, 2012. <https://doi.org/10.1002/mop.27199>
- 97 Gilliard N. Malheiros-Silveira, Gustavo S. Weiderhecker, and Hugo E. Hernández-Figueroa, "Dielectric resonator antenna for applications in nanophotonics", *OSA Optics Express*, Vol. 21, No 1, pp. 1234-1239, 14 January 2013. <https://doi.org/10.1364/OE.21.001234>
- 98 Eduardo J. Sartori and Hugo E. Hernández-Figueroa, "A Simple and Efficient Method to Design Electromagnetic Band Gap Grids", *Microwave and Optical Technology Letters*, Vol. 55, No 2, pp. 421-425, February, 2013. <https://doi.org/10.1002/mop.27311>
- 99 C. E. Rubio-Mercedes, V. F. Rodriguez-Esquerre, Ivan T. Lima, Jr., and H. E. Hernandez-Figueroa, "Design and Chromatic Aberration Analysis of Plasmonic Lenses Using the Finite-Element Method", *IEEE / OSA Journal of Lightwave and Technology*, Vol. 32, No. 11, pp. 1114 - 1119, April 1, 2013. DOI: [10.1109/JLT.2013.2241732](https://doi.org/10.1109/JLT.2013.2241732)
- 100 C. H. Silva-Santos, H. E. Hernández-Figueroa, "Benchmarking Parallel Natural Algorithms for Telecommunications Devices Design", *International Journal of Advanced Research in Computer Science (IJARCS)*, Vol. 4, No. 8, pp. 69-74, May-June 2013. ISSN No. 0976-5697. DOI: <https://doi.org/10.26483/ijarcs.v4i8.1773>
- 101 Leonardo A. Ambrosio and Hugo E. Hernandez-Figueroa, "Nanocircuits and Nanoimpedances of Nonmagnetic Plasmonic Nanoparticles from the Mie Theory Point of View", *IEEE Transactions on Nanotechnology*. Vol. 12, No. 6, pp. 1042-1046, November 2013. DOI: [10.1109/TNANO.2013.2275956](https://doi.org/10.1109/TNANO.2013.2275956)
- 102 José L. Prego, Michel Zamboni-Rached, Erasmo Recami, and Hugo E. Hernandez-Figueroa, "Producing Acoustic 'Frozen Waves': Simulated Experiments", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, Vol. 60, No. 11, pp. 2414-2425, November, 2013. DOI: [10.1109/tuffc.2013.6644744](https://doi.org/10.1109/tuffc.2013.6644744)
- 103 C. E. Rubio-Mercedes, V. F. Rodriguez-Esquerre, Ivan T. Lima, Jr., and H. E. Hernandez-Figueroa, "Analysis of Straight Periodic Segmented Waveguide Using the 2-D Finite Element Method", *IEEE / OSA Journal of Lightwave and Technology*, Vol. 32, No. 11, pp. 2163 - 2169, June 1, 2014. DOI: [10.1109/JLT.2014.2321047](https://doi.org/10.1109/JLT.2014.2321047)
- 104 Gilliard N. Malheiros-Silveira, Lucas H. Gabrielli, Connie J. Chang-Hasnain, and Hugo E. Hernandez-Figueroa, "Breakthroughs in Photonics 2013: Advances in Nanoantennas" (Invited Paper), *IEEE Photonics Journal*, Volume 6, Number 2, April 2014. (7 pages). DOI: [10.1109/JPHOT.2014.2311438](https://doi.org/10.1109/JPHOT.2014.2311438)
- 105 D. S. Santana, C. H. Silva-Santos, and H. E. Hernandez-Figueroa, "Human-Computer Interface Techniques to Design and Evaluate an Electromagnetic Simulator", *Revista IEEE América Latina*, Vol. 12, No. 4, pp. 725-732, June 2014. DOI: [10.1109/TLA.2014.6868876](https://doi.org/10.1109/TLA.2014.6868876)
- 106 José Patrocínio da Silva, J. M. Câmara, H. E. Hernández-Figueroa, V. F. Rodriguez-Esquerre, "Step Index Holey Fiber Design by Genetic Algorithm for Directional Coupling", *Journal of Microwaves, Optoelectronics and Electromagnetic Applications*, Vol. 13, pp. si39-si51, October 2014. <http://www.jmoe.org/index.php/jmoe/article/view/456>
- 107 R. González-García, G. Castañón, and H. E. Hernández-Figueroa, "2D photonic crystal complete band gap search using a cyclic cellular automaton refinement", *Elsvier, Photonics and Nanostructures - Fundamentals and Applications*, Vol. 12, No. 5, pp. 527–539, November, 2014. DOI: [10.1016/j.photonics.2014.09.003](https://doi.org/10.1016/j.photonics.2014.09.003)
- 108 Gilliard N. Malheiros-Silveira, Ricardo T. Yoshioka, José E. Bertuzzo, and Hugo E. Hernandez-Figueroa, "Printed monopole antenna with triangular-shape groove at ground plane for Bluetooth and UWB applications", *Microwave and Optical Technology Letters*, Vol. 57, No. 1, pp. 28–31, January 2015. (Publicado online em novembro de 2014). <https://doi.org/10.1002/mop.28763>
- 109 Gilliard N. Malheiros-Silveira and Hugo E. Hernandez-Figueroa, "Dielectric Resonator Nanoantenna Coupled to Metallic Coplanar Waveguide", *IEEE Photonics Journal*, Vol. 7, No. 1, February, 2015. (7 pages). DOI: [10.1109/JPHOT.2015.2399353](https://doi.org/10.1109/JPHOT.2015.2399353)

- 110 Kleucio Claudio, Carlos H. Silva-Santos, Marcos S. Gonçalves, and Hugo E. Hernández-Figueroa, "Finite Element Method to Improve the Computational Performance in Optical Devices Analysis", *Microwave and Optical Technology Letters*, Vol. 57, No. 6, pp. 1423-1426, June, 2015. (Publicado online em 27 março de 2015). <https://doi.org/10.1002/mop.29103>
- 111 C. H. Silva-Santos and H. E. Hernandez-Figueroa, "Free Visual FDTD 2D Simulator to Support the Telecommunication Teaching-Learning Process", *Revista IEEE América Latina*, Vol. 13, No. 3, pp. 818-824, March 2015. DOI: [10.1109/TLA.2015.7069110](https://doi.org/10.1109/TLA.2015.7069110)
- 112 Jhonattan C. Ramirez, Laura M. Lechuga, Lucas H. Gabrielli, and Hugo E. Hernandez-Figueroa, "Study of a low-cost trimodal polymer waveguide for interferometric optical biosensors", *OSA Optics Express*, Vol. 23, No 9, pp. 11985-11994, 04 May 2015. <https://doi.org/10.1364/OE.23.011985>
- 113 C. H. Silva-Santos, V. F. Rodriguez-Esquerre, and H. E. Hernandez-Figueroa, "Artificial Immune Network Design of Optical Multiplexers/Demultiplexers", *Journal of Microwaves, Optoelectronics and Electromagnetic Applications*, Vol. 14, No 2, pp. 229-237, December 2015. DOI: [10.1590/2179-10742015v14i2442](https://doi.org/10.1590/2179-10742015v14i2442)
- 114 Lucas H. Gabrielli and H. E. Hernandez-Figueroa, "Aperiodic Antenna Array for Secondary Lobe Suppression", *IEEE Photonics Technology Letters*, Vol. 28, No. 2, pp. 209-212, January15, 2016. DOI: [10.1109/lpt.2015.2492419](https://doi.org/10.1109/lpt.2015.2492419)
- 115 Claudia M. Serpa-Imbett and H. E. Hernandez-Figueroa, "Novel Bending Loss Reduction Technique for the TM mode in SOI-Based Waveguides", *IEEE Photonics Technology Letters*, Vol. 28, No. 8, pp. 872-875, April 15, 2016. DOI: [10.1109/LPT.2016.2515263](https://doi.org/10.1109/LPT.2016.2515263)
- 116 Marcos S. Gonçalves, Yuri H. Isayama, and Hugo E. Hernández-Figueroa, "A Novel Three Dimensional Vector Finite Element Method for Periodic Photonic Devices", *Microwave and Optical Technology Letters*, Vol. 58, No. 11, pp. 2665-2668, August, 2016. <https://doi.org/10.1002/mop.30125>
- 117 Rafael R. Heymann, Juan P. Pantoja, Leonardo L. Bravo Roger, Luciano Prado de Oliveira, Edson C dos Reis, João R. Moreira Neto, Hugo E. Hernandez-Figueroa, "A flat-gain LNA based on LTCC technology at UHF (300-500 MHz)", *Journal of Microwaves, Optoelectronics and Electromagnetic Applications*, Vol. 15, No. 3, pp. 191-197, September 2016. <https://doi.org/10.1590/2179-10742016v15i3600>
- 118 Jhonattan C. Ramirez, Juliana N. Schianti, Maria G. Almeida, Aristides Pavani, Roberto R. Panepucci, Hugo E. Hernandez-Figueroa, and Lucas H. Gabrielli, "Low-loss modified SU-8 waveguides by direct laser writing at 405 nm", *OSA Optical Materials Express*, Vol. 7, No. 7, pp. 2651-2659, 01 July 2017. DOI: [10.1364/ome.7.002651](https://doi.org/10.1364/ome.7.002651)
- 119 Ruth Esther Rubio Noriega and Hugo E. Hernandez-Figueroa, "Compact low-loss vertical coupling for optical transmitters with polymer modulators", *IEEE / OSA Journal of Lightwave and Technology*, Vol. 35, No. 24, pp. 540-547, December 15, 2017. DOI: [10.1109/JLT.2017.2764491](https://doi.org/10.1109/JLT.2017.2764491)
- 120 Adriano da Silva Ferreira, Carlos Henrique da Silva Santos, Marcos Sergio Gonçalves, Hugo Enrique Hernández-Figueroa, "Towards an integrated evolutionary strategy and artificial neural network computational tool for designing photonic coupler devices", *Applied Soft Computing*, Vol. 65, pp. 1-11, April 2018. DOI: [10.1016/j.asoc.2017.12.043](https://doi.org/10.1016/j.asoc.2017.12.043)
- 121 Julián L. Pita, Ivan Aldaya, Paulo Dainese, Hugo E. Hernandez-Figueroa, and Lucas H. Gabrielli, "Design of a compact CMOS-compatible photonic antenna by topological optimization", *OSA Optics Express*, Vol. 26, No. 3, pp. 2435-2442, 05 February 2018. DOI: [10.1364/oe.26.002435](https://doi.org/10.1364/oe.26.002435)
- 122 Juliana de N. Schianti, Fellype do Nascimento, Jhonattan C. Ramirez, Munemasa Machida, Lucas G. Heitzmann, Hugo E. Hernandez-Figueroa, and Stanislav Moshkalev, "Treatment of SU-8 surfaces using atmospheric pressure dielectric barrier discharge plasma", *Journal of Vacuum Science and Technology (JVST)*, Vol. 36, No. 2, pp. 021403-1-6, Mar/Apr 2018. DOI: [10.1116/1.4999045](https://doi.org/10.1116/1.4999045)
- 123 C. E. Rubio-Mercedes, V. F. Rodríguez-Esquerre, Ivan T. Lima Jr., and H. E. Hernández-Figueroa, "Analysis of the Propagation Properties of 90°-bend Periodic Segmented Waveguides Using the 2D Finite Element Method", *Journal of Microwaves, Optoelectronics and Electromagnetic Applications*, Vol. 17, No. 1, pp. 32-43, March 2018. DOI: [http://dx.doi.org/10.1590/2179-10742018v17i1861](https://doi.org/10.1590/2179-10742018v17i1861)
- 124 Jhonattan C. Ramirez, Juliana N. Schianti, Dênio E. P. Souto, Lauro T. Kubota, Hugo E. Hernandez-Figueroa, and Lucas H. Gabrielli, "Dielectric Barrier Discharge Plasma Treatment of Modified SU-8 for Biosensing Applications", *OSA Biomedical Optics Express*, Vol. 9, No. 4, pp. 2168-2175, April 2018. DOI: <https://doi.org/10.1364/BOE.9.002168>
- 125 C. H. Silva-Santos, M. S. Gonçalves, and H. E. Hernández-Figueroa, "Evolutionary Strategy Algorithm in a Complex Photonic Coupler Device Optimization", *IEEE Latin America Transactions*, Vol. 16, No. 2, pp. 613-618, February 2018. DOI: [10.1109/TLA.2018.8327420](https://doi.org/10.1109/TLA.2018.8327420)
- 126 Adriano da Silva Ferreira, Gilliard N. Malheiros-Silveira, Hugo Enrique Hernández-Figueroa "Computing Optical Properties of Photonic Crystals by Using Multilayer Perceptron and Extreme Learning Machine", *IEEE / OSA Journal of Lightwave and Technology*, Vol. 36, No. 18, pp. 4066-4073, September 15, 2018. DOI: [10.1109/JLT.2018.2856364](https://doi.org/10.1109/JLT.2018.2856364)
- 127 Leandro Andrade-Fonseca and Hugo Enrique Hernández-Figueroa "Full-Wave Interior Penalty Discontinuous Galerkin Method for Waveguide Analysis", *IEEE / OSA Journal of Lightwave and Technology*, Vol. 36, No. 22, pp. 5168-5176, November 15, 2018. DOI: [10.1109/JLT.2018.2870049](https://doi.org/10.1109/JLT.2018.2870049)

- 128 Gilliard N. Malheiros-Silveira and Hugo Enrique Hernández-Figueroa, "Wireless optical coupling evaluation in a dielectric resonator nanoantenna", *OSA Continuum*, Vol. 1, No. 3, pp. 805-811, November 15, 2018. DOI: <https://doi.org/10.1364/OSAC.1.000805>
- 129 Juan P. Pantoja, Luciano P. de Oliveira, H. E. Hernández-Figueroa and Edson C. dos Reis, "Design of a UWB biconical antenna with a lightning protection system for surveillance applications", *Microwave and Optical Technology Letters*, Vol. 61, No. 3, pp. 688-695, March, 2019. DOI: <https://doi.org/10.1002/mop.31619>
- 130 Jhonattan C. Ramirez, Lucas H. Gabrielli, Laura M. Lechuga, and Hugo E. Hernandez-Figueroa, "Trimodal Waveguide Demonstration and Its Implementation as a High Order Mode Interferometer for Sensing Application", *Sensors*, Vol. 19, No. 12, p. 2821-2831, June 2019. <https://doi.org/10.3390/s19122821>
- 131 E. M. Calzado, J. L. García Rodríguez, L. E. Bergues Cabrales, F. Monier García, A. R. Selva Castañeda, I. M. González Delgado, L. Mesa Torres, F. V. Giro Uribo, M. Morales González, S. C. Acosta Brooks, T. Rubio González, E. J. Roca Oria, L. L. Bravo Roger, H. E. Hernández-Figueroa, and G. Dávila Pérez, "Simulations of the electrostatic field, temperature, and tissue damage generated by multiple electrodes for electrochemical treatment", *Applied Mathematical Modelling*, Vol. 76, pp. 699–716, May 2019. <https://doi.org/10.1016/j.apm.2019.05.002>
- 132 Dieter Luebeck, Christian Wimmer, Laila F. Moreira, Marlon Alcântara, Gian Oré, Juliana A. Góes, Luciano P. Oliveira, Bárbara Teruel, Leonardo S. Bins, Lucas H. Gabrielli, and Hugo E. Hernandez-Figueroa, "Drone-borne Differential SAR Interferometry", *Remote Sensing*, Vol. 12, 778, 10 pages, February 2020. doi:[10.3390/rs12050778](https://doi.org/10.3390/rs12050778)
- 133 Gian Oré, Marlon S. Alcântara, Juliana A. Góes, Luciano P. Oliveira, Jhonattan Yepes, Bárbara Teruel, Valquíria Castro, Leonardo S. Bins, Felicio Castro, Dieter Luebeck, Laila F. Moreira, Lucas H. Gabrielli, and Hugo E. Hernandez-Figueroa, "Crop Growth Monitoring with Drone-Borne DInSAR", *Remote Sensing*, Vol. 12, 615, 18 pages, February 2020. doi:[10.3390/rs12040615](https://doi.org/10.3390/rs12040615)
- 134 Arthur Z. da Costa, Hugo E. Hernández-Figueroa, and Juliana A. Fracarolli, "Computer vision based detection of external defects on tomatoes using Deep Learning", *Biosystems Engineering*, Vol. 190, pp. 131-144, February 2020. <https://doi.org/10.1016/j.biosystemseng.2019.12.003>
- 135 Ursula F. S. Roggero and Hugo E. Hernández-Figueroa, "Polymeric power splitters for multiplexing optical biosensors", *Journal of Optical and Laser Technology*, Vol. 127, 106127, 7 pages, July 2020. <https://doi.org/10.1016/j.optlastec.2020.106127>
- 136 José A. Borda-Hernández, Claudia M. Serpa-Imbett, and Hugo E. Hernandez-Figueroa, "Vortex Polymer Optical fiber with 64 stable OAM states", *Polymers*, Vol. 12, 2776, 13 pages, November 2020. doi: [10.3390/polym12122776](https://doi.org/10.3390/polym12122776)
- 137 Silambarasan Anbumani, Aldeliane M. da Silva, Ursula F. S. Roggero, Alexandre M.P. A. Silva, Hugo E. Hernández-Figueroa, and Mônica A. Cotta, "Oxygen plasma-enhanced covalent biomolecule immobilization on SU-8 thin films: A stable and homogenous surface biofunctionalization strategy", *Applied Surface Science*, Vol. 553, 149502, 8 pages, March 2021. <https://doi.org/10.1016/j.apsusc.2021.149502>
- 138 Yesica R. R. Bustamante, Giovanni B. de Farias, Hening A. de Andrade, and Hugo E. Hernandez-Figueroa, "Demonstration of a silicon polarization splitter and rotator based on a bow-tie structure", *Photonics and Nanostructures - Fundamentals and Applications*, Vol 45, 100921, 8 pages, April 2021. <https://doi.org/10.1016/j.photonics.2021.100921>
- 139 Yuri Hayashi Isayama and Hugo Enrique Hernández-Figueroa, "High-Order Multimode Waveguide Interferometer for Optical Biosensing Applications", *Sensors*, 3254, 17 pages, May 2021. <https://doi.org/10.3390/s21093254>
- 140 Juliana A. Góes, Valquíria Castro, Leonardo Sant'Anna Bins, and Hugo E. Hernandez-Figueroa, "Spiral SAR Imaging with Fast Factorized Back-Projection: A Phase Error Analysis", *Sensors*, 5099, 20 pages, July 2021. <https://doi.org/10.3390/s21155099>
- 141 G. Portela, M. Levy, and H. E. Hernandez-Figueroa, "Magnetless Optical Circulator Based on an Iron Garnet with Reduced Magnetization Saturation", *Molecules*, 4692, 14 pages, August 2021. <https://doi.org/10.3390/molecules26154692>
- 142 Gian Oré, Marlon S. Alcântara, Juliana A. Góes, Bárbara Teruel, Luciano P. Oliveira, Jhonattan Yepes, Valquíria Castro, Leonardo S. Bins, Felicio Castro, Dieter Luebeck, Laila F. Moreira, Rodrigo Cintra, Lucas H. Gabrielli, and Hugo E. Hernandez-Figueroa "Predicting Sugarcane Harvest Date and Productivity with a Drone-Borne Tri-Band SAR", *Remote Sensing*, 14, 1734, 24 pages, March 2022. <https://doi.org/10.3390/rs14071734>
- 143 Jorge R. Fernandez-Herrera, Yesica R. R. Bustamante, and Hugo E. Hernandez-Figueroa, "Plasmonic sensor design using gold and silicon nitride waveguide at visible and NIR wavelengths", *Journal of Optical and Laser Technology*, Vol. 153, 108196, 11 pages, May 2022. <https://doi.org/10.1016/j.optlastec.2022.108196>
- 144 D. C. Zografopoulos, J. F. Algorri, J. M. López-Higuera, H. E. Hernandez-Figueroa, and V. Dmitriev, "Quasi-dark resonances with antiferromagnetic order in silicon metasurfaces", *Scientific Reports*, Vol. 12, Article number: 12975, 11 pages, July 2022. <https://doi.org/10.1038/s41598-022-16167-6>
- 145 Ursula F. S. Roggero, Silvia V. G. Nista, Hugo E. Hernandez-Figueroa, Lucia H. I. Mei, and Stanislav A. Moshkalev, "Graphene-biopolymer-based RFID tags: A performance comparison", *Materials Today Communications*, Vol. 31, 103726, 9 pages, May 2022. <https://doi.org/10.1016/j.mtcomm.2022.103726>

- 146 V. Alaferdov, O. V. Lebedev, U. F. S. Roggero, H. E. Hernandez-Figueroa, S. V. G. Nista, G. M. Trindade, Yu A. Danilov, A. N. Ozerin, and S. A. Moshkalev, "Highly conductive nanographite/ultra-high-molecular-weight polyethylene composite", *Results in Materials*, Vol. 15, 100298, 8 pages, June 2022. <https://doi.org/10.1016/j.rinma.2022.100298>
- 147 Ursula F. S. Roggero, Ruth E. Rubio-Noriega, Andreas Seifert, and Hugo E. Hernández-Figueroa, "Highly selective, compact and efficient vertical in-coupling for interferometric optical biosensors", *Journal of Physics: Conference Series* **2407**, IOP Publishing, 012045, November 2022. <https://doi.org/10.1088/1742-6596/2407/1/012045>
- 148 Gianni Portela, Miguel Levy, and Hugo E. Hernandez-Figueroa, "Novel compact magnetless isolator based on a magneto-optical garnet material", *Journal of Optical and Laser Technology*, Vol. 157, 108638, 7 pages, January 2023. <https://doi.org/10.1016/j.optlastec.2022.108638>
- 149 Francisco D. Nobre, Silvio D. Silva-Santos, Mauricio W. Benjô da Silva, Hugo E. Hernandez-Figueroa, Geraldo Melo, and Wagner Castro, "Graphene-based multifunctional signal divider in THz region", *Photonics and Nanostructures - Fundamentals and Applications*, Vol 54, 101115, 9 pages, February 2023. <https://doi.org/10.1016/j.photonics.2023.101115>
- 150 Yuri H. Isayama and Hugo E. Hernandez-Figueroa, "Design of a novel hybrid multimode interferometer operating with both TE and TM polarizations for sensing applications", *Optical and Quantum Electronics*, Vol 55, Article 454, 14 pages, May 2023. <https://doi.org/10.1007/s11082-023-04751-7>
- 151 Yi Zhou, Junjie Zhan, Yifan Shao, Yubo Wang, Yongdi Dang, Sen Zhang, Hugo E. Hernandez-Figueroa, and Yungui Ma, "Reconfigurable Spatiotemporal Optical Signal Processor", *Advanced Optical Materials*, Vol. 11, Article number 2300746, August 2023, 8 pages. DOI: [10.1002/adom.202300746](https://doi.org/10.1002/adom.202300746)
- 152 Arthur Clini de Souza, Stéphane Lanteri, Hugo Enrique Hernández-Figueroa, Marco Abbarchi, David Grosso, Badre Kerzabi, and Mahmoud Elsay, "Back-propagation optimization and multi-valued artificial neural networks for highly vivid structural color filter metasurfaces. *Scientific Reports*, Vol. 13, Article number 1352, 9 pages, December 2023. <https://doi.org/10.1038/s41598-023-48064-x>
- 153 J. F. Algorri, V. Dmitriev, H.E. Hernández-Figueroa, L. Rodríguez-Cobo, F. Dell'Olio, A. Cusano, J.M. López-Higuera, D.C. Zografopoulos, "Polarization-independent hollow nanocuboid metasurfaces with robust quasi-bound states in the continuum", *Optical Materials*, Volume 147, January 2024, 114631. <https://doi.org/10.1016/j.optmat.2023.114631>
- 154 Jorge R. Fernández, Eric Fujiwara, Hugo E. Hernandez-Figueroa, "Improving surface plasmon resonance sensors with speckle image processing", Elsevier, *Optics and Lasers in Engineering*, Volume 178, April 2024, 108233. <https://doi.org/10.1016/j.optlaseng.2024.108233>
- 155 Gian Carlos Oré Huacles, Hugo E. Hernandez-Figueroa, Laila F. Moreira, and Elidio S. Frias, "USE OF DRONE-BORNE IMAGING RADARS AS A TOOL TO IMPROVE THE CIRCULAR ECONOMY OF FOREST INDUSTRIES", *O PAPEL*, vol. 85, No. 4, pp. 92 – 97, April 2024. <https://cdn.newspulpaper.com/wp-content/uploads/2024/05/30210432/AT-1-USE-OF-DRONE-BORNE-IMAGING-RADARS-AS-A-TOOL-TO-IMPROVE-THE-CIRCULAR-ECONOMY-OF-FOREST-INDUSTRIES-1.pdf>
- 156 Gian Oré, Jhonattan Yepes, Juliana A. Góes, Luciano P. Oliveira, Barbara Teruel, Hugo E. Hernandez-Figueroa, "Soil moisture estimation of bare and vegetation-covered areas using a P/L/C-band SAR," December 2024. arXiv:2412.11874
- 157 Gian Oré, Alexandre Santos, Daniele Ukan, Ronald Zanetti, Mariane Camargo, Luciano P. Oliveira, Guillermo Kemper, Alonso Sanchez, Aldo Diaz, Jorge Gonzalez, Ruth Rubio-Noriega, Levy Boccato, Hugo E. Hernandez-Figueroa, "Ant Nest Detection Using Underground P-band TomoSAR," December 2024. arXiv:2412.11865.
- 158 F. T. Orlandini, P. R. B. Devloo, and H. E. Hernández-Figueroa, "A waveguide port boundary condition based on approximation space restriction for finite element analysis," *Engineering with Computers*, January 2025. <https://doi.org/10.1007/s00366-024-02101-z>
- 159 Ismail Shittu, Mohamed Abou-Khousa, Jaime Viegas, Hugo E. Hernandez-Figueroa, and Ibrahim (Abe) M. Elfadel, "Radar Cross Section Reduction Metamaterials: A Review of Principles, Design Methods, and Applications Beyond", *IEEE Aerospace and Electronic Systems Magazine*, January 2025. DOI: [10.1109/MAES.2025.3526134](https://doi.org/10.1109/MAES.2025.3526134)
- 160 Tadeu P. Pasetto and Hugo E. Hernandez-Figueroa, "Design of a Low-Cost Printed Slotted SIW Antenna Array with Omnidirectional Azimuth Pattern and Beam-Shaped Elevation Pattern," *Progress In Electromagnetics Research C*, Vol. 152, 1-12, January 2025. [doi:10.2528/PIERC24102502](https://doi.org/10.2528/PIERC24102502)

CONFERENCE PAPERS (SINCE 2015 - 14 SELECTED ITEMS)
(TOTAL CONFERENCE PAPERS: 276)

- 1 Hugo E. Hernandez-Figueroa, "The Internet of Things and Nanotechnology", *IEEE Brasil RFID 2015*, São Paulo, Brazil, October 7, 2015. **INVITED PAPER.** <http://www.rfid-coe.com.br/admin/pdf/2101958334.pdf>

- 2 Hugo E. Hernandez-Figueroa, "Silicon-based Integrated Photonics for Advanced Optical Communications", **KEYNOT SPEAKER**, Proceedings of MOMAG 2016, 17th SBMO - Simpósio Brasileiro de Microondas e Optoeletrônica e o 12o CBMag – Congresso Brasileiro de Eletromagnetismo, , Porto Alegre, Brazil, July 25 – 29, 2016.
<https://www.ufrgs.br/momag2016/index.php/palestras/>
- 3 Hugo E. Hernandez-Figueroa, "Integrated Photonics for Advanced Optical Communications", *IEEE XXIV Congreso Internacional de Ingeniería Eléctrica, Electrónica y Computación – INTERCON 2017*, Cusco, Perú, 15-18 August 2017. **INVITED PAPER**.
<https://www.facebook.com/intercon2017/photos/a.1759591200924959/1900939076790170/?type=3&theater>
- 4 Hugo E. Hernandez-Figueroa, "Dielectric Antennas for Photonics Applications", 2nd *International Conference on Intelligent Circuits and Systems (ICICS)*, Lovely Professional University (LPU), Jalandhar, Punjab, India, April 20-21, 2018. **KEYNOT SPEAKER**. <https://conferences.lpu.in/icics/icics2018/international-speakers.php>
- 5 Adriano da Silva Ferreira, Gilliard Nardel Malheiros-Silveira, and Hugo Enrique Hernandez-Figueroa, "Photonic Crystals Band Diagrams Computation by Using Extreme Learning Machine", *Frontiers in Optics / Laser Science Conference*, OSA Technical Digest (Optical Society of America, 2018), paper JW4A.94, Washington, DC, USA, September 16–20, 2018.
<https://doi.org/10.1364/FIO.2018.JW4A.94>
- 6 Ruth E. Rubio-Noriega and Hugo E. Hernandez-Figueroa, "Sub-wavelength vertical coupling between polymer modulator platform and silicon photonics", *SPIE Photonics West 2019*, San Francisco, California, USA, February 02-07, 2019. <https://doi.org/10.1117/12.2508660>
- 7 Laila Moreira, Felicio Castro, Juliana A. Góes, Leonardo Bins, Bárbara Teruel, Juliana Fracarolli, Valquiria Castro, Marlon Alcântara, Gian Oré, Dieter Luebeck, Luciano P. Oliveira, Lucas Gabrielli, Hugo E. Hernandez-Figueroa, "A Drone-borne Multiband DInSAR: Results and Applications", 2019 IEEE Radar Conference (RadarConf), Boston, MA, USA, 22-26 April 2019. DOI: [10.1109/RADAR.2019.8835653](https://doi.org/10.1109/RADAR.2019.8835653)
- 8 Leandro Andrade Couto Fonseca and Hugo E. Hernandez-Figueroa, "BaTiO3 Electro-Optic Waveguide Analysis with a Novel Discontinuous Galerkin Method", *IEEE 2019 International Conference on Optical MEMS and Nanophotonics (IEEE OMN 2019)*, Daejeon, Korea, July 28 - August 1, 2019. DOI: [10.1109/OMN.2019.8925196](https://doi.org/10.1109/OMN.2019.8925196)
- 9 Gianni Portela, Luciano P. de Oliveira, Miguel Levy, Hugo E. Hernandez-Figueroa, "Photonic integrated circulators based on iron garnets without external magnetization," *Proc. SPIE 11690, Smart Photonic and Optoelectronic Integrated Circuits XXIII*, 116900J, *SPIE Photonics West 2021*, San Francisco, California, USA, 06-11 March 2021. **INVITED PAPER**. [doi:10.1117/12.2578396](https://doi.org/10.1117/12.2578396).
- 10 Rafaela S. Cardoso, Luciano P. Oliveira, and Hugo E. Hernandez-Figueroa, "Assessment of Fermat's Spiral Arrays for Photonic Dielectric Antennas," *Proc. 2021 15th European Conference on Antennas and Propagation (EuCAP)*, Düsseldorf, Germany, 22-26 March 2021. DOI: [10.23919/EuCAP51087.2021.9411263](https://doi.org/10.23919/EuCAP51087.2021.9411263).
- 11 Hugo E. Hernandez-Figueroa, "Advances in Photonic Aperiodic Arrays and Circulators," *2021 IEEE Photonics Society / SBFoton International Conference*, São Paulo, Brazil, June 01, 2021. **KEYNOTE SPEAKER**.
<https://conference2021.sbfoton.org.br/guests/plenaries.html>
- 12 Hugo E. Hernandez-Figueroa, Bárbara Teruel, Luciano P. Oliveira, Gian Oré, Marlon S. Alcântara, Rodrigo Cintra, Jhonnatan Yepes, Juliana A. Góes, Dieter Luebeck, Valquíria Castro, Felicio Castro, Laila F. Moreira, Leonardo S. Bins, Lucas H. Gabrielli, "Sugarcane Precision Monitoring by Drone-Borne p/I/c-band dinsar", 2021 International Geoscience and Remote Sensing Symposium (IGARSS 21), July 13, 2021, Belgium, (virtual event). **INVITED PAPER**. DOI: [10.1109/IGARSS47720.2021.9554723](https://doi.org/10.1109/IGARSS47720.2021.9554723)
- 13 Rafaela S Cardoso, Gian Oré, Luana De Moraes, Edson C Reis, Luciano P Oliveira, João R Moreira Neto, Hugo E Hernandez-Figueroa, "Antennas and Electromagnetic Propagation Aspects for Drone-Borne Synthetic Aperture Radars", Proceedings of the SBMO / IEEE MTT-S International Microwave and Optoelectronics Conference (IMOC), Castelldefels, Spain, 05-09 November 2023, **INVITED PAPER**. DOI: [10.1109/IMOC57131.2023.10379773](https://doi.org/10.1109/IMOC57131.2023.10379773)
- 14 Ruth E. Rubio-Noriega, Franck D. Soria-Pinedo, Mark Clemente-Arenas, Julio V. Urbina, Akhlesh Lakhtakia, and Hugo E. Hernandez-Figueroa, "Topological optimization of electrically tunable silicon-organic metasurfaces", *Smart Photonic and Optoelectronic Integrated Circuits, SPIE Photonics West 2024*, San Francisco, California, USA, 27 Jan – 01 Feb 2024. **INVITED PAPER**. [http://dx.doi.org/10.1117/12.3005180](https://dx.doi.org/10.1117/12.3005180)

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