

CURRICULUM VITAE

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1. Educational Record

Engineer in Electronics, National University of La Plata (UNLP), Argentina. 2002.

Doctor in Engineering, National University of La Plata (UNLP), Argentina. 2009.

2. Current Teaching/Research Position

Associate Professor, Faculty of Engineering, UNLP and Arturo Jauretche National University (UNAJ), Argentina.

Associate Researcher, National Research Council (CONICET) at GCA-LEICI, Faculty of Engineering, National University of La Plata (UNLP), Argentina.

Researcher Grade III (3 out of 5) of National Research Board Scale.

3. Visiting Positions Held

April/October 2011: Semiconductor Integrated Optoelectronics and Photonics Group (SIOP Group), Dipartimento di Elettronica (DELEN), Politecnico di Torino, Italy.

May 2011 and October 2011: The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.

June/December 2004: Laboratoire TIMA (Techniques de l'Informatique et de la Microélectronique pour l'Architecture des systèmes integres), Institut National Polytechnique de Grenoble (INPG), Université Joseph Fourier (UJF), Grenoble, France.

4. Awards

Awarded with the "Young Researcher Prize" from the National University of La Plata (UNLP). 2013. (Prize yearly awarded to scientists below 40 years old in recognition to his career).

5. Teaching Experience

Mathematics; Physics; Semiconductor Physics; Electronics Devices; Probabilities and Statistics; Information and Communications.

6. Research Experience

My main research interests are in: (i) the study of photovoltaic devices, including perovskite solar cells; and (ii) the study of real systems using machine learning approaches.

7. I&D Projects

- PID 20/I258 (2020 - 2023). “Control, estimation and optimization in the generation of renewable energy”. Financed by National University of La Plata (UNLP), Argentina. Member of the Responsible Board.
- PIO 15520150100001CO (2016-2017). “Use of numerical methods and subsymbolic techniques of artificial intelligence for the generation of clean energies and the evaluation of bone health”. Financed by National Research Council (CONICET), Argentina. Director.
- PID 15/I205 (2015 - 2018). “Theoretical studies on electronic devices and materials for use in systems based on non-polluting energies”. Financed by National University of La Plata (UNLP), Argentina. Member of the Responsible Board.
- UNAJ INVESTIGA 2015 (2016-2017). “Numerical methods in environmental, biomedical and educational applications”. Financed by Arturo Jauretche National University (UNAJ), Argentina. Director.
- PIP 11220100100292 (2011-2013). “Theoretical and experimental study of semiconductor materials and devices under different operating conditions”. Financed by National Research Council (CONICET), Argentina. Director.
- PPID-UNLP 2009 (2011 - 2012). “Study of materials and electronic devices through simulation tools. Applications to the teaching electronic devices”. Financed by National University of La Plata (UNLP), Argentina. Director.
- PID 14/I191 (2014 - 2017). “Study of materials of interest in environmental applications: generation of clean energies and remediation-capture of pollutants”. Financed by National University of La Plata (UNLP), Argentina. Member of the Responsible Board.
- PID 11/I158 (2011 - 2014). “Theoretical studies on electronic devices and materials”. Financed by National University of La Plata (UNLP), Argentina. Member of the Responsible Board.
- PID 07/I122 (2007 - 2010). “Theoretical studies on electronic devices and materials”. Financed by National University of La Plata (UNLP), Argentina. Member of the Responsible Board.
- PICT 2006-2042 (2008-2010). “Study of materials and electronic devices for microelectronics”. Financed by the Argentine Agency for the Promotion of Science and Technology (ANPCyT), Argentina. Member of the Responsible Board.

8. Staff/Student Supervision

Supervised Theses:

Daniel Morales. PhD Thesis. “Subsymbolic techniques of artificial intelligence applied to energy efficiency”, May 5th, 2017. National University of Quilmes.

Others:

I have supervised six Final Degree Works and three Scholarship Students.

9. Publications

Journal Articles:

- “Extraction of the minority carrier transport properties of solar cells using the Hovel model and genetic algorithms”. M.A. Cappelletti, A.P. Cédola, L.M. Olivera, G.A. Casas, J. Osio, E.L. Peltzer y Blancá. *Measurement Science and Technology, Institute of Physics (IOP)*. Vol. **31**, pp 025601 (9pp) (2019). <https://doi.org/10.1088/1361-6501/ab46e4>

- “Study of the reverse saturation current and series resistance of p-p-n perovskite solar cells using the single and double-diode models”. M.A. Cappelletti, G.A. Casas, A.P. Cédola, E.L. Peltzer y Blancá y B. Marí Soucase. *Superlattices and Microstructures, Elsevier*. ISSN: 0749-6036. Vol. **123**, pp 338-348 (2018). <https://doi.org/10.1016/j.spmi.2018.09.023>.

- “Comparative study of the phase stability in SrTaO₂N”. R.E. Alonso, M.A. Taylor, A.V. Gil Rebaza, M.A. Cappelletti y V. Fernández. *Boletín de la Sociedad Española de Cerámica y Vidrio, Elsevier*. ISSN: 0366-3175 .Vol. **57**, pp 40-44 (2018). <https://doi.org/10.1016/j.bsecv.2017.10.002>.

- “Analysis of the power conversion efficiency of perovskite solar cells with different materials as Hole-Transport Layer by numerical simulations”. G.A. Casas, M.A. Cappelletti, A.P. Cédola, B. Marí Soucase y E.L. Peltzer y Blancá. *Superlattices and Microstructures, Elsevier*. ISSN: 0749-6036. Vol. **107**, pp 136-143 (2017). <http://dx.doi.org/10.1016/j.spmi.2017.04.007>.

- “Study of the electrical parameters degradation of GaAs sub-cells for triple junction space solar cells by computer simulation”. M.A. Cappelletti, G.A. Casas, D.M. Morales, W. Hasperué y E.L. Peltzer y Blancá. *Semiconductor Science and Technology, Institute of Physics (IOP)*. ISSN: 0268-1242. Vol. **31**, 115020 (8pp). (2016). <https://doi.org/10.1088/0268-1242/31/11/115020>.

- “Estudio basado en Algoritmos Genéticos de celdas solares expuestas a radiación”. D.M. Morales, M.A. Cappelletti, G.A. Casas, W. Hasperué y E.L. Peltzer y Blancá. *IEEE Xplore Digital Library*. ISBN 978-1-4673-9765-0. Pages: 1-5 (2016). doi: [10.1109/ARGENCON.2016.7585262](https://doi.org/10.1109/ARGENCON.2016.7585262)

- “Study of excitonic carrier dynamics in quantum dot solar cells by numerical simulations”. A.P. Cédola, M.A. Cappelletti y E.L. Peltzer y Blancá. *IEEE Xplore Digital Library*. ISBN 978-1-5090-3777-3. Pages: 39-43 (2016). doi: [10.1109/CAMTA.2016.7574088](https://doi.org/10.1109/CAMTA.2016.7574088)

- “Computational analysis of the maximum power point for GaAs sub-cells in InGaP/GaAs/Ge triple-junction space solar cells”. M.A. Cappelletti, A.P. Cédola y E.L. Peltzer y Blancá. *Semiconductor Science and Technology, Institute of Physics (IOP)*. ISSN: 0268-1242. Vol. **29**, 115025 (6pp). (2014).
- “Study of Photocurrent Enhancement Dependence on Background Doping in Quantum Dot Solar Cells by Numerical Simulations”. A.P. Cédola, M. Gioannini, F. Cappelletti, M.A. Cappelletti y E.L. Peltzer y Blancá. *IEEE Latin America Transactions*. Vol. **12**, pp 922-927. (2014).
- “Theoretical study of the maximum power point of n-type and p-type crystalline silicon space solar cells”. M.A. Cappelletti, G.A. Casas, A.P. Cédola y E.L. Peltzer y Blancá. *Semiconductor Science and Technology, Institute of Physics (IOP)*. ISSN: 0268-1242. Vol. **28**, 045010 (7pp). (2013).
- “Numerical Analysis of Si and GaAs Solar Cells Exposed to Space Radiation”. M.A. Cappelletti, G. Casas, A.P. Cédola y E.L. Peltzer y Blancá. *IEEE Latin America Transactions*. Vol. **11**, pp 268-273. (2013).
- “An Iterative Method Applied to Optimize the Design of PIN Photodiodes for Enhanced Radiation Tolerance and Maximum Light Response”. A.P. Cédola, M.A. Cappelletti, G. Casas y E.L. Peltzer y Blancá. *Nuclear Instruments and Methods in Physics Research, Section A (NIMA, Elsevier)*. ISSN: 01689002. Vol. **629**, Issue 1, Pages 392-395 (2011).
- “Theoretical study of neutron effects on PIN photodiodes with deep-trap levels”. M.A. Cappelletti, A.P. Cédola y E.L. Peltzer y Blancá. *Semiconductor Science and Technology, Institute of Physics (IOP)*. ISSN: 0268-1242. Vol. **24**, 105023 (7pp). (2009).
- “Simulation of Silicon PIN Photodiodes for use in Space-Radiation Environments”. M.A. Cappelletti, A.P. Cédola y E.L. Peltzer y Blancá. *Semiconductor Science and Technology, Institute of Physics (IOP)*. ISSN: 0268-1242. Vol. **23**, 025007 (7pp). (2008).
- “Radiation-Damaged Simulation PIN Photodiodes”. M.A. Cappelletti, U. Urcola y E.L. Peltzer y Blancá. *Semiconductor Science and Technology, Institute of Physics (IOP)*. ISSN: 0268-1242. Vol. **21**, pp 346-351. (2006).
- “Study of Semiconductor Devices Exposed to Spatial Radiation”. G. Domingo Yagüez, D. Villaraza, M.A. Cappelletti y E.L. Peltzer y Blancá. *WSEAS Transactions on Systems. (WSEAS: World Scientific and Engineering Academy and Society)*. ISSN: 1109-2777. Vol. **3**, pp 1228-1233. (2004).
- “Estudio de Dispositivos Semiconductores Expuestos a la Radiación Espacial”. G. Domingo Yagüez, D. Villaraza, M.A. Cappelletti, A.P. Cédola y E.L. Peltzer y Blancá. *Anales de la Asociación Física Argentina*. ISSN: 0327-358X. Vol. **15**. Page(s): 94-98. (2003).