Curriculum Vitae

Personal details

Name:	**Marco Pala**
Researcher ID:	ORCID: https://orcid.org/0000-0001-5733-515X
H-index:	29 (SCOPUS), 34 (Google scholar)
Webpage:	http://nanoelectronics.uniud.it Updated publication list available on G-Scholar
E-mail	marco.pala@uniud.it
Languages	Fluent in English, French, Italian

Current position

Function	Organization/Department	Location
Associate professor	DPIA, University of Udine	Via delle Scienze, 206, 33100 Udine, Italy

Activities

- **Teaching**
  - 2023-present: course of “Electronics” (bachelor’s degree in “Management Engineering”, U Udine, 60 h)
  - 2023-present: course of “Physics” (bachelor’s degree in “Building and territory technology”, U Udine, 60 h)
  - 2013, 2014: course of “Numerical methods” (60 h) at Phelma, Grenoble-INP.
  - 2010, 2011, 2012, 2013, 2014 and 2015: course of “simulation of electronic devices” (15 h) at PHELMA, Grenoble-INP.
  - 2006, 2007, 2008, 2009, 2010 and 2011 course of "Quantum transport simulation: NEGF methods" (8 h) at the summer school ESONN "European School On Nanosciences and Nanotechnologies".

- **Supervision of students and post-docs (2005-Present)**
  - 16 PhD candidates
  - 6 Post-docs

- **Refereeing activities**
  - 24 PhD committees
  - Reviewer for national agencies such as ANR (France), FNRS (Belgium), MIUR (Italy), FWF (Austria).
  - Regular reviewer for several journals (IEEE TED, IEEE EDL, PRL, PRB, APL, JAP, ACS Nano, SciRep, …)
  - Member of technical conference committees (IEDM, ESSDERC, IWCN)

- **Visiting positions**
  - 09/2021-09/2022: Visiting researcher at Dipartimento di Ingegneria Industriale e dell’Informazione, University of Udine, Italy

- **Conference organization**
  - 2006: Scientific chair of the summer school MIGAS 2007, Autrans, France
  - 2016: Member of the organizing committee of the IEEE-EDS Mini-colloquium in Grenoble, France
  - 2018-2019: member of the technical committee of the IEDM conference
  - 2018-2022: member of the technical committee of the ESSDERC conference
  - 2020-2022: member of the technical committee of the IWCN conference

- **National scientific qualifications**
  - October 2024: “Abilitazione scientifica Nazionale” (Italy), professore I fascia, settore: 09/E3, elettronica
  - January 2022: “Abilitazione scientifica Nazionale” (Italy), professore II fascia, settore: 02/B2, fisica teorica della materia
  - August 2018: “Abilitazione Scientifica Nazionale” (Italy), professore II fascia, settore: 09/E3, elettronica

- **Management**
  - 2018-2023: Head of the “Computational Electronics” group of C2N (UMR 9001), Palaiseau, France. 4 permanent researchers and professors, 4-5 PhDs and post-doc

- 2012-2016: Head of the Modeling and Simulation group of IMEP-LAHC (UMR 5130), Grenoble, France. 3-4 permanent researchers and professors, 4-5 PhDs and post-docs

- **Member of doctoral teaching boards**
  - 2012- present: Doctoral teaching board of Dipartimento di Ingegneria Industriale e dell'Informazione, University of Udine, Italy

- **Memberships**
  - IEEE senior member

Previous academic positions

Start date	End date	Town	Organization	Function
10/2022	09/2023	Palaiseau (France)	CNRS-C2N	Research director (Directeur de Recherche)
06/2016	09/2022	Palaiseau (France)	CNRS-C2N	Research scientist (Chargé de Recherche)
11/2005	05/2016	Grenoble (France)	IMEP-LAHC	Research scientist (Chargé de recherche)
11/2004	10/2005	Grenoble (France)	CEA-LETI	Post-doc
01/2004	10/2004	Pisa (Italy)	University of Pisa	Post-doc

Education

- July 2012: "Habilitation à Diriger des Recherches" (French HDR) delivered by University of Grenoble, France.
- Nov. 2000 – Dec. 2003: PhD studies at Dipartimento di Ingegneria dell'Informazione, University of Pisa, Italy. Title: Modeling of electronic and spintronic nanostructures. PhD defense date: April 2004.
- Oct. 2002 – Jul. 2003: Research internship at Institut für Theoretische Festkörperphysik, Universität Karlsruhe, Germany
- Jun. 2000: Master in physics at Dipartimento di Fisica, University of Pisa, Italy

Scientific productions

- **Research Interests**
  - Electronic and transport properties of nanowires and ultimate CMOS transistors
  - Modeling and simulation of steep slope devices
  - Ab-initio simulation of electronic and thermal properties of new materials for nanoelectronics
  - Quantum transport in mesoscopic devices
  - Scanning-gate microscopy
  - Spin-dependent transport in 1D and 2D structures
  - Charge fluctuations in single-electron transistors

- **European projects**
  - 2005-2007: Network of Excellence FP6-EU SINANO – Project partner.
  - 2008-2010: FP6-EU PULLNANO (PULLing the limits of NANOCmos electronics) – Project partner.
  - 2007-2011: Network of Excellence FP7-EU NANOSIL (Silicon based NANOstructures and nanodevices) – Project partner.
  - 2010-2013: FP7-EU NANOFUNCTION (Beyond CMOS Nanodevices for Adding Functionalities to CMOS) – Project partner.
  - 2009-2012: ENIAC MODERN (MOdeling and DEsign of Reliable, process variation aware Nanoelectronic devices, circuits and systems) – Project partner.
  - 2010-2013: FP7-EU SQWIRE (Silicon Quantum WIRE transistors) – Project partner.
  - 2013-2017: FP7-EU COMPOSE3 (Compound Semiconductors for 3D integration) – Project partner.
  - 2015-2017: H2020-ECSEL WAYTOGO FAST (Which Architecture Yields Two Other Generations of Fully depleted Advanced Substrate and Technologies) – Project partner.
  - 2019-2022: IPCEI Nano 2022 (Modeling of SPAD devices) – Project partner.
  - 2024-2027: HORIZON-CL4-2023 AttoSwitch – Project partner.

- **National Projects**
  - 2006-2009: Project Cluster Région Rhône-Alpes (Impact des fluctuations atomistiques sur les composants de la nanoélectronique) – Partner principal investigator.
  - 2008-2010: ANR PNANO2007 QUANTAMONDE (QUANTum and Atomistic MOdeling of NanoDEvices) – Partner principal investigator.
  - 2008-2011: ANR PNANO2007 MICATEC (MICroscopie avancée du Transport Electronique Cohérente) – Partner principal investigator.
  - 2011-2014: ANR P2N2010 QUASANOVA (QUAntum Simulations and Assessment of NanOdeVice Architectures) – Partner principal investigator.
  - 2014-2018: ANR P2N2013 MOSINAS (MOSFET à hétérostructure et film ultra mince d'InAs sur substrat silicium) – Partner principal investigator.
  - 2014-2018: ANR P2N2013 NOODLES (NanOdevice mODeling for Low powEr applicationS) – Principal investigator.
  - 2020-2024: ANR 2020 2D-ON-DEMAND (Van der Waals heterostructures of 2D materials with on-demand band-structure) – Partner principal investigator.
  - 2020-2024: ANR 2020 GeSPAD (Germanium-based single photon avalanche diodes) – Principal investigator.
  - 2021-2025: ANR 2021 Tunne2D (Scalable tunneling diodes based on 2D materials) – Partner Principal investigator.
  - 2021-2025: ANR 2021 Placho (Platform for multiscale simulation of hot carriers: electrons and phonons for energy harvesting) – WP leader.
  - 2021:2025: ANR 2021 MixDFerro (Mixed Dimensional heterostructures under 2D Ferroelectric control) – WP leader

Publications

Papers in peer-reviewed journals

1. P. Grigolini, M.G. Pala, L. Palatella, and R. Roncaglia, "Towards the thermo-dynamics of localization processes", Physical Review E vol. 62, p. 3429 (2000).
2. P. Grigolini, M.G. Pala, and L. Palatella, "Quantum measurement and entropy production", Physics Letters A vol. 285, p. 49 (2001).
3. M.G. Pala and G. Iannaccone, "A three-dimensional solver of the Schrödinger equation in momentum space for the detailed simulation of nanostructures", Nanotechnology vol. 13, p. 369 (2002).
4. M.G. Pala, G. Iannaccone et al., "Extraction of parameters of surface states from experimental test structures", Nanotechnology vol. 13, 373 (2002).
5. M. Bologna, P. Grigolini, M.G. Pala, and L. Palatella, "Decoherence, wave function collapses and non-ordinary statistical mechanics", Chaos, Solitons & Fractals vol. 17, p. 601 (2002).
6. M.G. Pala and G. Iannaccone, "Modeling decoherence effects on the transport properties of mesoscopic devices", J. Comp. Electronics vol. 2, p. 399 (2003).
7. M.G. Pala, M. Governale, J. König, and U. Zülicke, "Universal Rashba spin precession of two-dimensional electrons and holes", Europhysics Letters vol. 65, p. 850 (2004).
8. M.G. Pala, M. Governale, J. König, U. Zülicke, and G. Iannaccone, "Two-dimensional hole precession in an all-semiconductor spin field- effect-transistor", Physical Review B vol. 69, p. 045304 (2004).
9. M.G. Pala and G. Iannaccone, "Statistical model of dephasing in mesoscopic devices introduced in the scattering matrix formalism", Physical Review B vol. 69, p. 235304 (2004).
10. M.G. Pala and G. Iannaccone, "Effect of dephasing on the current statistics of mesoscopic devices", Physical Review Letters vol. 93, p. 25683 (2004).
11. G. Fiori, M.G. Pala, and G. Iannaccone, "Three-dimensional simulation of realistic Single Electron Transistors", IEEE Transactions on Nanotechnology vol. 4, p. 415 (2005).
12. M.G. Pala, M. Governale, U. Zülicke, and G. Iannaccone, "Rashba spin precession in quantum Hall edge channels", Physical Review B vol. 71, p. 115306 (2005).
13. M.G. Pala, G. Iannaccone, and G. Curatola, "Numerical simulation of ballistic magnetoconductance and magnetic focusing in strained Si-SiGe cavities", Nanotechnology vol. 16, p. S206 (2005).
14. M.G. Pala, C. LeRoyer, G. LeCarval, and L. Clavelier, "Modeling of non-equilibrium transport effects in Fully-Depleted GeOI-MOSFETs", J. Comp. Electronics vol. 5, p. 241 (2006).
15. Th. Schäpers, V. A. Guzenko, M.G. Pala, U. Zülicke, M. Governale, J. Knobbe, and H. Hardtdegen, "Suppression of weak antilocalization in GaInAs/InP narrow quantum wires", Physical Review B vol. 74, p. 081301(R) (2006).
16. M.G. Pala, M. Governale, and J. König, "Non-Equilibrium Josephson and Andreev Current through Interacting Quantum Dots", New Journal of Physics vol. 9, p. 278 (2007).
17. F. Martins, B. Hackens, M.G. Pala, et al., "Imaging electron wave functions inside open quantum rings", Physical Review Letters vol. 99, p. 136807 (2007).

18. C. Buran, M.G. Pala, M. Bescond, and M. Mouis, “Full-three-dimensional quantum approach to evaluate the surface-roughness-limited magnetoresistance mobility in SNWT”, J. Comp. Electronics vol. 7, p. 328-331 (2008).
19. M.G. Pala, B. Hackens, F. Martins, H. Sellier, V. Bayot, S. Huant, and T. Ouisse, “Local density of states in mesoscopic samples from scanning gate microscopy”, Physical Review B vol. 77, p. 125310 (2008).
20. M. Governale, M.G. Pala, and J. König, “Real-time diagrammatic approach to transport through interacting quantum dots with normal and superconducting leads”, Physical Review B vol. 77, p. 134513 (2008).
21. S. Poli, M.G. Pala, T. Poiroux, S. Deleonibus, and G. Baccarani, “Size Dependence of Surface-Roughness-Limited Mobility in Silicon-Nanowire FETs”, IEEE-Transactions on Electron Devices vol. 55, p. 2968 (2008).
22. D. Futterer, M. Governale, M.G. Pala, and J. König, “Nonlocal Andreev transport through an interacting quantum dot”, Physical Review B vol. 79, p. 054505 (2009).
23. S. Poli S, M.G. Pala and T. Poiroux, “Full Quantum Treatment of Remote Coulomb Scattering in Silicon Nanowire FETs”, IEEE-Transactions on Electron Devices vol. 56, p. 1191 (2009).
24. M. Bescond, M. Lannoo, F. Michelini, L. Raymond, M.G. Pala, “3D real-space quantum transport simulation of nanowire MOS transistors: Influence of the ionized doping impurity”, Microelectronics Journal, vol. 40, p. 756 (2009).
25. M.G. Pala, S. Baltazar, F. Martins et al., “Scanning gate microscopy of quantum rings: effects of an external magnetic field and of charged defects”, Nanotechnology vol. 20, p. 264021 (2009).
26. K. Rogdakis, S. Poli, E. Bano, K. Zekentes, and M.G. Pala, “Phonon- and surface-roughness-limited mobility of gate-all-around 3C-SiC and Si nanowire FETs”, Nanotechnology vol. 20, 295202 (2009).
27. C. Buran, M.G. Pala, M. Bescond, et al., “Three-Dimensional Real-Space Simulation of Surface Roughness in Silicon Nanowire FETs”, IEEE-Transactionson Electron Devices vol. 56, p. 2186-2192 (2009).
28. E. Buccafurri, R. Clerc, F. Calmon, M. Pala, A. Poncet, G. Ghibaudo, “Performances comparison of Si and GaAs based resonant tunneling diodes”, Physica status solidi (c), vol. 6, p. 1408-1411 (2009).
29. M.G. Pala, C. Buran, S. Poli, and M. Mouis, “Full quantum treatment of surface roughness effects in Silicon nanowire and double gate FETs”, J. Comp. Electronics vol. 8, p. 374 (2009).
30. S. Poli and M.G. Pala, “Channel-Length Dependence of Low-Field Mobility in Silicon-Nanowire FETs”, IEEE Electron Device Letters vol. 30, p. 1212 (2009).
31. B. Hackens, F. Martins, S. Faniel, C. A. Dutu, H. Sellier, S. Huant, M. Pala, L. Desplanque, X. Wallart, V. Bayot, “Imaging Coulomb Islands in a Quantum Hall Interferometer”, Nature Communications vol. 1, p. 39 (2010).
32. D. J. Eldridge, M.G. Pala, M. Governale, J. König,“Superconducting proximity effect in interacting double-dot systems”, Physical Review B vol. 82, p. 184507 (2010).
33. S. Estevez Hernandez, M. Akabori, K. Sladek, Ch. Volk, S. Alagha, H. Hardtdegen M.G. Pala, N. Demarina, D. Grützmacher, Th. Sch¨apers, “Spin-orbit coupling and phase-coherence in InAs nanowires”, Physical Review B vol. 82, p. 235303 (2010).
34. A. Braggio, M.G. Pala, M. Governale, J. König, “Superconducting proximity effect in interacting quantum dots revealed by shot noise”, Solid-State Communications vol. 151, p. 155 (2011).
35. F. Martins, B. Hackens, H. Sellier, P. Liu, M.G. Pala, S. Baltazar, L. Desplanque, X. Wallart, V. Bayot, S. Huant, “Scanning-gate microscopy of semiconductor nanostructures: an overview”, Acta Physica Polonica A vol. 119, p. 569-575 (2011).
36. A. Cresti, M.G. Pala, S. Poli, M. Mouis and G. Ghibaudo, “A comparative study of surface-roughness induced variability in Si nanowire and double-gate FETs”, IEEE-Transactions on Electron Devices vol. 58, p. 2274-2281 (2011).
37. H. Sellier, B. Hackens, M.G. Pala et al., “On the imaging of electron transport in semiconductor quantum structures by scanning-gate microscopy: successes and limitations”, Semicod. Science and technology vol. 26, p. 064008 (2011).
38. M.G. Pala, S. Baltazar, P. Liu, H. Sellier, B. Hackens, F. Martins, V. Bayot, X. Wallart, L. Desplanque, S. Huant, “Transport inefficiency in branched-out mesoscopic networks: An analog of the Braess paradox”, Physical Review Letters vol. 108, p. 076802 (2012).
39. A. Bekaddour, M.G. Pala, N. Chabane-Sari and G. Ghibaudo, “Deterministic method to evaluate the threshold voltage variability induced by discrete trap charges in Si nanowire FETs”, IEEE-Transactions on Electron Devices vol. 59, p. 1462-1467 (2012).
40. F. Conzatti, M.G. Pala, D. Esseni, “Surface Roughness Induced Variability in Nanowire InAs Tunnel-FETs”, IEEE-Electron Device Letters vol. 33, p. 806-808 (2012).
41. F. Conzatti, M.G. Pala, D. Esseni, E. Bano, L. Selmi, “Strain Induced Performance Improvements in InAs Nanowire Tunnel-FETs”, IEEE-Transactions on Electron Devices vol. 59, p. 2085-2092 (2012).
42. M. Pala, H. Sellier, B. Hackens, F. Martins, V. Bayot, S. Huant, “A new transport phenomenon in nanostructures: A mesoscopic analog of the Braess paradox encountered in road networks”, Nanoscale Res. Lett. vol. 7, p. 472 (2012).
43. F. Martins, S. Faniel, B. Rosenow, H. Sellier, S. Huant, M.G. Pala, L. Desplanque, X. Wallart, V. Bayot, and B. Hackens, “Coherence and Coulomb blockade in ultrasmall quantum Hall islands”, New Journal of Physics vol. 15, p. 013049 (2013).
44. F. Martins, S. Faniel, B. Rosenow, H. Sellier, S. Huant, M.G. Pala, et al., “Coherent tunnelling across a quantum point contact in the quantum Hall regime”, Scientific Reports vol. 3, pp. 1-5 (2013).
45. F. Conzatti, M.G. Pala, D. Esseni and E. Bano, “Investigation of localized versus uniform strain as a performance booster in InAs Tunnel-FETs”, Solid-State Electronics Vol. 88, pp. 49–53 (2013).
46. M.G. Pala and D. Esseni, “Interface Traps in InAs Nanowire Tunnel-FETs and MOSFETs—Part I : Model Description and Single Trap Analysis in Tunnel-FETs”, IEEE Trans. Electron Devices, vol. 60, pp. 2795 - 2801 (2013).
47. D. Esseni and M.G. Pala, “Interface Traps in InAs Nanowire Tunnel FETs and MOSFETs—Part II : Comparative Analysis and Trap-Induced Variability”, IEEE Trans. Electron Devices, vol. 60, pp. 2802 - 2807 (2013).

48. S. Brocard, M.G. Pala and D. Esseni, “Large On-Current Enhancement in Hetero-Junction Tunnel-FETs via Molar Fraction Grading”, IEEE-Electron Device Letters, vol. 35, pp. 184-186 (2014).
49. M.G. Pala and S. Brocard, “Exploiting hetero-junctions to improve the performance of III-V nanowire Tunnel-FETs”, IEEE-Journal of Electron Device Society, vol. 3, pp. 115-121 (2015).
50. P. Liu, F. Martins, B. Hackens, L. Desplanque, X. Wallart, M.G. Pala, S. Huant, V. Bayot and H. Sellier, “Formation of quantum dots in the potential fluctuations of InGaAs nanowires controlled by scanning gate microscopy”, Physical Review B, vol. 91, p. 075313 (2015).
51. M.G. Pala and A. Cresti, “Increase of self-heating effects in nanodevices induced by surface roughness: a full-quantum study”, Journal of Applied Physics, vol. 117, p. 084313 (2015).
52. D. Esseni, M.G. Pala and T. Rollo, “Essential Physics of the OFF-State Current in Nanoscale MOSFETs and Tunnel FETs” IEEE Trans. Electron Devices, vol. 62, pp. 3084-3091 (2015).
53. J. Cao, M.G. Pala, A. Cresti and D. Esseni, “Quantum simulation of a heterojunction vertical tunnel FET based on 2D transition metal dichalcogenides”, Solid-state Electronics, vol. 116, pp. 1-7 (2016).
54. J. Cao, D. Logoteta, S. Özkaya, B. Biel, A. Cresti, M. Pala, D. Esseni, “Operation and Design of van der Waals Tunnel Transistors: A 3-D Quantum Transport Study”, IEEE Trans. Electron Devices, vol. 63, pp. 4388-4394 (2016).
55. M.G. Pala, C. Grillet, J. Cao, D. Logoteta, A. Cresti, D. Esseni, “Impact of inelastic phonon scattering in the OFF state of Tunnel-field-effect transistors”, J. Comp. Elec., vol. 15, pp. 1240-1247 (2016).
56. C. Grillet, D. Logoteta, A. Cresti and M. G. Pala, “Assessment of the electrical performance of short channel InAs and strained Si nanowire FETs”, IEEE Trans. Electron Devices, vol. 64, pp. 2425-2431 (2017).
57. D. Esseni, M. Pala, et al., “A Review of Selected Topics in Physics Based Modelling of Small Slope Transistors based on Band-to-Band-Tunnelling”, Semiconductor Science and Technology, vol. 32 (8), p. 083005 (2017).
58. J. Cao, D. Logoteta, M.G. Pala, A. Cresti, “Impact of momentum mismatch on 2D van der Waals tunnel field-effect transistors”, Journal of Physics D: Applied Physics vol. 51 (5), p. 055102 (2017).
59. D. Logoteta, N. Cavassilas, A. Cresti, M.G. Pala, M. Bescond, “Impact of the gate and insulator geometrical model on the static performance and variability of ultra-scaled silicon nanowire FETs”, IEEE Trans. Electron Devices vol. 65 (2), pp. 424-430 (2018).
60. S. Toussaint, F. Martins, S. Faniel, M. Pala, L. Desplanque, X. Wallart, et al., “On the origins of transport inefficiencies in mesoscopic networks”, Scientific reports vol. 8 (1), p. 3017 (2018).
61. M.G. Pala and D. Esseni, “Full-band quantum simulation of electron devices with the pseudopotential method: Theory, implementation, and applications”, Physical Review B vol. 97 (12), p. 125310 (2018).
62. C. Grillet, A. Cresti, M.G. Pala, “Vertical GaSb/AlSb/InAs Heterojunction Tunnel-FETs: A Full Quantum Study”, IEEE-Transactions on Electron Devices vol. 65 (7), pp. 3038-3044 (2018).
63. J. Cao, J. Park, F. Triozon, M. Pala, A. Cresti, “Simulation of 2D material-based tunnel field-effect transistors : planar vs. vertical architectures”, ISTE Open Science vol. 1 (2018). DOI: 10.21494/ISTE.OP.2018.0222.
64. J. Choukroun, M. Pala, S. Fang, E. Kaxiras, P. Dollfus, “High performance tunnel field effect transistors based on in-plane transition metal dichalcogenide heterojunctions”, Nanotechnology vol. 30 (2), p. 025201 (2019).
65. D. Logoteta, M.G. Pala, J. Choukroun, P. Dollfus, G. Iannaccone, “A Steep-Slope MoS2-Nanoribbon MOSFET Based on an Intrinsic Cold-Contact Effect”, IEEE Electron Device Letters vol. 40 (9), pp. 1550-1553 (2019).
66. M. G. Pala, D. Esseni, “Quantum transport models based on NEGF and empirical pseudopotentials for accurate modeling of nanoscale electron devices”, Journal of Applied Physics vol. 126 (5), p. 055703 (2019).
67. M.G. Pala, P. Giannozzi, D. Esseni, “Unit cell restricted Bloch functions basis for first-principle transport models: Theory and application”, Physical Review B vol. 102 (4), p. 045410 (2020).
68. A. M'foukh, M.G. Pala, D. Esseni, “Full-Band Quantum Transport of Heterojunction Electron Devices with Empirical Pseudopotentials”, IEEE Transactions on Electron Devices vol. 67, pp. 5662 – 5668 (2020).
69. D. Logoteta, J. Cao, M. Pala, P. Dollfus, Y. Lee, G. Iannaccone, “Cold-source paradigm for steep-slope transistors based on van der Waals heterojunctions”, Physical Review Research vol. 2 (4), p. 043286 (2021)
70. C. Ernandes, et al., “Indirect to direct band gap crossover in two-dimensional WS2(1-x)Se2x alloys", npj 2D Materials and Applications vol. 5, n. 7 (2021).
71. J. Cao, Y. Wu, H. Zhang, D. Logoteta, S. Zhang, M. Pala, “Dissipative transport and phonon scattering suppression via valley engineering in single-layer antimonene and arsenene field-effect transistors” npj 2D Materials and Applications vol. 5, n. 59 (2021).
72. L. Khalil, et al., “Electronic band gap of van der Waals α-As2Te3 crystals”, Applied Physics Letters vol. 119 (4), p. 043103 (2021).
73. C. Ernandes, et al., “Strain and Spin-Orbit Coupling Engineering in Twisted WS2/Graphene Heterobilayer”, Nanomaterials vol. 11 (11), p. 2921 (2021).
74. T. Cazimajou, M. Pala, J. Saint-Martin, R. Helleboid, J. Grebot, D. Rideau, P. Dollfus, “Quenching Statistics of Silicon Single Photon Avalanche Diodes”, IEEE Journal of the Electron Devices Society vol. 9, pp. 1098-1102 (2021).
75. D. Pierucci, et al.., “Evidence for highly p-type doping and type II band alignment in large scale monolayer WSe2/Se-terminated GaAs heterojunction grown by molecular beam epitaxy”, Nanoscale vol. 14 (15), pp. 5859-5868 (2021).
76. Y. Shao, M. Pala, D. Esseni, J. del Alamo,” Scaling of GaSb/InAs Vertical Nanowire Esaki Diodes Down to Sub-10-nm Diameter”, IEEE Transactions on Electron Devices vol. 69 (4), pp. 2188-2195 (2022).
77. A. M'foukh, J. Saint-Martin, P. Dollfus, M. Pala, “Phonon-assisted transport in van der Waals heterostructure tunnel devices”, Solid-State Electronics vol. 194, p. 108344 (2022).

78. P. Dollfus, J. Saint-Martin, T. Cazimajou, R. Helleboid, A. Pilotto, D. Rideau, M. Pala, “Avalanche breakdown and quenching in Ge SPAD using 3D Monte Carlo simulation”, Solid-State Electronics vol. 194, p. 108361 (2022).
79. D. Lizzit, P. Khakbaz, F. Driussi, M. Pala, D. Esseni, “A study of metal-MoS2 contacts by using an in-house developed ab-initio transport simulator”, Solid-State Electronics vol. 194, p. 108365 (2022).
80. R. Helleboid, D Rideau, J Grebot, I Nicholson, N Moussy, O Saxod, J. Saint-Martin, M. Pala, P. Dollfus, “Modeling of SPAD avalanche breakdown probability and jitter tail with field lines”, Solid-State Electronics vol. 194, p. 108376 (2022).
81. R. Helleboid et al., “Comprehensive Modeling and Characterization of Photon Detection Efficiency and Jitter Tail in Advanced SPAD Devices”, IEEE Journal of the Electron Devices Society vol. 10, pp. 584 - 592 (2022).
82. L. Khalil et al., ‘’α-As_2Te_3 as a platform for the exploration of the electronic band structure of single layer β-tellurene”, Physical Review B vol. 106 (12), p. 125152 (2022).
83. A. Pilotto, P. Dollfus, J. Saint-Martin, M. Pala, “Full Quantum Simulation of Shockley-Read-Hall Recombination in p-i-n and Tunnel Diodes”, Solid-State Electronics vol. 198, p. 108469 (2022).
84. R. Helleboid, et al., “A Fokker–Planck-based Monte Carlo method for electronic transport and avalanche simulation in single-photon avalanche diodes”, J. Phys. D: Appl. Phys. Vol. 55, p. 505102 (2022).
85. L. Khalil et al., “Hybridization and localized flat band in the WSe2/MoSe2 heterobilayer”, Nanotechnology vol. 34 p. 045702 (2022).
86. J. Zribi et al., “Unidirectional Rashba spin splitting in single layer WS2 (1-x) Se2x alloy”, Nanotechnology vol. 34 (7), p. 075705 (2022).
87. V.-T. Tran, T.-T. Vu, P. Dollfus, J. Saint-Martin, M. Pala, “Thermal conductance of twisted-layer graphite nanofibers“, Carbon vol. 204, pp. 601-611 (2023).
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4. M.G. Pala, “Quantum-mechanical modeling of advanced semiconductor devices”, 4-th SINANO summer school, Bertinoro, Italy, 2010.
5. M.G. Pala, “Advanced transport simulations of nanodevices”, 14-th MIGAS summer school, Autrans, France, 2011.
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11. (Plenary) M. Pala, “Ab-initio quantum transport with a basis of unit-cell restricted Bloch functions and the NEGF formalism”, SISPAD 2020, Kobe, Japon, 2020.
12. M. Pala, “Ab-initio quantum transport simulation of 2D-materials-based electron devices”, Kick-off meeting of GDR Low-dimensionnal van der Waals Hetero-structures “Howdi”, Paris, France, March 2021.
13. M. Pala, “Electron transport properties of van der Waals hetero-structures with ab-initio methods”, Nano-TN 2022, Marrakech, Morocco, May 2022
14. M. Pala, “Frontiers in the atomistic simulation of nanoscale electron devices”, EUROSOI-ULIS Conference 2022, Udine, Italy, May 2022.
15. M. Pala, “Quantum transport with plane-wave ab-initio Hamiltonians”, CECAM Workshop on “Quantum Transport: From Nanoscopic to Microscopic Modelling”, Zurich, Switzerland, July 2022.
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Valorization

Development of several scientific codes for the numerical simulation of electronic transport in nanodevices capable of running in parallel on a cluster of CPUs, as well as on GPU architectures.