

# Mario Carpentieri

## List of Publications by Year in descending order

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105  
papers

3,025  
citations

147801

31  
h-index

182427

51  
g-index

112  
all docs

112  
docs citations

112  
times ranked

2364  
citing authors

| #  | ARTICLE   | IF   | CITATIONS |
|----|---|------|-----------|
| 1  | Magnetic skyrmions: from fundamental to applications. Journal Physics D: Applied Physics, 2016, 49, 423001.   | 2.8  | 318       |
| 2  | Giant spin-torque diode sensitivity in the absence of bias magnetic field. Nature Communications, 2016, 7, 11259.   | 12.8 | 123       |
| 3  | Micromagnetic simulations using Graphics Processing Units. Journal Physics D: Applied Physics, 2012, 45, 323001.  | 2.8  | 117       |
| 4  | Field-free spin-orbit torque-induced switching of perpendicular magnetization in a ferrimagnetic layer with a vertical composition gradient. Nature Communications, 2021, 12, 4555.                         | 12.8 | 105       |
| 5  | Skyrmion based microwave detectors and harvesting. Applied Physics Letters, 2015, 107, .  | 3.3  | 86        |
| 6  | Performance of synthetic antiferromagnetic racetrack memory: domain wall versus skyrmion. Journal Physics D: Applied Physics, 2017, 50, 325302.   | 2.8  | 86        |
| 7  | Thermal generation, manipulation and thermoelectric detection of skyrmions. Nature Electronics, 2020, 3, 672-679.   | 26.0 | 86        |
| 8  | Switching of a single ferromagnetic layer driven by spin Hall effect. Applied Physics Letters, 2013, 102, .   | 3.3  | 77        |
| 9  | Origin of temperature and field dependence of magnetic skyrmion size in ultrathin nanodots. Physical Review B, 2018, 97, .  | 3.2  | 77        |
| 10 | A framework for the damage evaluation of acoustic emission signals through Hilbert-Huang transform. Mechanical Systems and Signal Processing, 2016, 75, 109-122.  | 8.0  | 75        |
| 11 | Anatomy of Skyrmionic Textures in Magnetic Multilayers. Advanced Materials, 2019, 31, e1807683.   | 21.0 | 75        |
| 12 | Magnetic Radial Vortex Stabilization and Efficient Manipulation Driven by the Dzyaloshinskii-Moriya Interaction and Spin-Transfer Torque. Physical Review Letters, 2016, 117, 087204.                       | 7.8  | 71        |
| 13 | Semi-implicit integration scheme for Landau-Lifshitz-Gilbert-Slonczewski equation. Journal of Applied Physics, 2012, 111, .   | 2.5  | 63        |
| 14 | Massively parallel probabilistic computing with sparse Ising machines. Nature Electronics, 2022, 5, 460-468.  | 26.0 | 59        |
| 15 | A numerical solution of the magnetization reversal modeling in a permalloy thin film using fifth order Runge-Kutta method with adaptive step size control. Physica B: Condensed Matter, 2008, 403, 464-468. | 2.7  | 58        |
| 16 | Spin-Hall nano-oscillator: A micromagnetic study. Applied Physics Letters, 2014, 105, .   | 3.3  | 55        |
| 17 | Micromagnetic computations of spin polarized current-driven magnetization processes. Journal of Magnetism and Magnetic Materials, 2005, 286, 381-385.   | 2.3  | 52        |
| 18 | Experimental Demonstration of Spintronic Broadband Microwave Detectors and Their Capability for Powering Nanodevices. Physical Review Applied, 2019, 11, .  | 3.8  | 49        |

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|----|--|-----|-----------|
| 19 | Micromagnetic modeling of terahertz oscillations in an antiferromagnetic material driven by the spin Hall effect. <i>Physical Review B</i> , 2019, 99, .   | 3.2 | 49        |
| 20 | Effect of the classical ampere field in micromagnetic computations of spin polarized current-driven magnetization processes. <i>Journal of Applied Physics</i> , 2005, 97, 10C713.   | 2.5 | 44        |
| 21 | Topological, non-topological and instanton droplets driven by spin-transfer torque in materials with perpendicular magnetic anisotropy and Dzyaloshinskii-Moriya Interaction. <i>Scientific Reports</i> , 2015, 5, 16184.                  | 3.3 | 43        |
| 22 | Ultrahigh detection sensitivity exceeding 105 V/W in spin-torque diode. <i>Applied Physics Letters</i> , 2018, 113, .  | 3.3 | 43        |
| 23 | A Variation-Aware Timing Modeling Approach for Write Operation in Hybrid CMOS/STT-MTJ Circuits. <i>IEEE Transactions on Circuits and Systems I: Regular Papers</i> , 2018, 65, 1086-1095.  | 5.4 | 41        |
| 24 | A Compact Model with Spin-Polarization Asymmetry for Nanoscaled Perpendicular MTJs. <i>IEEE Transactions on Electron Devices</i> , 2017, 64, 4346-4353.  | 3.0 | 40        |
| 25 | Chiral skyrmions in an anisotropy gradient. <i>Physical Review B</i> , 2018, 98, .   | 3.2 | 39        |
| 26 | Spin-Hall nano-oscillator with oblique magnetization and Dzyaloshinskii-Moriya interaction as generator of skyrmions and nonreciprocal spin-waves. <i>Scientific Reports</i> , 2016, 6, 36020.   | 3.3 | 38        |
| 27 | High frequency spin-torque-oscillators with reduced perpendicular torque effect based on asymmetric vortex polarizer. <i>Journal of Applied Physics</i> , 2011, 110, .   | 2.5 | 37        |
| 28 | Spin-orbit torque based physical unclonable function. <i>Journal of Applied Physics</i> , 2020, 128, .   | 2.5 | 35        |
| 29 | Electrical detection of single magnetic skyrmion at room temperature. <i>AIP Advances</i> , 2017, 7, .   | 1.3 | 34        |
| 30 | Dynamics of domain-wall motion driven by spin-orbit torque in antiferromagnets. <i>Physical Review B</i> , 2020, 101, .  | 3.2 | 33        |
| 31 | Coupling of spin-transfer torque to microwave magnetic field: A micromagnetic modal analysis. <i>Journal of Applied Physics</i> , 2007, 101, 053914.   | 2.5 | 31        |
| 32 | Electrically tunable detector of THz-frequency signals based on an antiferromagnet. <i>Applied Physics Letters</i> , 2020, 117, .  | 3.3 | 31        |
| 33 | Variability-Aware Analysis of Hybrid MTJ/CMOS Circuits by a Micromagnetic-Based Simulation Framework. <i>IEEE Nanotechnology Magazine</i> , 2017, 16, 160-168.   | 2.0 | 28        |
| 34 | Observation of Magnetic Radial Vortex Nucleation in a Multilayer Stack with Tunable Anisotropy. <i>Scientific Reports</i> , 2018, 8, 7180.   | 3.3 | 28        |
| 35 | Trends in spin-transfer-driven magnetization dynamics of CoFe <sub>2</sub> O <sub>4</sub> /AlO <sub>x</sub> /Py and CoFe <sub>2</sub> O <sub>4</sub> /MgO/Py magnetic tunnel junctions. <i>Applied Physics Letters</i> , 2006, 89, 262509. | 3.3 | 27        |
| 36 | About identification of Scalar Preisach functions of soft magnetic materials. <i>IEEE Transactions on Magnetics</i> , 2006, 42, 923-926.   | 2.1 | 26        |

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|----|---|-----|-----------|
| 37 | Magnetization dynamics driven by spin-polarized current in nanomagnets. <i>Journal of Magnetism and Magnetic Materials</i> , 2007, 316, 488-491.  | 2.3 | 26        |
| 38 | Galois sequences in the non-destructive evaluation of metallic materials. <i>Measurement Science and Technology</i> , 2006, 17, 2973-2979.  | 2.6 | 25        |
| 39 | Compact Modeling of Perpendicular STT-MTJs With Double Reference Layers. <i>IEEE Nanotechnology Magazine</i> , 2019, 18, 1063-1070.   | 2.0 | 25        |
| 40 | Rate of entropy model for irreversible processes in living systems. <i>Scientific Reports</i> , 2017, 7, 9134.  | 3.3 | 24        |
| 41 | Perspectives on spintronic diodes. <i>Applied Physics Letters</i> , 2021, 118, .  | 3.3 | 24        |
| 42 | Excitation of Spin Waves in an In-Plane-Magnetized Ferromagnetic Nanowire Using Voltage-Controlled Magnetic Anisotropy. <i>Physical Review Applied</i> , 2017, 7, .                           | 3.8 | 23        |
| 43 | State-independent hypothesis to model the behavior of magnetic materials. <i>Journal of Magnetism and Magnetic Materials</i> , 2004, 280, 158-163.  | 2.3 | 22        |
| 44 | Influence of the Dzyaloshinskii-Moriya interaction on the spin-torque diode effect. <i>Journal of Applied Physics</i> , 2014, 115, 17C730.  | 2.5 | 22        |
| 45 | Assessment of STT-MRAMs based on double-barrier MTJs for cache applications by means of a device-to-system level simulation framework. <i>The Integration VLSI Journal</i> , 2020, 71, 56-69. | 2.1 | 22        |
| 46 | Spin-polarized current-driven switching in permalloy nanostructures. <i>Journal of Applied Physics</i> , 2005, 97, 10E302.  | 2.5 | 21        |
| 47 | Non-Adlerian phase slip and nonstationary synchronization of spin-torque oscillators to a microwave source. <i>Physical Review B</i> , 2012, 86, .  | 3.2 | 21        |
| 48 | Amplification and stabilization of large-amplitude propagating spin waves by parametric pumping. <i>Applied Physics Letters</i> , 2018, 112, .  | 3.3 | 21        |
| 49 | Modeling of hysteresis in magnetic multidomains. <i>Physica B: Condensed Matter</i> , 2014, 435, 62-65.   | 2.7 | 19        |
| 50 | Intrinsic synchronization of an array of spin-torque oscillators driven by the spin-Hall effect. <i>Journal of Applied Physics</i> , 2015, 117, 17E504.                                       | 2.5 | 19        |
| 51 | Dynamical properties of three terminal magnetic tunnel junctions: Spintronics meets spin-orbitronics. <i>Applied Physics Letters</i> , 2013, 103, .   | 3.3 | 18        |
| 52 | Scalable synchronization of spin-Hall oscillators in out-of-plane field. <i>Applied Physics Letters</i> , 2016, 109, .  | 3.3 | 18        |
| 53 | Description of Statistical Switching in Perpendicular STT-MRAM Within an Analytical and Numerical Micromagnetic Framework. <i>IEEE Transactions on Magnetics</i> , 2018, 54, 1-10.            | 2.1 | 18        |
| 54 | Noise-Like Sequences to Resonant Excite the Writing of a Universal Memory Based on Spin-Transfer-Torque MRAM. <i>IEEE Transactions on Magnetics</i> , 2012, 48, 2407-2414.                    | 2.1 | 17        |

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|----|--|-----|-----------|
| 55 | Fourier, Wavelet, and Hilbert-Huang Transforms for Studying Electrical Users in the Time and Frequency Domain. <i>Energies</i> , 2017, 10, 188.  | 3.1 | 17        |
| 56 | Configurational entropy of magnetic skyrmions as an ideal gas. <i>Physical Review B</i> , 2019, 99, .  | 3.2 | 17        |
| 57 | Analytical solution of Everett integral using Lorentzian Preisach function approximation. <i>Journal of Magnetism and Magnetic Materials</i> , 2006, 300, 451-470.   | 2.3 | 16        |
| 58 | Micromagnetic understanding of the skyrmion Hall angle current dependence in perpendicularly magnetized ferromagnets. <i>Physical Review B</i> , 2018, 98, .   | 3.2 | 16        |
| 59 | Simulation Analysis of DMTJ-Based STT-MRAM Operating at Cryogenic Temperatures. <i>IEEE Transactions on Magnetics</i> , 2021, 57, 1-6.   | 2.1 | 16        |
| 60 | Analytical and numerical solution to the nonlinear cubic Duffing equation: An application to electrical signal analysis of distribution lines. <i>Applied Mathematical Modelling</i> , 2016, 40, 9152-9164.          | 4.2 | 14        |
| 61 | Micromagnetic Analysis of Statistical Switching in Perpendicular Magnetic Tunnel Junctions With Double Reference Layers. <i>IEEE Magnetics Letters</i> , 2018, 9, 1-5.   | 1.1 | 14        |
| 62 | Spintronics-compatible Approach to Solving Maximum-Satisfiability Problems with Probabilistic Computing, Invertible Logic, and Parallel Tempering. <i>Physical Review Applied</i> , 2022, 17, .                      | 3.8 | 14        |
| 63 | Automatic Crack Classification by Exploiting Statistical Event Descriptors for Deep Learning. <i>Applied Sciences (Switzerland)</i> , 2021, 11, 12059.   | 2.5 | 13        |
| 64 | Spin-torque switching in Py/Cu/Py and Py/Cu/CoPt spin-valve nanopillars. <i>Journal of Magnetism and Magnetic Materials</i> , 2007, 316, 492-495.  | 2.3 | 12        |
| 65 | Micromagnetic Modeling of Magnetization Reversal in Nano-Scale Point Contact Devices. <i>IEEE Transactions on Magnetics</i> , 2007, 43, 2938-2940.   | 2.1 | 12        |
| 66 | Dual-band microwave detector based on magnetic tunnel junctions. <i>Applied Physics Letters</i> , 2020, 117, .   | 3.3 | 11        |
| 67 | A fuzzy model of scalar hysteresis on soft magnetic materials. <i>Physica B: Condensed Matter</i> , 2004, 343, 132-136.  | 2.7 | 10        |
| 68 | Spin-Torque Oscillators Using Perpendicular Anisotropy in CoFeB/MgO Magnetic Tunnel Junctions. <i>IEEE Transactions on Magnetics</i> , 2013, 49, 3151-3154.  | 2.1 | 10        |
| 69 | Vector Hysteresis Model at Micromagnetic Scale. <i>IEEE Transactions on Magnetics</i> , 2006, 42, 3138-3140.   | 2.1 | 9         |
| 70 | Indices to Study the Electrical Power Signals in Active and Passive Distribution Lines: A Combined Analysis with Empirical Mode Decomposition. <i>Energies</i> , 2016, 9, 211.                                       | 3.1 | 9         |
| 71 | Computing with Injection-Locked Spintronic Diodes. <i>Physical Review Applied</i> , 2022, 17, .  | 3.8 | 9         |
| 72 | Influence of the magnetostatic coupling in magnetization switching driven by spin-polarized current. <i>Materials Science and Engineering B: Solid-State Materials for Advanced Technology</i> , 2006, 126, 190-193. | 3.5 | 8         |

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|----|--|-----|-----------|
| 73 | Injection locking at zero field in two free layer spin-valves. Applied Physics Letters, 2013, 102, .   | 3.3 | 8         |
| 74 | Micromagnetic Study of Electrical-Field-Assisted Magnetization Switching in MTJ Devices. IEEE Transactions on Magnetics, 2014, 50, 1-4.  | 2.1 | 8         |
| 75 | Reliability of Neural Networks Based on Spintronic Neurons. IEEE Magnetics Letters, 2021, 12, 1-5.   | 1.1 | 8         |
| 76 | Micromagnetic understanding of switching and self-oscillations in ferrimagnetic materials. Applied Physics Letters, 2021, 118, 052403.   | 3.3 | 8         |
| 77 | Micro-focused Brillouin light scattering study of the magnetization dynamics driven by Spin Hall effect in a transversely magnetized NiFe nanowire. Journal of Applied Physics, 2015, 117, 17D504. | 2.5 | 6         |
| 78 | Phase Coherence Index, HHT and Wavelet Analysis to Extract Features from Active and Passive Distribution Networks. Applied Sciences (Switzerland), 2018, 8, 71.                                    | 2.5 | 6         |
| 79 | Statistics to Detect Low-Intensity Anomalies in PV Systems. Energies, 2018, 11, 30.  | 3.1 | 6         |
| 80 | Exploiting Double-Barrier MTJs for Energy-Efficient Nanoscaled STT-MRAMs. , 2019, , .  |     | 6         |
| 81 | Role of magnetic skyrmions for the solution of the shortest path problem. Journal of Magnetism and Magnetic Materials, 2021, 532, 167977.  | 2.3 | 6         |
| 82 | Domain periodicity in an easy-plane antiferromagnet with Dzyaloshinskii-Moriya interaction. Physical Review B, 2020, 102, .  | 3.2 | 6         |
| 83 | Antiferromagnetic Parametric Resonance Driven by Voltage-Controlled Magnetic Anisotropy. Physical Review Applied, 2022, 17, .  | 3.8 | 6         |
| 84 | Temperature Dependence of Microwave Nano-Oscillator Linewidths Driven by Spin-Polarized Currents: A Micromagnetic Analysis. IEEE Transactions on Magnetics, 2009, 45, 3426-3429.                   | 2.1 | 5         |
| 85 | Spreading sequences for fast switching process in spin-valve nanopillars. Applied Physics Letters, 2011, 98, 122504.   | 3.3 | 5         |
| 86 | Influence of the Second-Order Uniaxial Anisotropy on the Dynamical Properties of Magnetic Tunnel Junctions. IEEE Transactions on Magnetics, 2017, 53, 1-7.   | 2.1 | 5         |
| 87 | Theory of nonreciprocal spin-wave excitations in spin Hall oscillators with Dzyaloshinskii-Moriya interaction. Physical Review B, 2018, 97, .  | 3.2 | 5         |
| 88 | Unified Framework for Micromagnetic Modeling of Ferro-, Ferri-, and Antiferromagnetic Materials at Mesoscopic Scale: Domain Wall Dynamics as a Case Study. IEEE Magnetics Letters, 2020, 11, 1-5.  | 1.1 | 5         |
| 89 | Low-Frequency Nonresonant Rectification in Spin Diodes. Physical Review Applied, 2020, 14, .   | 3.8 | 5         |
| 90 | Computing with Invertible Logic: Combinatorial Optimization with Probabilistic Bits. , 2021, , .   |     | 5         |

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|-----|--|-----|-----------|
| 91  | Micromagnetic Analysis of Statistical Switching in Perpendicular STT-MRAM With Interfacial Dzyaloshinskii-Moriya Interaction. IEEE Transactions on Magnetics, 2017, 53, 1-5. | 2.1 | 4         |
| 92  | Impact of Scaling on Physical Unclonable Function Based on Spin-Orbit Torque. IEEE Magnetics Letters, 2020, 11, 1-5.   | 1.1 | 4         |
| 93  | Field-Free Magnetic Tunnel Junction for Logic Operations Based on Voltage-Controlled Magnetic Anisotropy. IEEE Magnetics Letters, 2021, 12, 1-4.                             | 1.1 | 4         |
| 94  | Super-Lorentzian Preisach function and its applicability to model scalar hysteresis. Physica B: Condensed Matter, 2004, 343, 121-126.  | 2.7 | 3         |
| 95  | Correction of Phase Errors in a Spin-Wave Transmission Line by Nonadiabatic Parametric Pumping. Physical Review Applied, 2019, 11, .   | 3.8 | 3         |
| 96  | Modulation, Injection Locking, and Pulling in an Antiferromagnetic Spin-Orbit Torque Oscillator. IEEE Transactions on Magnetics, 2021, 57, 1-6.                              | 2.1 | 3         |
| 97  | Robustness of using degree of match in performing analog multiplication with spin-torque oscillators. Solid-State Electronics, 2021, 183, 108045.                            | 1.4 | 2         |
| 98  | Vector hysteresis model to describe micromagnetic structures. , 2016, , .  |     | 1         |
| 99  | Applications of Magnetic Materials and Spintronics in Smart Systems. , 2022, , 95-103.   |     | 1         |
| 100 | Spin-torque oscillators based on the excitation of bubble-like solitons. , 2014, , .   |     | 0         |
| 101 | Micromagnetic modelling of synchronized three terminal magnetic tunnel junctions. , 2015, , .  |     | 0         |
| 102 | Skyrmion motion induced by spin-Hall current in constrained geometries. , 2015, , .  |     | 0         |
| 103 | Cylindrical and spiral dynamics driven by spin-transfer torque in perpendicularly magnetized materials with Dzyaloshinskii-Moriya Interaction. , 2017, , .                   |     | 0         |
| 104 | PV penetration in distribution lines of smart grids. , 2017, , .   |     | 0         |
| 105 | Micromagnetic simulations of spin-Hall driven dynamics in an antiferromagnet. , 2018, , .  |     | 0         |