

Giovanni Finocchio is an Associate Professor of Electrical Engineering at the Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Italy. He got his PhD (XVIII cycle) in “Advanced Technologies for Optoelectronics, Photonics and Electromagnetic Modeling”.

Since 2014, adjunct research at the “Istituto Nazionale di Geofisica e Vulcanologia” at the Rome2 section (Viale Vigna Murata). I have also access to the computational facilities of the center for performing micromagnetic simulations.

Since 2018, he is co-director of the “Joint Laboratory UNIME-SINANO of PETAscale computing and SPINtronics – PETASPIN” which is active in the design, simulation, realization and experimental characterization of spintronics devices. The laboratory has been set on 27 October 2017 and was funded by Ministero degli Affari Esteri e della Cooperazione Internazionale (MAECI) with the project "Nanoscale broadband spin-transfer-torque microwave detector" within the call "Executive programme of scientific and technological cooperation between Italy and China 2016-2018". We have developed high performance spintronic oscillators and detectors. Currently, we are working in the development of spintronic hardware for computing applications in particular probabilistic computing. Part of the activities of DISCO will be implemented in the PETASPIN laboratory.

He was also visiting scholar at the Department of Electrical and Computer Engineering of Northwestern University (NU) (<https://www.northwestern.edu/>), Evanston, IL (USA) from February to July 2019 and from May to August 2022.

Bibliometric indicator

Web of Science: h-index 36 and > 4565 citations; Scopus: h-index 36 and > 4795 citations; Google scholar: h-index 42 and > 6391 citations - update 09/03/2022.

I'm co-authors of more than 180 papers published in well-established international journals (IEEE, Nature group, APS, IOP, AIP, Wiley) including 4 Nature Communications, 4 Nature Electronics and 1 Advanced Materials. A full list of publication can be found at https://scholar.google.co.uk/citations?hl=en&user=eKDbn-oAAAAJ&view_op=list_works&sortby=pubdate.

Technological transfer

GF was co-inventors of 5 patents and co-founder of two spin-off companies.

Responsible for the SpintronicFactory (<http://www.spintronicfactory.eu/>) at the University of Messina and coordinator leader of the Transverse Theme 2: Design and Modelling.

Dissemination activities

GF has more than 10 years' experience in dissemination activities. He has organized as chair, co-chair or member of the scientific committee more than 8 well established conferences (magnonics, hysteresis modeling and micromagnetics (HMM)) and I was co-organizer of more than 10 workshops in Messina.

He is also the president of the Petaspin association (www.petaspin.com) which main missions are to support scientific research in many fields of engineering and applied physics, particularly in the field of magnetism, and to disseminate scientific results through conferences and meetings, also organized in collaboration with other institutions and associations. Actually, Petaspin lead the organization of Trends in Magnetism conference series and has more than 12000 contacts of people working in magnetism and related field and has organized several events and virtual activities (<https://www.petaspin.com/workshops-and-seminars-2022-home/>).

Research activities

Currently, he has more the 15 active international collaborations (Active in the sense that I have already published with them in the last three years (2018/2020) and we have ongoing projects and/or joint papers/papents submitted for evaluation) on different topics in the field of applied magnetism, spintronics and computing. I'm regularly invited at international conferences in magnetism, I gave more than 80 invited talks at conferences, universities and industries. GF is referee for more than 40 journals including (Nature Nanotechnology, Nature Electronics, Nature Communication, Phys. Rev. Lett., and IEEE).

Since 2002, his main research interest is applied magnetism. He has developed different tools for modeling magnetic materials at macroscopic and microscopic scale. The main skills, which are relevant to the project, are:

(i) Hardware acceleration for computing (including GPU-based programming).

- (ii) Spintronics.
- (iii) Non-linear dynamics.
- (iv) Probabilistic computing.

Funding

Principal Investigator at University of Messina for the project “Low Power Spintronics Wireless Autonomous Node (SWAN) Integrated Circuits Developed Via Spintronics Technology Accelerator Platform” SWAN-on-chip code 101070287 funded by the European Union within the call HORIZON-CL4-2021-DIGITAL-EMERGING-01.

Principal Investigator (National Coordinator and Unit coordinator at University of Messina) for the project “The Italian factory of micromagnetic modeling and spintronics” PRIN 2020LWPKH7 funded by MIUR (Ministero dell’Università e della Ricerca) within the PRIN 2020 call.

Principal Investigator at University of Messina for the project “Pipeline for Advanced Contrast Enhancement for Enhancement effectiveness of chest X-ray for monitoring COVID-19 patients” funded by MIUR (Ministero dell’Università e della Ricerca) within the call FIRS-covid (Duration May-November 2021).

Principal Investigator at University of Messina for the project "High sensitivity rad hard spintronics diode (DIOSPIN)" funded by the Italian Space Agency (ASI) within the call “NUOVE IDEE PER LA COMPONENTISTICA SPAZIALE DEL FUTURO”.

Italian Manager of the *COST Action* (CA17123) (http://www.cost.eu/COST_Actions/ca/CA17123) - Ultrafast Opto-Magneto-Electronics for nondissipative information technology. Funded by the European Union. <https://www.cost.eu/actions/CA17123/#tabs|Name:management-committee>.

Principal Investigator of the project (code CN16GR09) "Nanoscale broadband spin-transfer-torque microwave detector" funded by the Ministero degli Affari Esteri e della Cooperazione Internazionale (MAECI). Executive programme of scientific and technological cooperation between Italy and China for the years 2016-2018. Partner SINANO, Prof. Zhongming Zeng.

Principal Investigator at University of Messina for the project PRIN (*PRIN2010ECA8P3*) "Manipulation of magnetization dynamics in nanostructures for spintronic applications".

Advisor for the project "Theoretical Understanding of static and dynamic properties of Skyrmions: towards a skyrmion based technology (ThunderSKY)". Funded by the Hellenic Foundation for Research and Innovation and the General Secretariat for Research and Technology, under the HFRI's 1st Call with grant agreement No 871 (<http://thundersky.iacm.forth.gr/Home.html>).

International Expert for the projects *MAT2011-28532-C03-01* and *MAT2008-04706/NAN* funded by Ministerio de Educación y Ciencia (Spain).

Achievement of awards and other recognitions

GF is a senior member of the IEEE Magnetics Society.

Since 2019, chair of the Italy Chapter of the IEEE Magnetics Society. In 2020 the chapter was awarded as “Best Chapter” from IEEE Italy section.

Elected member of the Administrative Committee of the IEEE Magnetics Society for the years 2020-2022.

Since January 2021, chair the Technical Committee n°16 on Quantum Neuromorphic and Unconventional Computing sponsored by the IEEE Nanotechnology Council (<https://ieeenano.org/quantum-neuromorphic-unconventional-computing-tc>).

Since 2013, steering committee member of the HMM conferences (Hysteresis Modeling and Micromagnetics), GF was chair of the committee from 2015 to 2019.

American Physical Society (APS) Outstanding Referee 2020.

Paper selected for a "News and Views" from the "Nature Electronics" editors.
[<https://www.nature.com/articles/s41928-020-0373-4>]

Associate Editor of Physical Review Applied (APS).

Editorial board member of the IEEE Magnetics Letters (IML).

Editorial board member of Scientific Reports.

Referee for the several funding agencies:

1. Chilean National Science and Technology Commission - Chile
2. National Research Council - Romania.
3. "City University of Hong Kong" - Hong Kong
4. Research Foundation - Flanders (Fonds Wetenschappelijk Onderzoek - Vlaanderen, FWO) - Belgium.
5. Deutsche Forschungsgemeinschaft (DFG) - Germany
6. Swiss National Science Foundation (SNSF) - Switzerland
7. Nottingham Research Fellowship program at University of Nottingham - UK
8. Czech Science Foundation - Czech Republic
9. French National Research Agency - France
10. European Union (ERC program)