

Elisa Molinari - Curriculum Vitae

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CV & POSITIONS

2001- now Full Professor of Condensed Matter Physics, University of Modena and Reggio Emilia (Department of Physics, Informatics and Mathematics; previously Department of Physics)
2010 - now Research associate, CNR (Consiglio Nazionale delle Ricerche - Istituto Nanoscienze), Modena
2007- 2009 Director of INFM-CNR (Istituto Nazionale per la Fisica della Materia del CNR), comprising 21 Research Centers in Italy
2001- 2007 Research associate, INFM (Istituto Nazionale per la Fisica della Materia)
1992 - 2001 Associate Professor, University of Modena
1985 -1992 Research staff member, Istituto “Corbino” of CNR, Roma
1983 -1985 Post-doctoral scientist, Max-Planck-Institut für Festkörperforschung, in Stuttgart and Grenoble
1981-1983 Post-lauream fellow (supported by an industry) at the University of Modena
1981 Laurea *cum laude* in Physics, University of Modena

SELECTED SCIENTIFIC AND PROFESSIONAL ACTIVITIES

2015- now Director, MaX European Center of Excellence in Materials Modelling, Simulation and Design (www.max-centre.eu, coordinated by CNR-NANO and supported by through 3 EU / EuroHPC JU projects 2015-18, 2018-22, 2023-26)
2014-now European Synchrotron Radiation Facility - ESRF, Grenoble: Council Member, Head of Italian Delegation;
2023-now CNR – Dipartimento Scienze Fisiche e Tecnologie della Materia (DSFTM): Consiglio Scientifico (2023-oggi)
2023-now Institut Català de Nanociència i Nanotecnologia, Barcelona: International Advisory Board
2024-now Swedish e-Science Research Center – SeRC: International Advisory Group
2024-now IIT – Istituto Italiano di Tecnologia – Comitato Tecnico Scientifico
2015-now Associazione Big Data – Board of directors
2015-2023 Fritz-Haber-Institute of the Max-Planck Gesellschaft, Berlin: Scientific Board
2016-2023 Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg: Scientific Board
2018-now JARA Center for Simulation & Data Science, Jülich-Aachen Research Alliance: Advisory Board
2019-2021 EuroHPC Joint Undertaking - RIAG Research and Innovation Advisory Board
2019-2023 HPC3 – High Performance Computing Centres of Excellence Council: vice-president
2018-2022 EU High Level Group on Materials
2012-2018 Università di Trento - Consiglio di amministrazione
2020-now Università di Modena e Reggio Emilia - Consiglio di amministrazione
2010-2016 Helmholtz Program on Nano & Microsystems, Karlsruhe Institute of Technology: Advisory Board
2014-2020 EU Program Committee “Nanotechnologies, Advanced materials, Biotechnology, Advanced manufacturing and processing” (NMBP) within Horizon2020: Expert Member, Italian Delegation
2007-2014 EU Program Committee “Cooperation: Nano-, Materials, Production Systems” (NMP) within the 7th Framework Program: Member and Head of Italian Delegation
2010-2015 CINECA & Italian Supercomputing Resource Allocation - ISCRA: Member of the Scientific Board
2014-2017 Scientific Reports, Nature Publishing Group: Member of the Editorial Board
2011-2014 Emilia-Romagna Region High Technology Network: Chair of the Steering Board

2009-2011	EU European Research Council (ERC): Member AdG Evaluation Panels
2007-2014	OECD Working Party on Nanotechnology, Member
2003-2012	Science Festival, Genova: Member of the Scientific Board
2007-2010	Director, INFM – CNR
2003-2012	Festival della Scienza di Genova, Scientific Board
2002-2007	Director; S3 Research Center of INFM “nanoStructures and bioSystems at Surfaces”, Modena
2006-2007	EU Advisory Group on “Nanosciences, Nanotechnologies, Materials and New Production Materials” within the 7th Framework Program
2002-2003	IUPAP - International Union of Pure and Applied Physics: Associate Secretary General; and member of the IUPAP Working Group on Women in Physics
1999-2002	IUPAP: Scientific Secretary, Semiconductor Commission
1994-1999	Università di Modena e Reggio Emilia - Senato Accademico
1990-2008	Solid State Communications, Elsevier: Editorial Board.

Fellow of the American Physical Society, Member of the Italian and European Physical Societies.

RESEARCH

Her main research interests are in theoretical and computational condensed matter science. She has been particularly active in the theory of fundamental properties of low-dimensional structures –especially few-electron and electron-phonon interactions, excitations and dynamics—, in the simulation of advanced nano-bio systems and devices, and in the advancement of related computational methods. She has a continuing interest also in scientific imaging and communication. Coordinator of several European and international projects in these fields.

Invited speaker in >200 Internatl. Conferences and Workshops. Among these e.g. the Annual Meeting of the American Chemical Society, the Internat. Conference on the Physics of Semiconductors, the March Meeting of the Condensed Matter Division of the American Physical Society, the Annual Meeting of the Condensed Matter Division of the European Physical Society, the March Meeting of the Condensed Matter Division of the German Physical Society, the Spring Meeting of the Materials Research Society, the European Conference on Surface Science. Chair of numerous international workshops/conferences/schools, and member of Program/Advisory Committees of the main conferences in her research field.

Over 280 papers in leading international journals. Over 11500 citations (*h*-index 57, Scopus, June 2024). For full publication list see ORCID ID 0000-0002-0692-6096; Web of Science ResearcherID: Q-9199-2019.

A FEW SELECTED PUBLICATIONS

- Sun et al, Evidence for equilibrium exciton condensation in monolayer WTe₂, Nature Physics 18, 94 (2022).
- Ataei et al, Evidence of ideal excitonic insulator in bulk MoS₂ under pressure, Proc Natl Acad Sci USA, 118, e2010110118 (2021).
- Varsano et al., "A monolayer transition-metal dichalcogenide as a topological excitonic insulator", Nature Nanotechnology 15, 367 (2020).
- D'Amico et al., "Intrinsic edge excitons in two-dimensional MoS₂", Phys. Rev. B 101, 161410 (2020).
- Zanfrognini et al, Distinguishing Different Stackings in Layered Materials via Luminescence Spectroscopy, Physical Review Letters 131, 206902 (2023).
- Betti et al, Dielectric response and excitations of hydrogenated free-standing graphene, Carbon Trends, , 12, 100274 (2023).
- Bonacci et al, Towards high-throughput many-body perturbation theory: efficient algorithms and automated workflows, npj Computational Materials 9, 74 (2023).
- Atambo et al., "Electronic and optical properties of doped TiO₂ by many-body perturbation theory", Phys. Rev. Materials 3, 045401 (2019).
- Portone et al., "Tailoring optical properties and stimulated emission in nanostructured polythiophene", Scientific Reports 9, 7370 (2019).
- J.O. Island et al, "Interaction-Driven Giant Orbital Magnetic Moments in Carbon Nanotubes", Phys. Rev. Letters 121, 127704 (2018).
- D. Varsano et al., "Carbon nanotubes as excitonic insulators", Nature Comm. 8, 1461 (2017).

- De Sio et al., "Tracking the coherent generation of polaron pairs in conjugated polymers", Nature Comm. 7, 13742 (2016).
- L. Bursi et al. "Quantifying the Plasmonic Character of Optical Excitations in Nanostructures", ACS Photonics 3, 520 (2016).
- G. Soavi, "Exciton-exciton annihilation and biexciton stimulated emission in graphene nanoribbons", Nature Comm.7, 11010 (2016)
- S. Falke et al, "Coherent ultrafast charge transfer in an organic photovoltaic blend", Science 344, 1001 (2014).
- R. Denk et al, "Exciton Dominated Optical Response of Ultra-Narrow Graphene Nanoribbons", Nature Comm 5, 4253 (2014).
- A. Rozzi et al, "Quantum coherence controls the charge separation in a prototypical artificial light-harvesting system", Nature Comm 4, 1602 (2013).
- P. Ruffieux et al, "Electronic Structure of Atomically Precise Graphene Nanoribbons", ACS Nano 6, 6930 (2012).
- S. Kalliakos et al, "A molecular state of correlated electrons in a quantum dot", Nature Physics 4, 467 - 471 (2008).
- Prezzi et al, "Optical properties of graphene nanoribbons: The role of many-body effects", Phys Rev B77, 041404 (2008).
- Ferretti et al, "Mixing of electronic states in pentacene adsorption on copper", Phys Rev Lett 99, 046802 (2007).
- J. Maultzsch et al, "Exciton binding energies in carbon nanotubes from two-photon photoluminescence", Phys Rev B 72, 241402 (2005).
- Ferretti et al, "First-principles theory of correlated transport through nanojunctions", Phys Rev Lett 94, 116802 (2005).

Modena, June 2024