

Curriculum Vitae

Personal data

Francesco Maccherozzi

Born in on

address:

Jobs	2014	Junior beamline Scientist
	November 2009 - 2014	Support Scientist position at Diamond Light Source on i06
	May 2007 to November 2009	Post-doc position on Micro focused X-PEEM beamline of Soleil, under the direction of Dr. Belkhou Rachid. The X-PEEM/LEEM microscope is temporary installed on the Nanospectroscopy beamline at Elettra synchrotron, in Trieste (Italy).
Education	2 April 2007	PhD in Physics at the University of Trieste. Advisor: prof. Giorgio Rossi. Title of the thesis: <i>"Surface and interface magnetic properties of the diluted magnetic semiconductor $Ga_{1-x}Mn_xAs$ studied by synchrotron X-ray spectroscopy and surface science methods"</i> .
	17 July 2002	Degree in physics (laurea), oriented to material science, at the University of Parma, with evaluation 107/110. Title of the thesis: <i>"Experimental procedures for Integer Quantum Hall Effect"</i> . Advisor prof. Carlo Ghezzi. Topic of the thesis: Realization of an automatic system for magneto transport measurements under high magnetic fields (12 Tesla) and low temperature (1.5 K). Samples: high mobility 2-deg heterostructure GaAs/AlGaAs.
	July 1996	Graduation at the Guglielmo Marconi scientific secondary school with evaluation 47/60.

Teaching activities

2006	Teaching activity for "Hercules 2006" students for a practical/tutorial on APE beamline.
2004	Tutor activity at the university of Trieste, physics department.
1998-1999	Teaching activity on basics of operating system and Microsoft Office software at the Melloni technical institute of Parma.

International schools participations

10-15 October 2004	"Magnetism and synchrotron radiation", Mittelwihr (Haut-Rhin), France CNRS
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National school of Material science on “Neutron spectroscopy and synchrotron light from disordered systems, surfaces and interfaces” and “Surface science” , Torino, Villa Gualino, Italy
I.S.I foundation

Informatics skills	Operating systems: Labview environment, data analysys program Matlab, Igor; elements of programming in Python; Simion software for charged particles optics design
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Languages

English: fluent

Italian : mother language

Working skills

1. Basics of electronics
2. Magneto-transport characterization of semiconductors, use of superconducting magnets and cryogenic system
3. Experience with Ultra High Vacuum Systems
4. Standard surface preparation and characterization techniques (surface cleaning procedures, Auger electron spectroscopy, LEED), magneto optical Kerr effect
5. Charged particles optical system fundamentals
6. Experience as local contact with different research group on APE High energy beamline (APPLE II undulator), XPS with Omicron electron analyzer, X-ray Absorption Spectroscopy with variable light polarization (XMCD-XMLD), Mott detector for surface magnetometry, PEEM/LEEM microscopy (LEEM-III-Elmitec microscope)
7. Data acquisition program design with Labview®

Scientific Activity

Dr. Francesco Maccherozzi was graduate at the Physics university of Parma, on July 17th 2002 under the supervision of prof. Carlo Ghezzi. The title of the thesis was “Experimental procedures for integer quantum Hall effect”. His scientific background is on the physics and transport properties of semiconductors and 2-deg electron gas in semiconducting heterostructures. During the graduation thesis he designed and realized a computer controlled acquisition system for an Oxford superconducting magnet for magnetotransport measurements, experiencing in low level electrical measurements and data acquisition.

During 2006 he collaborated with prof. P. Schattschneider (Inst. of Solid State Phys. of Wien) and the TEM group of INFM-CNR TASC laboratory, for the growth and XMCD characterization of thin Fe/GaAs film for the comparison with Chiral-TEM measurements.

On April 2nd 2007 he got the PhD at the university of Trieste discussing a thesis on “Surface and interface magnetic properties of the diluted magnetic semiconductor GaMnAs studied by synchrotron X-ray spectroscopy and surface science methods”, supervised by prof. Giorgio Rossi. During the PhD period he worked at the Advanced Photoemission Experiment (APE) beamline, at the Trieste Synchrotron. He specialized in the use of X-ray absorption spectroscopy (XAS), magnetic dichroism (XMCD) and X-ray photoemission (XPS). He also worked with other spectroscopic and structural surface science techniques, as Low Energy Electron Diffraction (LEED) and Auger Electron Spectroscopy (AES): he is then familiar with ultra high vacuum systems. He focussed on the interfaces of GaMnAs diluted ferromagnetic semiconductor and the Fe/GaMnAs interface. As parallel activity he gave experimental support to groups of international external users on the beamline following many different topics.

On May 2007 he started a post-doc fellowship with the X-PEEM microfocused beamline of Soleil synchrotron, directed by dr. Rachid Belkhou, working on a LEEM/PEEM-V microscope built by Elmitec gmbh. The main topics followed within the group are the study of the domain structure of MnAs/GaAs(100) and the magnetic coupling between Fe/MnAs/GaAs(100), the effect of magnetic frustration on artificial networks of nanomagnets and the domain-wall generation in patterned magnetic tunnel junctions.

From November 2019 to the present time he has worked as a beamline scientist at Diamond Light Source (UK) on the i06. He is leading a project to upgrade the LEEM/PEEM microscope to an aberration corrected version on the beamline. His current scientific interests are on thin film magnetism, imaging and manipulation of domains in multiferroics and antiferromagnet thin films and devices.

List of publications of Francesco Maccherozzi

2006

1. **"Influence of surface treatment on magnetic properties of $Ga_xMn_{1-x}As$ thin films"**, *Physical Review B*, vol. 74, pag. 104421, year 2006, F. Maccherozzi, G. Panaccione, and G. Rossi, M. Hochstrasser, M. Sperl, M. Reinwald, G. Woltersdorf, W. Wegscheider, C. H. Back
2. **"Evidence for in-plane spin-flop orientation at $MnPt/Fe(100)$ interface revealed by X-ray Magnetic Linear Dichroism"**, *Physical review B*, vol. 73, pag. 214444, year 2006, J. Fujii, F. Borgatti, G. Panaccione, M. Hochstrasser, F. Maccherozzi, G. Rossi, G. van der Laan

2007

1. **"Surface treatments and magnetic properties of $GaMnAs$ thin films"**, *Surface Science*, vol. 601, iss. 18, pag. 4283-4287, year 2007, F. Maccherozzi, G. Panaccione, and G. Rossi, M. Hochstrasser, M. Sperl, M. Reinwald, G. Woltersdorf, W. Wegscheider, C. H. Back
2. **"Magnetic properties of epitaxial Fe films on $MnPt/Fe(100)$ "**, *Surface Science*, vol. 601, issue 18, pag. 4288-4291, year 2007, J. Fujii, F. Borgatti, G. Panaccione, M. Hochstrasser, F. Maccherozzi, G. Rossi
3. **"Growth, structural, and magnetic characterizations of nanocrystalline $\gamma'-FeNiN(220)$ thin films"**, *Applied Physics Letters*, vol. 90, pag. 032505, year 2007, P. Prieto, K.R. Pirota, J. M. Sanz, E. Jiménez, J. Camarero, F. Maccherozzi, G. Panaccione
4. **"Temperature dependent magnetism of Fe thin films on $ZnSe(001)$ "**, *Journal of Magnetism and Magnetic Materials*, vol. 316, pag. e545-e548, year 2007, M. Cantoni, R. Bertacco, F. Ciccacci, E. Puppini, E. Pinotti, M. Brenna, M. Marangolo, M. Eddrief, V. Etgens, P. Torelli, F. Maccherozzi, G. Panaccione
5. **"Biaxial Strain in the Hexagonal Plane of $MnAs$ Thin Films: The Key to Stabilize Ferromagnetism to Higher Temperature"**, *Physical Review Letters*, vol. 99, pag. 117205, year 2007, V. Garcia, M. Marangolo, F. Vidal, M. Eddrief, V. H. Etgens, Y. Sidis, P. Bourges, F. Ott, F. Maccherozzi, G. Panaccione
6. **"Photoelectron spectroscopy study of the effect of substrate doping on an $HfO_2/SiO_2/n-Si$ gate stack"**, *Journal of Non-Crystalline Solids*, vol. 353, issues 5-7, pag. 635-638, N. Barret, O. Renault, J. F. Damlencourt, F. Maccherozzi, M. Fabrizioli

2008

1. **"Surface electronic and magnetic properties of $La_{2/3}Sr_{1/3}MnO_3$ thin films with extended metallicity above the Curie temperature"**, *Physical Review B*, vol. 78, pag. 35448, year 2008, R. Bertacco, M. Riva, L. Signorini, M. Cantoni, A. Cattoni, F. Ciccacci, B. A. Davidson, F. Maccherozzi, I. Vobornic, G. Panaccione
2. **" 360° domain wall generation in the soft layer of magnetic tunnel junctions"**, *Applied Physics Letters*, vol. 92, pag. 72501, year 2008, M. Hehn, D. Lacour, F. Montaigne, J. Briones, R. Belkhou, S. El Moussaoui, F. Maccherozzi, N. Rougemaille

3. **"Evidence for a magnetic proximity effect up to room temperature at Fe/(Ga,Mn)As interfaces"**, *Physical Review Letters*, vol. 101, pag. 267201, year 2008, F. Maccherozzi, M. Sperl, G. Panaccione, J. Minar, S. Polesya, H. Ebert, U. Wurstbauer, M. Hochstrasser, G. Rossi, G. Wolterdsdorf, W. Wegscheider, C. H. Back, (Editors' Suggestion)

2009

1. **"Strain-induced nonequilibrium magnetoelastic domain structure and spin reorientation of NiO(100)"**, *Physical Review B*, vol. 80, pag. 184408, year (2009), S. Mandal, Krishnakumar S. R. Menon, F. Maccherozzi, R. Belkhou

2010

1. **"Identifying the character of ferromagnetic Mn in epitaxial Fe/(Ga,Mn)As heterostructure"**, *Physical Review B*, vol 81, pag. 35211, year 2010, M. Sperl, F. Maccherozzi, F. Borgatti, A. Verna, G. Rossi, M. Soda, D. Schuh, G. Bayreuther, W. Wegscheider, J. C. Cezar, F. Yakhov, N. B. Brookes, C. H. Back, G. Panaccione.
2. **"Current-induced motion and pinning of domain walls in spin-valve nanowires studied by XMCD-PEEM"**, *Physical Review B*, vol. 81, pag. 224418, year 2010, V. Uhler, S. Pizzini, N. Rougemaille, J. Novotny, V. Cros, E. Jimenez, G. Faini, L. Heyne, F. Sirotti, C. Tieg, A. Bendounan, F. Maccherozzi, R. Belkhou, J. Grollier, A. Anane, J. Vogel.

2011

1. **"Surface spin orientation of NiO(100) and interfacial coupling of Fe/NiO(100) revisited with soft X-ray spectromicroscopy"**, *Europhysics Letters*, vol 95, pag 27006, year 2011, S. Mandal, K. S. R. Menon, F. Maccherozzi, R. Belkhou
2. **"Microscopic investigation of surface and interfacial magnetic domain structure of Fe-NiO(100) system"**, *Journal of Physics D: Applied Physics*, vol. 44, pag. 255003, year 2011, S. Mandal, K. S. R. Menon, F. Maccherozzi, R. Belkhou
3. **"Artificial kagome arrays of nanomagnets: a frozen dipolar spin ice"**, *Physical review Letters*, vol. 106, pag. 57209, year 2011, N. Rougemaille, F. Montaigne, B. Canals, A. Duluard, D. Lacour, M. Hehn, R. Belkhou, O. Fruchart, S. El Moussaoui, A. Bendounan, F. Maccherozzi
4. **"Exchange-spring-driven spin flop in an ErFe₂/YFe₂ multilayer studied by X-Ray magnetic circular dichroism"**, *Physical Review B*, vol. 84, pag. 104428, year 2011, G. B. G. Stenning, A. R. Buckingham, G. J. Bowden, R. C. C. Ward, G. van der Laan, L. R. Shelford, F. Maccherozzi, S. S. Dhesi, P. A. J. de Groot
5. **"High-precision soft X-Ray polarimeter at Diamond Light Source"**, *Review of Scientific Instruments*, vol. 82, pag. 123301, year 2011, H. Wang, S. S. Dhesi, F. Maccherozzi, S. Cavill, E. Shepherd, F. yuan, R. Deshmukh, S. Scott, G. van der Laan, K. S. Sawhney

2012

1. **"Giant and reversible extrinsic magnetocaloric effects in La_{0.7}Ca_{0.3}MnO₃ films due to strain"**, *Nature Materials*, DOI:10.1038/NMAT3463, X. Moya, L. E. Hueso, F. Maccherozzi, A. I. Tovstolytkin, D. I. Podyalovskii, C. Ducati, L. C. Phillips, M. Ghidini, O. Hovorka, A. Berger, M. E. Vickers, E. Defay, S. S. Dhesi, and N. D. Mathur
2. **"Complete polarization analysis of high energy soft x-rays by combining a multilayer phase retarder with crystal analyzer"**, *Journal of Applied Physics*, H. Wang, S. S. Dhesi, F. Maccherozzi, and K. J. S. Sawhney

3. ***“The increase of the spin-transfer torque threshold current density in coupled vortex domain walls”***, Journal of Physics: Condensed Matter, **24** (2012) 024210, S. Lepadatu, A. P. Mihai, J. S. Claydon, F. Maccherozzi, S. S. Dhesi, S. J. Kinane, S. Langridge, C. H. Marrow
4. ***“Electronic structure of Fe and Co magnetic adatoms on Bi₂Te₃ surfaces”***, Physical Review B **86**, 081304(R) (2012)

2013

1. ***“Low-temperature transverse magnetic domains in nominally uniaxial La_{0.67}Sr_{0.33}MnO₃ films on NdGaO₃(001)”***, Journal of Physics D: Applied Physics, vol. 46, pag. 32002, year 2013, L. C. Phillips, M. Ghidini, X. Moya, F. Maccherozzi, S. S. Dhesi and N. D. Mathur
2. ***“Tuning La_{0.67}Sr_{0.33}MnO₃ surface magnetism using LaMnO₃ and SrTiO₃ caps”***, Journal of Magnetism and Magnetic Materials **355** (2014), 331
3. ***“Complete polarization analysis in the 1KeV to 2KeV energy range using a high-precision polarimeter”***, Journal of Physics: Conference series **425** (2013), 152014, H. Wang, S. Dhesi, P. Bencok, P. Steadman, F. Maccherozzi, K. Sawhney

2014

1. ***“Antiferromagnetic exchange spring as the reason of exchange bias training effect”***, Applied Physics Letters **105**, 032407 (2014), A. N. Dobrynin, F. Maccherozzi, S. S. Dhesi, R. Fan, P. Bencok, P. Stedman
2. ***“Magnetic coupling and single-ion anisotropy in durface-supported Mn-based metal-organic networks”***, The Journal of Physical Chemistry C, 2014, **118**, 11738-11744, L. Giovanelli, A. Savoyant, M. Abel, F. Maccherozzi, Y. Ksari, M. Koudia, R. Hayn, F. Choueikani, E. Otero, P. Ohresser, J. M. Themlin, S. S. Dhesi and S. Clair
3. ***“Characterising ultrathin ceria films at the nanoscale: combining spectroscopy and microscopy”***, Journal of Electron Spectroscopy and Related Phenomena, **195**, (2014) 13-17, D. Grinter, Chi L. Pang, C. A. Muryn, F. Maccherozzi, S. S. Dhesi, G. Thornton
4. ***“Observation of a temperature dependent asymmetry in the domain structure of a Pd-doped FeRh epilayer”***, New Journal of Physics **16** (2014) 113073, C. J. Kinane, M. Loving, M. A. de Vries, R. Fan, T. R. Chrlton, J. S. Claydon, D. A. Arena, F. Maccherozzi, S. S. Dhesi, D. Heiman, C. H. Marrowa, L. H. Lewis and S. Langridge
5. ***“Magnetic skin layer of NiO(100) probed by polarization-dependent spectromicroscopy”***, Applied Physics Letters **104**, 242414 (2014), S. Mandal, R. Belkhou, F. Maccherozzi, K. S. R. Menon

2015

1. ***“Perpendicular local magnetization under voltage control in Ni films on ferroelectric BaTiO₃ substrates”***, Advanced Materials **2015**, 27, 1460-1465, M. Ghidini, F. Maccherozzi, X. Moya, L. C. Phillips, W. Yan, J. Soussi, N. Metallier, M. E. Vickers, N. J. Steinke, R. Mansell, C. H. W. Barnes, S. S. Dhesi, N. D. Mathur
2. ***“Role of B diffusion in the interfacial Dzyaloshinskii-Moriya interaction in Ta/Co₂₀Fe₆₀B₂₀/MgO nanowires”***, Physical Review B **91**, 014433 (2015), R. Lo Conte, E. Martinez, A. Hrabec, A. Lamperti, T. Schultz, L. Nasi, L. Lazzarini, R. Mantovan, F. Maccherozzi, S. S. Dhesi, B. Ocker, C. H. Marrows, T. A. Moore and M. Klau

3. ***The atomic structure of low-index surfaces of the intermetallic compound InPd***, The Journal of Chemical Physics, **143**, 074705 (2015), G. M. McGuirk, J. Ledieu, M. C. de Weerd, M. Hahne, P. Gille, D. C. A. Ivarsson, M. Armbruster, J. Ardini, G. Held, F. Maccherozzi, A. Bayer, M. Lowe, K. Pussi, R. D. Diehl and V. Fournée
4. ***“Control of magnetization-Reversal mechanism via uniaxial anisotropy strength in $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ electrodes for spintronic devices”***, Physical review applied **4**, 064004 (2015), L. C. Phillips, W. yan, X. Moya, M. Ghidini, F. Maccherozzi, S. S. Dhesi and N. D. Mathur
5. ***“Tailoring the photocurrent in BaTiO_3 ./ Nb:SrTiO_3 photoanodes by controlled ferroelectric polarization”***, Applied Physics Letters **107**, 103901 (2015), M. Rioult, S. Datta, D. Stanesco, S. Stanesco, R. Belkhou, F. Maccherozzi, H. Magnan and A. Barbier
6. ***“Local electronic structure and photoelectrochemical activity of partial chemically etched Ti-doped hematite”***, Surface Science **641** (2015) 310-313, M. Rioult, R. Belkhou, H. Magnan, D. Stanesco. S. Stanesco, F. Maccherozzi, C. Rountree, A. Barbier
7. ***“Antiferromagnetic structure in tetragonal CuMnAs thin films”***, Scientific Reports 5:17079 Doi: 10.1038/srep17079, P. Wadley, V. Hills, M. R. Shahedkhah, K. W. Edmonds, R. P. Champion, V. Nock, B. Ouladdiaf, D. Khalyavin, S. Langridge, C. Saidu, P. Nemec, A. W. Rushforth, B. L. Gallagher, S. S. Dhesi, F. Maccherozzi, J. Zelezny and T. Jungwirth
8. ***“Influence of support morphology on the bonding of molecules to nanoparticles”***, PNAS doi: 10.1073/pnas.1506939112, C. M. Yim, C. L. Pang, D. R. Hermoso, C. M. Dover, C. A. Muryn, F. Maccherozzi, S. S. Dhesi, R. Perez and G. Thornton

2016

1. ***“Biomaterial shell formation under ocean acidification: a shift from order to chaos”***, Scientific Reports DOI: 10.1038/srep21076, S. C. Fitzner, P. Chung, F. Maccherozzi, S. S. Dhesi, N. A. Kamenos, V. R. Phoenix and M. Cusack
2. ***“Striped nanoscale phase separation at the metal-insulator transition of heteroepitaxial nickelates”***, Nature Communications, DOI: 10.1038/ncomms13141, G. Mattoni, P. Zubko, F. Maccherozzi, A. J. H. van der Torren, D. B. Boltje, M. Hadjimichael, N. Manca, S. Catalano, M. Gilber, Y. Liu, J. Aarts, J. M. Triscone, S. S. Dhesi and A. D. Caviglia
3. ***“Coherent magnetoelastic domains in multiferroic BiFeO_3 films”***, Physical Review Letters **117**, 177601 (2016), N. W. Price, R. D. Johnson, W. Saenrang, F. Maccherozzi, S. S. Dhesi, A. Bombardi, F. P. Chmiel, C. B. Eom and P. G. Radaelli
4. ***“Electrical switching of an antiferromagnet”***, Science 10.1126/science.aab1031 (2016), P. Wadley, B. Howells, J. Zelezny, C. Andrews, V. Hills, R. P. Champion, V. Novak, K. Olejnik, F. Maccherozzi, S. S. Dhesi, S. Y. Martin, T. Wagner, J. Wunderlich, F. Freimuth, Y. Mokrousov, J. Kunes, J. S. Chauhan, M. J. Grzybowski, A. W. Rushforth, K. W. Edmonds, B. L. Gallagher, T. Jungwirth
5. ***“Long spin diffusion length in few-layer graphene flakes”***, Physical Review Letters **117**, 147201 (2016), W. Yan, L. C. Phillips, M. Barbone, S. J. Hamalainen, A. Lombardo, M. Ghidini, X. Moya, F. Maccherozzi, S. van Dijken, S. S. Dhesi, A. C. Ferrari and N. D. Mathur

2017

1. ***“Effect of lithographically induced strain relaxation on the magnetic domain configuration in microfabricated epitaxially grown $\text{Fe}_{81}\text{Ga}_{19}$ ”***, Scientific Reports DOI: 10.1038/srep42107, R. P.

Beardsley, D. E. Parkes, J. Zemen, S. Bowe, K. W. Edmonds, C. Reardon, F. Maccherozzi, I. Isakov, P. A. Warburton, R. P. Champion, B. L. Gallagher, S. A. Cavill and A. W. Rushforth

2. ***“imaging current-induced switching of antiferromagnetic domains in CuMnAs”***, Physical Review Letters **118**, 057701 (2017), M. J. Grzybowski, P. Wadley, K. W. Edmonds, R. Beardsley, V. Hills, R. P. Champion, B. L. Gallagher, J. S. Chauhan, V. Novak, T. Jungwirth, F. Maccherozzi and S. S. Dhesi
3. ***“Deterministic and robust room-temperature exchange coupling in monodomain multiferroic BiFeO₃ heterostructures”***, Nature Communications, DOI: 10.1038/sr1467-017-01581-6, W. Saenrang, B. A. Davidson, F. Maccherozzi, J. P. Podkaminer, J. Irwin, R. D. Johnson, J. W. Freeland, J. Iniguez, J. L. Schad, K. Reiersen, J. C. Frederick, C. A. F. Vaz, L. Howald, T. H. Kim, S. Ryu, M. V. Veendaal, P. G. Radaelli, S. S. Dhesi, M. S. Rzchowski and C. B. Eom
4. ***“Optical determination of the Neel vector in a CuMnAs thin-film antiferromagnet”***, Nature Photonics, DOI: 10.1038/NPHOTON.2016.255, V. Saidl, P. Nemec, P. Wadley, V. Hills, R. P. Champion, V. Novak, K. W. Edmonds, F. Maccherozzi, S. S. Dhesi, B. L. Gallagher, F. Trojanek, J. Kunes, J. Zelezny, P. Maly and T. Jungwirth
5. ***“Control of antiferromagnetic spin axis orientation in bilayer Fe/CuMnAs films”***, Scientific Reports DOI: 10.1038/s41598-017-11653-8, P. Wadley, K. W. Edmonds, M. R. Shahedkhah, R. P. Champion, B. L. Gallagher, J. Zelezny, J. Kines, V. Novak, T. Jungwirth, V. Saidl, P. Nemec, F. Maccherozzi and S. S. Dhesi

2018

1. ***“Magnetic iron oxide nanowires formed by reactive dewetting”***, Nano Letters 2018 **18** 2365-2372, R. A. Bennet, H. A. Etman, H. Hicks, L. Richards, C. Wu, M. R. Castell, S. S. Dhesi and F. Maccherozzi
2. ***“Quantitative investigation of linear arbitrary polarization in an APPLE-II undulator”***, Journal of Synchrotron Radiation (2018), **25**, 378-384
3. ***“Voltage control of magnetic single domains in Ni discs on ferroelectric BaTiO₃”***, J. Phys. D: Appl. Phys, **51**, (2018) 224007, M. Ghidini, B. Zhu, R. Mansell, R. Pellicelli, A. Lesaine, X. Moya, S. Crossley, B. Nar, F. Maccherozzi, C. H. W. Barnes, R. P. Cowburn, S. S. Dhesi and N. D. Mathur
4. ***“Light control of the nanoscale phase separation in heteroepitaxial nickelates”*** Phys. Rev. Mater. **2**, 1–6 (2018), Mattoni, G. *et al.*
5. ***“Current polarity-dependent manipulation of antiferromagnetic domains”*** Nat. Nanotechnol. **13**, 362–365 (2018), Wadley, P. *et al.*
6. ***“Magnetic skyrmions in confined geometries: Effect of the magnetic field and the disorder”***. J. Magn. Magn. Mater. **455**, 3–8 (2018), Juge, R. *et al.*

2019

1. ***“Imaging of current induced Néel vector switching in antiferromagnetic Mn₂Au”*** Phys. Rev. B **99**, 8–12 (2019), Bodnar, S. Y. *et al.*
2. ***“Shear-strain-mediated magnetoelectric effects revealed by imaging”*** Nat. Mater. **18**, 840–845 (2019), Ghidini, M. *et al.*
3. ***“Current-Driven Skyrmion Dynamics and Drive-Dependent Skyrmion Hall Effect in an Ultrathin Film”*** Phys. Rev. Appl. **12**, 1–9 (2019), Juge, R. *et al.*
4. ***“Early-stage dynamics of metallic droplets embedded in the nanotextured Mott insulating***

- phase of V2 O3**" *Phys. Rev. B* **100**, 1–11 (2019), Ronchi, A. et al.
5. **"Redox behaviour of a ceria–zirconia inverse model catalyst"** *Surf. Sci.* **682**, 8–13 (2019), Allan, M. et al.
 6. **"Mechanism of neél order switching in antiferromagnetic thin films revealed by magnetotransport and direct imaging"** *Phys. Rev. Lett.* **123**, 177201 (2019), Baldrati, L. et al.
 7. **"Tunability of Domain Structure and Magnonic Spectra in Antidot Arrays of Heusler Alloy"** *Phys. Rev. Appl.* **12**, 1 (2019), Mallick, S. et al.

2020

1. **"Photoemission core level binding energies from multiple sized nanoparticles on the same support: TiO2(110)/Au"** *J. Chem. Phys.* **152**, (2020), Mellor, A. et al.
2. **"Spin-orbit torque switching of an antiferromagnetic metallic heterostructure"** *Nat. Commun.* **11**, 1–8 (2020), DuttaGupta, S. et al.
3. **"Large magnetoelectric coupling in multiferroic oxide heterostructures assembled via epitaxial lift-off"** *Nat. Commun.* **11**, 1–8 (2020), Pesquera, D. et al.
4. **"Voltage-driven displacement of magnetic vortex cores"** *J. Phys. D: Appl. Phys.* **53**, 434003 (2020), Ghidini, M. et al.
5. **"Antiferromagnetic half-skyrmions and bimerons at room temperature"** *Nature* **590**, 74–79 (2021), Jani, H. et al.
6. **"Electrical detection of the spin reorientation transition in antiferromagnetic TmFeO₃ thin films by spin Hall magnetoresistance"** *Phys. Rev. B* **103**, 24423 (2020), Becker, S. et al.
7. **"Multidomain Memristive Switching of Pt38Mn62/[Co/Ni] n Multilayers"** *Phys. Rev. Appl.* **14**, 1–10 (2020), Krishnaswamy, G. K. et al.
8. **"Magneto-Seebeck microscopy of domain switching in collinear antiferromagnet CuMnAs"** *Phys. Rev. Mater.* **4**, 1–9 (2020), Janda, T. et al.
9. **"Interplay between morphology and magnetoelectric coupling in Fe / PMN-PT multiferroic heterostructures studied by microscopy techniques"** **114418**, 1–9 (2020), Motti, F. et al.
10. **"Photoemission core level binding energies from multiple sized nanoparticles on the same support: TiO2(110)/Au"**, *J. Chem. Phys.* **152**, (2020), Mellor, A. et al.
11. **"Spin flop and crystalline anisotropic magnetoresistance in CuMnAs"** *Phys. Rev. B* **101**, 1–8 (2020), Wang, M. et al.

2021

1. **"Identification of Néel vector orientation in antiferromagnetic domains switched by currents in NiO/Pt thin films"**, *Phys. Rev. Applied* **15**, 034047, Schmitt, C. et al. C. Schmitt, L. Baldrati, L. Sanchez-Tejerina, F. Schreiber, A. Ross, M. Filianina, S. Ding, F. Fuhrmann, R. Ramos, F. Maccherozzi, D. Backes, M.-A. Mawass, F. Kronast, S. Valencia, E. Saitoh, G. Finocchio, and M. Kläui
2. **"Quenching of an antiferromagnet into high resistivity states using electrical or ultrashort optical pulses"** *Nat. Electron.* **4**, 30–37 (2021), Kašpar, Z. et al.

3. **“Magnetisation configuration in arrays of permalloy rectangles and its impact on magnetisation reversal”**, Mater. Res. Express 8 (2021) 096103, P. J. Newton, N. B. Devlin , S.M.Masur ,M. Ghidini, D. Backes , F. Maccherozzi , A.A.Pacheco-Pumaleque, MAGonzález Esqueche and C.H.W. Barnes

2022

1. **“Atomically sharp domain walls in an antiferromagnet-draft with supporting materials”** Science Advances 8, eabn3535(2022).DOI:[10.1126/sciadv.abn3535](https://doi.org/10.1126/sciadv.abn3535), Krizek, F. et al.
2. **“Nanoscale self-organisation in Mott insulators : a pathway to metastable metallicity”** *Nat. Commun.* (2022), Ronchi, A. et al.
3. **“Magnetisation configuration in arrays of permalloy rectangles and its impact on magnetisation reversal”** Mater. Res. Express 8, 96103 (2021), Newton, P. J. et al
4. **“Defect-driven antiferromagnetic domain walls in CuMnAs films”** *Nat. Commun.* 13, (2022), Reimers, S. et al.
5. **“Ultrafast X-ray imaging of the light-induced phase transition in VO₂”** *Nat. Phys.* (2022) doi:10.1038/s41567-022-01848-w, Johnson, A. S. et al.
6. **“Resolving the Effect of Oxygen Vacancies on Co Nanostructures Using Soft XAS/X-PEEM”** *ACS Catal.* 12, 9125–9134 (2022), Qiu, C. et al.
7. **“N. D. XPEEM and MFM Imaging of Ferroic Materials”** *Adv. Electron. Mater.* 8, (2022), Ghidini, M., Maccherozzi, F., Dhesi, S. S. & Mathur,
8. **“Quantifying the computational capability of a nanomagnetic reservoir computing platform with emergent magnetisation dynamics”** *Nanotechnology* 33, (2022), Vidamour, I. T. et al.
9. **“Magnetic domain engineering in antiferromagnetic CuMnAs and Mn₂Au devices”** (2023), Reimers, S. et al.
10. **“Antiferromagnetic half-skyrmions electrically generated and controlled at room temperature”** *Nat. Nanotechnol.* (2023), Amin, O. J. et al.

List of Conferences

1. April 2006 Participant at the **“2nd ChiralTEM workshop”**, Wien
2. June 2006 Poster session at **“ECOSS 24”**, Paris
Title: **“Effect of surface treatments on GaMnAs ferromagnetic properties”**
3. June 2006 Contributed talk at **“XIV Congresso Società Italiana di Luce di Sincrotrone”**, Naples
Title: **“Evidences of room temperature Mn-Fe antiferromagnetic coupling on Fe/Ga1-xMnxAs: a combined XMCD-XPS study”**
Presentation awarded with the prize **“Massimo Sancrotti”**, for young researchers.
4. January 2007 Poster Session at ESRF satellite workshop on **“X-ray spectroscopy of magnetic solids”**, Grenoble
Title: **“Antiparallel ferromagnetic coupling at the Fe/GaMnAs interface at room temperature”**

5. June 2007 Contributed Talk at “**3rd Chiraltem workshop**”, Trieste
Title: “**Induced magnetic order at room temperature in (GaMn)As**”
6. August 2008 Contributed Talk at “**EPS-CMD22**” conference, Rome
Title: “**Antiparallel magnetic coupling across a ferromagnet-diluted magnetic semiconductor interface: Fe/GaMnAs**”
Deeper insight into the effect is given by a detailed lineshape analysis of XAS/XMCD data acquired at ID08-ESRF beamline. A clear chemical shift of the XMCD peak of the Mn coupled with the Fe, with the XMCD of the ferromagnetic Mn inside the GaMnAs, shows that the different magnetic behavior is due to a different electronic configuration.
7. March, 19th 2009, invited to present my latest publication (*Phys. Rev. Lett.* **101**, 267201 (2008)) at the “advanced functional materials” meeting, of the UK Magnetic Society.
8. May, 31st 2010, invited speaker at the “37th international simposium on compounds semiconductors – ISCS2010”, Takamatsu, Japan
9. November 2012, Contributed talk at “LEEMPEEM-8” workshop, Honk Kong
10. September 2016, Contributed Talk at “LEEMPEEM-10” workshop, Monterey, California
11. September 2022, Oral presentation to “LEEM PEEM 12”, Cordoba, Spain

Francesco Maccherozzi

22/05/2023