CURRICULUM VITAE

PERSONAL INFORMATION

Name	***MUSTARELLI Chiara***
Date of birth	04.FEBRUARY.1969

WORK EXPERIENCE

• Dates (from – to)	**10 October 2017 to today (full time engagement)**
Name and address of employer	National Institute of Optics (CNR) – Largo E. Fermi n. 6, Florence
• Type of business or sector	Research
• Occupation or position held • Main activities and responsibilities	Project management support: follow up the financial implementation of the grants, analysis of financial reports; maintain, manage and document all project reports and statements; prepare and maintain follow-up tables as tools for decision-making of staff and managers; assist and support project team members in completing projects. Drafting and negotiating of cooperation agreements especially in the field of applied Physics
Main appointments:	Member of the PNNR team appointed by the Director General of CNR by providing support to the scientific staff in the participation at PNRR (Recovery and Resilience Plan) and draw up of SWOT models and guidance documents. Member of the "Rete dei referenti Audit del CNR" team appointed by the *Director General* of CNR by providing support to CNR internal audit unit in auditing procedures (Prot. AMMCNT-CNR n. 18999/2021); Administrative and financial manager of the branch research office of CNR-INO in Trieste, appointment by CNR-INO Director Prot. CNR-INO nr. 7015/2020 and 1025/2021 (Decree nr. 140 dated 19/10/2020 and Decree nr. 14 dated 5/02/2021); Member of the "Cabina di Regia Bando PON INFRASTRUTTURA" team appointed by the *D General* of CNR by providing operational support to the application of research infrastructures projects within the ESFRI roadmap (Prot. AMMCNT-CNR n.38383/2018); CNR Project officer of the EraNET Cofund "QuantERA" and "QuantERA II" project, appointed by the President of CNR, GA nr. 731473 and nr. 101017773 – preparation of the transnational Italian Call for proposals 2017, 2019 and 2021. Collect, verify, and process all financial and legal documents required from internal beneficiaries; Liaise with internal and – when appropriate - transnational beneficiaries on all financial and IPR issues. Member of the Technology Transfer team appointed by the Director of CNR-INO by providing support in the conclusion of cooperation agreements[1] (such as the signature, accession and entry into force) – Prot. CNR-INO n. 4575/2018; Project Manager of the Competence Centre ARTES4.0 financed by the Italian Ministry of Economic Development and Managerial tutor of 3 funded projects within the initiati
Dates (from – to)	**20.04.2010 to 9.10.2017 (full time engagement and part-time 75%)**

[1] Note that the term "agreement" includes convention, memorandum of understanding, exchange of notes

•Name and address of employer	Dipartimento di Scienze Fisiche e Tecnologie della Materia – CNR (the Italian National Research Council, CNR) – Piazzale A. Moro n. 7, 00185 Rome and CNR-INO (National Institute of Optics)
Type of business or sector	Research
Occupation or position held	Financial Chief Officer of the Dipartimento di Scienze Fisiche e Tecnologie della Materia (Prot. AMMCNT-CNR nr. 47701, July 20 2012 up to 4.02.2015) and Project management support. Permanent contract
Main activities and responsibilities	**Main appointments**: Technical Coordinator of the team on digitalization of the CNR, appointed by the *Director General* of CNR; Member of the team appointed by the *Director General* of CNR on the analysis of the processes and procedures within the CNR; Appointed LEAR (Legal Entity Appointed Representative at the EU) of the Coirich consortium, a research organization composed by 4 public research institutions and 2 SMEs, D(2011) 1259609/72, March 22nd 2012; **Finance**: Responsible for financial planning and record-keeping, as well as financial reporting to the Director and to higher management staff; To assess financial transaction in conformity with the Financial Regulation; Coordinating the planning and budgeting processes of the department. Appointed reference person of the DSFTM CNR on the transparency regulation. To provide support in the administrative and financial aspects of grant agreements, model contracts and regulatory provisions and ensure a sound management and follow up of the projects during their lifecycle. **Internal management and coordination**: By representing the department in contacts with other units and departments of CNR as for research funded projects (Prot. AMMCNT-CNR n. 5685/2017); **Project financial management**: Responsible for the management of DSFTM research projects (Prot. AMMCNT-CNR n. 5685/2017); Member of the team appointed by the Director of DSFTM on project management up to January 30th 2017 (Prot. AMMCNT-CNR n. 15544 dated March 6th 2015); Financial Officer of the IPERION CH Coordination Office (up to 13.04.2015) – Technical and administrative Office that provides support to the partnership for the preparatory phase of the IPERION ESFRI; Coordinating Manager of PON 2007-2013 projects (the research and competitiveness National Programme for structural funds) participated by the department, maintaining an overview of progress and financial expenditures of projects, providing the necessary assurance on the regularity of all transactions and coordinating activities with external organisations to ensure the success of the projects and their implementation.
• Dates (from – to)	**1 Feb 2008 to 19.04.2010**
• Name and address of employer	National Institute of Optics – CNR (the Italian National Research Council, CNR) – Largo E. Fermi n. 6, Florence
• Type of business or sector	Research
• Occupation or position held	Technician, Level VI; Permanent Contract (as of 15 December 2010)
• Main activities and responsibilities	Provide support regarding management and financial issues to the scientific coordinator and assistance to project partners to ensure projects run smoothly, their objectives are achieved and obligations to the EU or to regional and national administrative offices are fulfilled. Monitoring of projects, including assessing technical and financial plans, progress and expenditure reports, payments, amendments, award of grants, supply and service contracts. Logs, manages and analyses information on the progress of the project, using specific databases.

Provides access to R&D co-funded programmes. In charge of the International and European INO Project Office.
Project management:

- In charge of the European and International Project Office of CNR-INO;
- Project Manager of the Qibec Project GA 284584;
- Financial Officer of the PRIN Project "Interferometria quantistica" project nr. PRIN2009_125 cofinanced by the Italian Ministry of Education, University and Research (MIUR) within the funding source Research projects of national interest.

• Dates (from – to)	**4 Feb 2003 to 31 Jan 2008**
• Name and address of employer	National Institute of Optics (CNR) – Largo E. Fermi n. 6, Florence
• Type of business or sector	Research
• Occupation or position held	Collaboration contract Project support officer: Management and financial support to the scientific coordinator of regional, national and EC funded projects for the art diagnostic research group: Professional contract (from 04.Feb.03 to 30.July.03) and collaborative and coordination contract (from 01.Sept.03 to 31.Jan.08)
• Main activities and responsibilities	Provide support regarding management and financial issues to the scientific coordinator and assistance to project partners to ensure projects run smoothly, their objectives are achieved and obligations to the EU or to regional and national administrative offices are fulfilled. Monitoring of projects, including assessing technical and financial plans, progress and expenditure reports, payments, amendments, award of grants, works, supply and service contracts. Logs, manages and analyses information on the progress of the project, using specific databases. Provides access to R&D co-funded programmes. Revision of scientific papers, the leaflet and website of the art diagnostic group.
• Dates (from – to)	**20 June 2002 to 28 November 2002**
• Name and address of employer	Leonardo da Vinci Technologies Group, Colle di Val d'Elsa, Siena
• Type of business or sector	SrL
• Occupation or position held	Executive Assistant; Permanent Contract
• Main activities and responsibilities	Manages relationships with international entities. Manages and organizes the personnel at the Budapest work site of the company.
• Dates (from – to)	**01 September 2000 to 19 June 2002**
• Name and address of employer	Consorzio CEO – Center of Excellence for Optronics (Centro di Eccellenza Optronica) – Largo E. Fermi n. 6, Firenze
• Type of business or sector	Mixed Public -Private Consortium: University of Florence, CNR -IFAC, INOA, El.En. SpA
• Occupation or position held	Project Assistant; fixed-term contract
• Main activities and responsibilities	Provides management and financial support to the scientific coordinator and assistance to project partners. Monitoring of projects, including assessing technical and financial plans, progress and expenditure reports, payments, amendments, award of grants, works, supply and service contracts. Logs, manages and analyses information on the progress of the project, using specific databases. Translation and revision of English-language publications and scientific reports.
• Dates (from – to)	**1996 to December 2000**
• Name and address of employer	Free-lance
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for the courts of Rome, Prato and Terni and for the Magistrate's Court of Prato; Consultancy Contract for Freelance.

• Main activities and responsibilities	Transcription of court acts deemed valuable by the courts and consultant for the Public prosecutors as stenotypist in procedural interviews or ats.
• Dates (from – to)	**01 May 1995 to 29 Feb 1996**
• Name and address of employer	Oligamma SnC, Viale Sardegna n. 15, 08100 Nuoro
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for reports in the penal court of Nuoro; Work-Training Contract
• Main activities and responsibilities	Transcription of procedural acts
• Dates (from – to)	**01 Jan 1994 to 06 Feb 1995**
• Name and address of employer	Istituto Pitagora SrL di Sassari
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for the courts of Sassari and Tempio Pausania, for the Court of Youth of Sassari and for the Magistrate's Court of Sassari; Work-Training Contract
• Main activities and responsibilities	Transcription of procedural acts
• Dates (from – to)	**1992-1993**
• Name and address of employer	Free-lance
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for the courts of the Magistrate's Court of Rome.
• Main activities and responsibilities	Transcription of procedural acts and advisor to the Public prosecutor for the transcriptions of phone tappings

EDUCATION AND TRAINING

• Dates (from – to)	**2004/5-2008/09**
• Name and type of organisation providing education and training	University for Foreigners of Siena. Degree in Linguistic and Cultural Mediation Curriculum: translation in the field of entrepreneurial tourism (Class L-12).
• Principal subjects/occupational skills covered	Solid cultural base in three European languages (English, Spanish and French); General preparation in the fields of Economics, Law and Literature.
• Title of qualification awarded	Bachelor degree (3 years) in Linguistic Mediation and Culture, curriculum in translation; Thesis topic **"**Il ruolo della comunicazione nell'era della ricerca: il caso Università per Stranieri di Siena (The role of communication in the field of research. A case study: the University for Foreigners of Siena" (A.A. 2008/09) 9.12.2009
• Level in national classification	Mark 103/110
• Dates (from – to)	**1987/88 to 1990/91**
• Name and type of organisation providing education and training	School for Interpreters and Translators - Via Cassia 32/34 – Rome College Education
• Principal subjects/occupational skills covered	Solid cultural and linguistic knowledge in two European languages (English and Spanish); Technical and literary translations in English and Spanish; simultaneous translation; General preparation in the fields of Economics, Law and Literature.
• Title of qualification awarded	Interpreter and Translator – Foreign Language Correspondent – 2 years bachelor degree

• Dates (from – to)	**1982/83 to 1986/87**
• Name and type of organisation providing education and training	High School in the Scientific field "Galileo Galilei" in Terni
• Principal subjects/occupational	High School Leaving Examination
• Title of qualification awarded	High School Diploma

PERSONAL SKILLS AND COMPETENCES

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MOTHER TONGUE **ITALIAN**

Understanding				**Speaking**				**Writing**	
Listening		Reading		Spoken interaction		Spoken produ			
C1	English	C1	English	C1	English	C1	English	C1	English
B2	Spanish	B2	Spanish	B2	Spanish	B2	Spanis h	B2	Spanish
A2	French	A2	French	A2	French	A2	French	A2	French

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ORGANIZATIONAL SKILLS AND COMPETENCES

Precision and respect of schedules in realizing assigned complex tasks;
Management of human resources, coordinating collaborators, supporting and motivating colleagues;
Problem solving attitude developed in the project management experience;
Knowledge of European Commission rules, procedures and organization;
Acquaintance with scientific research issues, researchers and technologists attitude and with specific problems common to scientific research projects;
Knowledge of process analysis methodology and experience in process rationalization;
Knowledge and experience of digitalization of administrative processes;
Experience in applying risk analysis to projects and programs.

TECHNICAL SKILLS AND COMPETENCES

Teaching assignment by CNR on management procedures on RRP projects: 2 days teaching. Subject: Illustration of the functioning of the HUB&Spoke structure of the RRP financial models such as National Centres, Innovation Ecosystems and Extended Partnerships; illustration of the aforementioned structure in GEPRO and definition of the economic plan structure.

Certified Project Manager issued by the Istituto Italiano di Project Management (ISIPM) in January 11th , 2021 nr.. 14029;

Professional consultancy service for Paolo Annunziato (advisor to the UAE Minister of Economy of Dubai) on the following subject: a) support to the renewal of the collaboration agreement between EU and UAE in the field of research and development; b) support to the drafting of an analysis on IPR management in the UAE (fror 4.05.2018 al 3.06.2018);

Master in Structural funds: issued by CEIDA - Scuola Superiore di Amministrazione Pubblica e degli Enti Locali, December 2011 (Prot. CNR-INO 10795/2011);

Certified translator for English and Spanish language at the Civil and Penal Court of Rome as of 2000;

Nominated as English Language expert by the Selection board for the competition for Financial Officer in Public Research Entity (Directorial Decree INOA n. 269 of 9 July 2004.)

Appointed Quality Control Manager for the Consorzio CEO – Center of Excellence for Optronics. The Consortium implemented its quality system according to UNI EN ISO 9001-00 regulations.

Expert Certification MOUS: MOUS is the standard, recognized all over the world, that attests to the utilization of the Microsoft Office Applications. The certificate was granted by Microsoft after passing an exam.

European Computer Driving Licence (ECDL) n. IT 378656, issued on 14.Dec.2002 by the President of the *Associazione Italiana per l'Informatica ed il Calcolo Automatico* (AICA) (Italian Association for Computer Science and Automatic).

REPORTS AND PUBLICATIONS

- **Vasco Ronchi Colloquia: vision on Technology Transfer Firenze** University Press, Firenze (Italia), 2023 – F. S. Cataliotti, G. Adembri, C. Mustarelli, A. Fedele, G. Lombardo, R. Cicchi, M. Locatelli, L. Gizzi (2023) -DOI 10.36253/cdg-1473 ;
- **Quantum Technologies Public Policy Report – Deliverable** Francesco S. Cataliotti, C. Mustarelli, Watse Castelein, Sylwia Koska, Justyna Milan-Pinat et altri (2023);
- **PROGRESS FINAL REPORT MACRONODO CNR-MACRONODO@ARTES4.0** Andrea Passarella, Chiara Mustarelli, Jacopo Catani, Ignazio Infantino, Giuseppe Amato, Francesca Rossi, Guido Toci (2023);
- **PE0000023 NQSTI - Presentazione del Bando NQSTI - QuantERA Call 2023** Chiara Mustarelli (2023)
- **PE0000023 NQSTI - Kick off meeting Spoke 3** Chiara Mustarelli, Claudia Firino (2023);
- **EuPRAXIA Advanced Photon Sources - PNNR_EuAPS project** Technical Report M. Ferrario, Ferro, L. Gizzi, M. G. Iungo, L. Labate, C. Mustarelli, G. Petringa, A. R. Rossi **(2023);**
- **Istruzioni operative per l'inserimento in PdGP di Finanziamento esterno, Progetto e Sotto**
- **Technical report** di aggiornamento sull'attuazione dei progetti nell'ambito degli avvisi D.D. n. 424 del 28.02.2018 e D.D. n. 2595 del 24.12.2019 (M. Rapallini. B. Cagnana, C. Mustarelli)
- **Nota tecnica su flussi finanziari e regole di rendicontazione progetti PNRR, Missione 4, Componente 2, Investimento 3.1, "Fondo per la realizzazione di un sistema integrato di infrastrutture di ricerca e innovazione** a cura di C.Mustarelli, D.Selisca, F. Usala (2022)
- **Nota tecnica su flussi finanziari progetti PNRR tipologia "Hub&Spoke" (CN, EI e PE), Missione 4, Componente 2, Investimento 3.1 e linee guida piattaforma AtWork** a cura di D. Fornaciari, C. Mustarelli, F. Usala (2022)
- **Technical Report "Artes4.0 Report MISE Test-before-invest"** Prot. CNR-INO n. 728 del 28/01/2022
- **Relazione su Piano Stralcio Ricerca e Innovazione 2015-2017 – "PNIR – Programma Nazionale Infrastrutture di Ricerca**" CNR-AMMCEN N. 84422 data 29/12/2020;
- **Relazione tecnica relativo al SAL2 del Centro di Competenza ARTES** CNR-INO N. 9374 data 10/12/2020;
- **Relazione tecnica per la costituzione dell'URT Interdipartimentale DSFTM-DISBA presso il Campus Biomedico di Roma** CNR-INO N. 6061 data 3/09/2020;
- **Report sulle attività al 31.12.2019** del progetto QuantERA ERA-NET Cofund in Quantum Technologies - Project no. 731473 - CNR-INO N. 971 data 5.02.2020
- QuantERA Project GA 731473
  - **Technical report Task 6.1 "Exploring the possibilities of additional joint funding activities and future developments in QT"** F. S. Cataliotti, D. Fornaciari, C. Mustarelli – Prot. CNR-INO n. 1227/2018.
- Qibec Project GA 284584 (FP7-ICT-2011-C):
  - D1.1" **Project Reporting Templates and Guidance**" Prot. CNR-INO nr. 7959, 10/09/2013.
  - D1.2 "**Periodic Activity and Management report**" - Prot. CNR-INO nr. 7960, 10/09/2013.
  - D6.2 "**Dissemination Strategy**" Prot. CNR-INO nr. 7961, 10/09/2013.
  - D6.3 "**International Conference**" Prot. CNR-INO n. 10836, 22.12.2015.
  - D.6.4 "**Second Reporting Period**" Prot. CNR-INO n. 10836, 22.12.2015.
  - "**Final Report**" Prot. CNR-INO n. 10836, 22.12.2015.
- **Information note** to the Board of Directors of CNR "**Relazione sullo stato di avanzamento della dematerializzazione delle procedure amministrative"** Prot. AMMCNT-CNR n. 10379, 16.02.2016;
- **Report "Mappatura dei processi e dei relativi procedimenti dell'Ente**" – Prot. AMMCNT-CNR n. 7376, 5.02.2016;
- **Information note** to the Board of Directors of CNR "**Mappatura dei processi e dei relativi procedimenti dell'Ente**" Prot. AMMCNT-CNR n. 10120, 16.02.2016.

ACKNOWLEDGEMENT

- Acknowledgment for assistance in preparing documents for ethical committee approval in the paper: M. Lombardo, G. Lombardo, "Non-invasive and real-time

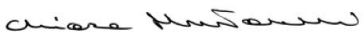
assessment of riboflavin consumption in standard and accelerated corneal cross-linking", J Cataract Refract Surg 45, 80-86 (2019)

- Acknowledgment for assistance in preparing documents for ethical committee approval in the paper B. Zappone, N. J. Patil, M. Lombardo, G. Lombardo, "Transient viscous response of the human cornea probed with the Surface Force Apparatus", PLoS ONE 13(5): e019777 (2018) (I.F 2,776)";
- Acknowledgment for assistance in preparing documents for ethical committee approval in the paper G. Lombardo, V. Villari, N. L. Micali, N. Leone, C. Labate, M.P. De Santo, M. Lombardo, "Non-invasive optical method for real-time assessment of intracorneal riboflavin concentration and efficacy of corneal cross-linking", J. Biophotonics 11, e201800028 (2018) (IF. 4.328). - J. Biophotonics 2/2018

I accept that my personal data - provided during this procedure – will be processed in accordance with Regulation (EC) No 2016/679 of the European Parliament.

Florence, 27.11.2023

Chiara Mustarelli



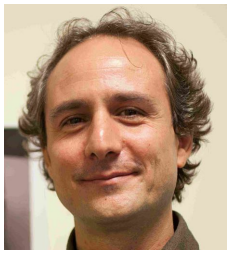

Cognome BRANDI
Nome FERNANDO
nato il 21/04/1971
(atto n. 764 P. 1 S. A)
a PISA (PI)
Cittadinanza ITALIA
Residenza GENOVA (GE)
Via [redacted]
Stato civile Celibe
Professione RICERCATORE
CONTRASSEGNI SALIENTI
Statura 1,70
Capelli Castani
Occhi Castani
Segni particolari
GENOVA (GE) 30/04/2013
IL SINDACO


SCADENZA 21/04/2024
AU [redacted]
REPVBBLICA ITALIANA
COMVNE DI
GENOVA
CARTA D'IDENTITA'
N° AU [redacted]
DI
BRANDI
FERNANDO

Curriculum Vitae

PERSONAL INFORMATION

Fernando Brandi



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fernando.brandi@ino.cnr.it – fernando.brandi@cnr.it - fbrandi2000@gmail.com

Sex Male | Date of birth 21/04/1971 | Nationality Italian

WORK EXPERIENCE

From 01/01/2023 to today

Full time Senior Researcher

Intense Laser Irradiation Laboratory, Istituto Nazionale di Ottica-CNR, SS-PISA (Italy)

-) Ultra-intense laser-matter interaction, laser-plasma acceleration,
-) Applied research and technology transfer activity
-) Design and development of optical diagnostic techniques for plasma and gas targets;
-) Support in the development and menagement of ultra-intense laser-plasma interaction facility;

From 03/02/2014 to 31/12/2022

Full time Researcher

Intense Laser Irradiation Laboratory, Istituto Nazionale di Ottica-CNR, SS-PISA (Italy)

-) Design and development of optical diagnostic techniques for plasma and gas targets;
-) Support in the development and menagement of ultra-intense laser-plasma interaction facility;
-) Green synthesis of colloidal nanoparticles solution by pulsed laser ablation in liquid;
-) Advanced additive and subtractive Laser Micro/Nano fabrication;
-) Applied research and technology transfer activity

From 15/07/2008 to 02/02/2014

Full time Researcher

Nanophysics Department, Istituto Italiano di Tecnologia-Genova (Italy)

Responsible of the Laser Laboratory.
He set-up and managed a new high-power laser laboratory for multidisciplinary applications.
Specific activities were:
-) Laser laboratory management: procurement of equipment and maintainance, implementing safety procedures, and coordinating multidisciplinary research supervising Post-docs and PhD amd Internship students.
-) Development of novel quantitative phase imaging technique for label-free imaging and optical metrology of dispersive materials, (e.g., biological samples, neutral gases and plasma);
-) Laser based green syntheses of bio-functionalized nanoparticles;
-) Laser processing of thin films (e.g., metals and single layer graphene), polymers and hard materials (e.g., silicon and diamond) for lab-on-a-chip development;
-) Fabrication and characterization of 3D bio-compatible and biodegradable scaffolds via novel layer-by-layer stereolithography methods;

From 01/09/2007 to 14/07/2008

Full time Post-Doc fellow

Physics Department, University of Pisa (Italy)

Design, install and run diagnostic techniques for burning plasma. Specifically, he was in charge of the installation of interferometric and spectroscopic diagnostics on a new plasma machine at the TriAlphaEnergy Inc. company (Irvine, USA).

From 01/09/2006 to 31/08/2007

Full time Post-Doc fellow

Consorzio Nazionale Inter-Universitario Scienze Fisiche della Materia (CNISM) at the Physics Department, University of Pisa (Italy)

Experimental and theoretical investigation of harmonic generation with short intense laser pulses. In particular, he studied the influence of plasma dynamics on the harmonic spectral purity.

From 01/01/2006 to 31/08/2006

Full time Post-Doc fellow

Physics Department, University of Pisa (Italy)

Development of novel interferometric diagnostic techniques for plasma. Specifically, he design and developed a novel dispersion interferometer with high sensitivity and high temporal resolution using both pulsed and continuous wave laser sources. Write proposals for industrial collaborations and management of projects.

From 01/08/2004 to 31/07/2005

Full time Post-Doc fellow

Physics Department, University of Pisa (Italy)

Development of an experimental apparatus to perform laser ablation and study the plasma dynamics in the ablated plume.

From 01/01/2000 to 31/07/2004

Research Assistant

Laser Center-Vrije Universiteit Amsterdam (The Netherlands)

Research activity in the field of optical harmonic generation in gases and plasma, and high-resolution XUV laser spectroscopy.

From 01/07/1998 to 31/12/1999

Full time Post-graduate fellow

Italian National Institute for Nuclear Physics (INFN), Pisa (Italy)

Design, build and test an original ultra-high-vacuum compatible polarization modulator device.

From 01/05/1997 to 31/08/1997

Collaborator

Physics Department, University of Pisa (Italy)

Design and test an original ultra-high-vacuum chamber to host the high-sensitivity ellipsometer and optical cavity to measure the magnetic vacuum birefringence.

From 01/05/1996 to 30/04/1997

Full time Under-graduate Fellow

Italian National Institute for Nuclear Physics (INFN), National Laboratory of Legnaro (Padova, Italy)

Build and test the prototype ellipsometer and optical cavity of the experimental apparatus to measure the magnetic vacuum birefringence.

EDUCATION

01/07/2004

PhD in Physics

Laser Center-Vrije Universiteit Amsterdam (The Netherlands)

Thesis title “Table-top XUV sources for high resolution spectroscopy: from low to high-order harmonic generation”

20/03/1997

First-Class Honours Degree in Physics (Laurea cum Laude)

Physics Department-University of Pisa (Italy)

Thesis title “Prototype of an apparatus to measure vacuum polarization”

Academic year 1993-1994

Erasmus student at the University of Edinburgh

Faculty of Science and Engineering

Classes: Experimental Physics, third year, mark 82%; Quantum Physics and Atomic and molecular Physics, third year, mark 81%; Nuclear Physics 1 and 2, fourth year, mark 87%.

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Excellent	Excellent	Excellent	Excellent	Excellent
French	Good	Good	Basic	Basic	Basic

Communication skills: Excellent communication skills gained through experience in international working environments and coordinated team activities.

List of scientific publications
H-index: 32 from Google Scholar, 29 from Scopus,

2021 - Fabrication of ZnO-nanowire-coated thin-foil targets for ultra-high intensity laser interaction experiments
D Calestani, M Villani, G Cristoforetti, **F Brandi**, P Koester, L Labate, LA Gizzi
Matter and Radiation at Extremes 6 (4), 046903

2021 - Enhanced laser-driven proton acceleration via improved fast electron heating in a controlled pre-plasma
LA Gizzi, E Boella, L Labate, F Baffigi, PJ Bilbao, **F Brandi**, G Cristoforetti, A Fazzi, L Fulgentini, D Giove, P Koester, D Palla, P Tomassini
Scientific Reports 11, 13728

2021 - A Few MeV Laser-Plasma Accelerated Proton Beam in Air Collimated Using Compact Permanent Quadrupole Magnets
F Brandi, L Labate, D Palla, S Kumar, L Fulgentini, P Koester, F Baffigi, M Chiari, D Panetta, L A Gizzi
Applied Sciences 11 (14), 6358

2021 - Overview and specifications of laser and target areas at the Intense Laser Irradiation Laboratory
LA Gizzi, L Labate, F Baffigi, **F Brandi**, G Bussolino, L Fulgentini, P Köster, D. Palla
High Power Laser Science and Engineering 9, e10

2020 - Erratum to: EuPRAXIA Conceptual Design Report
RW Assmann, et al.
The European Physical Journal Special Topics 229 (1), 11-31

2020 - EuPRAXIA conceptual design report
RW Assmann, et al.
The European Physical Journal Special Topics 229 (24), 3675-4284

2020 - Toward an effective use of laser-driven very high energy electrons for radiotherapy: Feasibility assessment of multi-field and intensity modulation irradiation schemes
L Labate, D Palla, D Panetta, F Avella, F Baffigi, **F Brandi**, F Di Martino, L. Fulgentini, A. Giulietti, P. Köster, D. Terzani, P. Tomassini, C. Traino, L A Gizzi
Scientific Reports 10, 17307

2020 - Laser-driven proton acceleration via excitation of surface plasmon polaritons into TiO2 nanotube array targets
G Cristoforetti, F Baffigi, **F Brandi**, G D'Arrigo, A Fazzi, L Fulgentini, D Giove, P Koester, L Labate, G Maero, D Palla, M Romé, R Russo, D Terzani, P Tomassini, LA Gizzi
Plasma Physics and Controlled Fusion 62 (11), 114001

2020 - Intense proton acceleration in ultrarelativistic interaction with nanochannels
LA Gizzi, G Cristoforetti, F Baffigi, **F Brandi**, G D'Arrigo, A Fazzi, L Fulgentini, D Giove, P Koester, L Labate, G Maero, D Palla, M Romé, M Russo, D Terzani, P Tomassini
Physical Review Research 2 (3), 033451

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APPLIED PHYSICS B: LASERS AND OPTICS, vol. 65, p. 351-355

Book chapters

2017 – **F. Brandi**
Invited - Book Chapter title: “Silicon Nanoparticles via Pulsed Laser Ablation in Liquid”, Book title: “Silicon Nanomaterials Sourcebook: Low-Dimensional Structures, Quantum Dots, and Nanowires”, Volume One
Editor: Prof. Klaus D. Sattler, Publisher: CRC Press | Taylor & Francis Group,
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2013 - A. Milionis, I. Bayer, D. Fragouli, **F. Brandi** and A. Athanassiou
Book Chapter title: "Combination of lithography and coating methods for surface wetting control", Book title: "Updates in Advanced Lithography", ISBN 980-953-307-530-8, Editor: Prof. Sumio Hosaka, Publisher: Intech

Fernando Brandi, 27/11/2023

PERSONAL INFORMATION

Leonida Antonio GIZZI
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ORCID iD: https://orcid.org/0000-0001-6572-6492
SCOPUS Author ID: 7003405601
LOOP Profile: 217114

WORK EXPERIENCE

- **Research Director** (Dirigente di Ricerca) at Istituto di Ottica CNR-INO, Pisa (current)
- **Head** of the Pisa Unit of Istituto Nazionale di Ottica (http://www.pi.ino.cnr.it/pisa/) (current)
- **Scientific Director** of the Intense Laser Irradiation Laboratory (current)

ONGOING RESEARCH PROJECT WITH LEADING ROLE
> Next Generation EU (PNRR) - Tuscany Health Ecosystem (THE) 2022-2025 – Principal Investigator of Spoke 1 – "Advanced radiotherapies and diagnostics in oncology" (€ 9.140.725,78)
> Next Generation EU (PNRR) - IPHOQS - INTEGRATED INFRASTRUCTURE INITIATIVE IN PHOTONIC AND QUANTUM SCIENCES, WP Leader (3,262,429.00)
> EU H2020 - Innovation Fostering in Accelerator Science and Technology (I.FAST) 2020-2024, Task Leader on Laser Driver Development for Plasma Accelerators (€ 110.000,00)
> EU H2020 - Compact European Plasma Accelerator with Superior Beam Quality (EuPRAXIA) 2022-2026, PP pf Research Infrasturcure, WP Leader (Laser Development); (€ 90.000,00)
> IT MoD - "APOLLO (Advanced Pulsed Orientable Laser for Long distance Operations) – 2019-2024, High repetition rate Ultrafast Laser development (€ 3.350.000,00)

SAMPLE OF PAST PROJECTS WITH LEADING ROLE
> IT MUR-CNR – Implementation of the European Roadmap ESFRI: "Extreme Light Infrastructure" (ELI), 2013-2019, PI of Research Unit at CNR-INO (€ 2.640,000).
> EU FP7 - High Power laser Energy Research Facility (HiPER), Research Infrastructures, 2008-2011, PI of IPCF- CNR research unit; (€ 112.000,00)
> INFN Commissione Nazionale V, Progetto FAST - Femtosecond timing and sync, 2007-2009, PI of Pisa Research Unit – INFN Sez. Pisa; (€ 95.500,00)
> MIUR-FISR- national project on *Compact Ultrafast X-ray Sources*, National Coordinator, 2003-2007; (€ 276.097,00)
> EU FP5 European training network XPOSE, *X-ray probing of the structural evolution of matter*, Head of IPCF-CNR node, 2000-2004; (€ 147.000,00)
> ASI Italian Space Agency, Laue-diffraction optics for gamma-ray astronomy, Scientist in charge of Pisa research unit, 2000-2001; (€ 13.000,00)

SAMPLE OF OTHER RESEARCH PROJECTS WITH PARTICIPANT ROLE
> EC European training network GAUS-XRP II, Generation and application of ultrashort, laser-produced X-ray pulses, 1996-200;
> EC European training network SILASI, Superintense Laser Solid Interactions, 1996-2000;
> EC European training network GAUS-XRP I, Generation and application of ultrashort, laser-produced X-ray pulses, 1993-1995;
> CNR institutional projects on *High power density laser-matter interactions*, 1989-1996.

CONFERENCES AND WORKSHOPS
More than 70 oral and invited presentations at international conferences and workshops.

PUBLICATIONS
Author of 312 publications (Source ISI Web of Science) including more than 210 articles on **refereed** (JCR) journals (as of Feb 2022) with more than 5500 citations.H-Index: 43 (G. Scholar)SEP H-Index: 35 (ISI WOS)

MASTER AND PhD SUPERVISION: more than 20 Master and PhD Theses Supervision

EDUCATION AND TRAINING

PhD: (1990-2004) 1994: Ph.D. in Plasma Physics and D.I.C (Imperial College of Science technology and Medicine, University of London;

FIRST DEGREE (Laurea): (1983-1989) Laurea in Fisica, Università degli studi di Pisa, Laurea in Fisica (Università di Pisa);

OTHER POSITIONS, SCHOLARSHIPS AND AWARDS: EU Marie Curie Fellowship at Imperial College, London, UK, 1995 • Scholarship of the Italian Space Agency at IFAM-CNR, Pisa, 1994 • Scholarship of the National Research Council at l'Imperial College di London, UK, 1993-94 • Research Associate at Imperial College, London, UK, 1993 • Scholarship of the National Research Council at IFAM-CNR, Pisa, 1991-92 • Scholarship of the National Research Council at Imperial College di London, UK, 1991.

MAIN RESEARCH FIELDS: Radiation Sources • High Power Laser Interaction with Matter •X-Ray Emission From Laser Produced Plasmas – X and Gamma Ray Generation and Applications • High Energy Astrophysics.

RESEARCH INTERESTS: Ultra Short, Ultraintense Laser Plasma Interactions • E.m. wave propagation • Atomic physics of ionised species • Collective phenomena and instabilities • Inertial confinement fusion related studies • X-ray generation and characterisation • Particle acceleration in laser-matter interactions • X-ray and gamma ray optics • Plasma acceleration of particles • Dosimetry • Radiobiology.

REVIEWER ROLE

CAMBRIDGE JOURNALS Member of the Editorial Board of "High Power Laser Science and Engineering"

APS since 1997 *Referee* of *Phys. Rev. Lett., Phys Rev. E*

APS since 2008 *Outstanding Referee of the American Physical Society (APS).*

nature since 2010, *Referee of Nature, Nature Communications, Nature Physics, Scientific Reports.*

Other referee roles: *Physics of Plasmas*, *Laser and Particle Beam*, *New J. Physics*

RESEARCH ACHIEVEMENTS

During my career I have conducted and promoted research activities that have led me and my institution to gain leadership roles in the most innovative fields of physics with high intensity lasers, plasmas and their applications in the main sectors of socio-economic interest, such as medicine, environment and cultural heritage, also in collaboration with high-tech companies. Since my first degree thesis (1989) I have been dealing with the experimental study of laser-plasma interactions in conditions relevant for laser fusion. In this context I have promoted, with roles of coordinator or work-package leader, experimental campaigns at the main international laser facilities, including the Vulcan laser at the Central Laser Facility (CLF, GB), the Prague Asterix Laser (PALS, Czech Rep.), the OMEGA laser (USA), the J-KAREN laser (Japan). Since 1992, I have been developing experimental study of laser-plasma interaction with ultra-intense lasers of the Chirped Pulse Amplification type and in 1999 I have promoted and coordinated the first Italian project (MURST) on the development of ultrashort radiation pulses based on laser-plasma interaction for materials and medical

*Figure 1. World map of laser with peak power >100 TW, tratto da "Gerard Mourou: Nobel Lecture: Extreme light physics and application", Rev. Mod. Phys., **91**, 030501 (2019).*

applications. I have carried out and coordinated experimental activities at international laboratories of high power ultra-short pulse lasers at the Rutherford Appleton Laboratory (GB), the Laboratoire d'Optique Appliquée (Ecole Polytechnique, France), the CEA of Saclay (France), the Japan Atomic Energy Research Institute (Japan). Following the results obtained, I was able to establish a program for the development of laser-plasma acceleration of particles for X-ray imaging and novel radiotherapy approacheswithin the ESFRI Extreme Light Infrastructure (ELI) initiative which, in 2007, led to the first demonstration of laser-plasma acceleration in Italy, at the ILIL laboratory of the INO-CNR in Pisa, a key international infrastructure (see figure) of which I became Scientific Director in 2009. On the basis of these results and European developments, I coordinated, from 2009 to 2013, the establishment of the FLAME Laboratory at the National Laboratories of Frascati (LNF) of the INFN which to date constitutes another key infrastructure of the SparcLAB project at the LNF (see Figure) and of the new ESFRI infrastructure on Plasma Acceleration called EuPRAXIA. Starting from 2013, I have been responsible for the design and construction, at the Pisa headquarters of the National Institute of Optics, of the ILIL-PW installation, the first infrastructure in Italy based on ultra-intense sub-PW class lasers, entirely dedicated to the study of laser-plasma interaction and laser-plasma acceleration, which was inaugurated in March 2018. Thanks to these results, the ILIL laboratory is today among the main laboratories in the world for plasma physics with ultra-intense lasers and plasma acceleration. ILIL is also a node of the European Network on Innovative Accelerators (Euronnac), a partner of the ESFRI EuPRAXIA Infrastructure Project and a member of LASERLAB-EUROPE association. Since 2013, I have also been responsible for the CNR-INO-Pisa node of the Italian Extreme Light Infrastructure Network (ELI-Italy, ELI-Attosecond, ELI-Nuclear Physics) coordinated by CNR and participated by the Sincrotrone of Trieste and the INFN. Within this Network, the Pisa node is home to the development of plasma acceleration of particles for applications to high-energy radiation sources, diagnostics and radiotherapy in the biomedical field, focused on the role of the ultrashort (femtosecond domain) nature of laser-driven radiation sources.

As of today, my research group carries out basic research and develops applications of plasmas in the main sectors of socio-economic interest and, in particular in biology and medicine, energy and cultural heritage. The research activity on plasmas today constitutes the main research line for planning and scientific production active at the Pisa Branch of the National Institute of Optics and one of the main ones of the Institute at a national level. As head of the Pisa section of the National Institute of Optics, I have attracted regional/national/European resources and collaborations in particle acceleration and applications to radiobiology. I have engaged a major research programme in the development of innovative radiobiology and future radiation therapies also based on Very High Energy Electron (VHEE) and ultra-high dose rate for FLASH radiotherapy. This programme, supported by the Next Generation EU programme through the Italian Ministry of Research, includes infrastructure development and a full multi-disciplinary approach to the investigation of biological effects of ionizing radiations, from the microscopic, ultrafast scale to the clinics.

SELECTED PUBLICATIONS

- G. Cristoforetti, P. Koester, S. Atzeni, D. Batani, S. Fujioka, A. Schiavi, K. Shigemori, R. Takizawa, T. Tamagawa, D. Tanaka, A. Tentori, Y. Umeda, A. Yogo, and **L.A. Gizzi**, Multibeam laser–plasma interaction […] for direct-drive inertial confinement fusion, High Power Laser Science and Engineering 11, 24 (2023).

- A. Borghini , C. Vecoli, L. Labate, D. Panetta, MG Andreassi, **L.A.Gizz**i. FLASH ultra-high dose rates in radiotherapy: preclinical and radiobiological evidence. Int J Radiat Biol. 98, 127-135 (2022).

- **L.A. Gizzi**, M.G. Andreassi, Ready for translational research. *Nat. Phys.* 18, 237–238 (2022).

- F. Albert, M E Couprie, A. Debus, M. C. Downer, J. Faure, A. Flacco, **L. A. Gizzi** et al., *2020 roadmap on plasma accelerators,* New J. Phys. 23, 031101 (2021).

- L. Labate, D. Palla, D. Panetta, F. Avella, F. Baffigi, F. Brandi, F. Di Martino, L. Fulgentini, A. Giulietti, P. Köster, D. Terzani, P. Tomassini, C. Traino, **L. A.Gizzi**, Toward an effective use of laser-driven very high energy electrons for radiotherapy: Feasibility assessment of multi-field and intensity modulation irradiation schemes, Scientific Reports 10, 17307 (2020).

- **L. A. Gizzi**, G. Cristoforetti, F. Baffigi, F. Brandi, G. D'Arrigo, A. Fazzi, L. Fulgentini, D. Giove, P. Koester, L. Labate, G. Maero, D. Palla, M. Romé, M. Russo, D. Terzani, and P. Tomassini, Intense proton acceleration in ultrarelativistic interaction with nanochannels, Phys. Rev. Research 2, 033451 (2020).

- P. Tomassini, D. Terzani, F. Baffigi, F. Brandi, L. Fulgentini, P. Koester, L. Labate, D. Palla and **L. A. Gizzi**, High- quality 5 GeV electron bunches with resonant multi-pulse ionization injection, Plasma Physics and Contr. Fusion, 62, 014010 (2020).

- **L.A. Gizzi**, L. Labate, F. Baffigi, F. Brandi, G.C. Bussolino, L. Fulgentini, P. Koester, D. Palla, F. Rossi, Laser– plasma acceleration of electrons for radiobiology and radiation sources, Nuclear Instruments and Methods in Physics Research B355, 241–245 (2015).

- P. Ferrara, M. Ciofini, L. Esposito, J. Hostaša, L. Labate, A. Lapucci, A. Pirri, G. Toci, M. Vannini, and **L. A. Gizzi**, 3-D numerical simulation of Yb:YAG active slabs with longitudinal doping gradient for thermal load effects assessment, Optics Express 22, 5375–5386 (2014).

-**L. A. Gizzi**, S. Betti, E. Förster, D. Giulietti, S. Höfer, P. Köster, L. Labate, R. Lötzsch, A. P. L.Robinson, and I. Uschmann, Role of resistivity gradient in laser-driven ion acceleration Phys. Review ST Acc. Beams, 14, 011301 (2011).

- F. Zamponi, A. Lübcke, T. Kämpfer, I. Uschmann, E. Förster, A. P. L. Robinson, A. Giulietti, P. Köster, L. Labate. T. Levato, and **L.A. Gizzi**, *Directional Bremsstrahlung from a Ti Laser- Produced X-Ray Source at Relativistic Intensities in the 3–12 keV Range*, Phys. Rev. Lett, 105, 085001 (2010).

- S. Betti, C. A. Cecchetti, E. Förster, A. Gamucci, A. Giulietti, D. Giulietti,T. Kämpfer, P. Köster, L. Labate, T. Levato, A. Lübcke, I. Uschmann, F. Zamponi, and **L. A. Gizzi**, *On the effect of rear-surface dielectric coatings on laser-driven proton acceleration*, Phys. Plasmas, 16, 100701 (2009).

- **L. A. Gizzi**, S. Betti, M. Galimberti, A. Giulietti, D. Giulietti, L. Labate T. Levato, P. Tomassini, P. Monot, T. Ceccotti, P. De Oliveira, and Ph. Martin, *Tracking propagation of ultrashort intense laser pulses in gases via probing of ionization*, Phys. Rev. E 79, 056405 (2009).

- **L.A. Gizzi**, A. Giulietti, D. Giulietti, P. Koester, L. Labate, T. Levato, F. Zamponi, A. Luebcke, T. Kaempfer, I. Uschmann, E. Foerster, A. Antonicci, D. Batani, Observation of electron transport dynamics in high intensity laser interactions using multi-energy monochromatic X-ray imaging, Plasma Phys. Control. Fusion 49, B221-B221 doi: 10.1088/0741-3335/49/12B/S19 (2007).

- **L.A. Gizzi**, M. Galimberti, A. Giulietti, D. Giulietti, P. Köster, L. Labate, P. Tomassini, Ph. Martin, T. Ceccotti, P. D'Oliveira, P. Monot, *Femtosecond interferometry of propagation of a laminar ionization front in a gas*, Phys. Rev. E , 144609PRE, (2006).

- **L.A. Gizzi**, C.A. Cecchetti, M. Galimberti, A. Giulietti, D. Giulietti, P. Köster, L. Labate, S. Laville, P. Tomassini, *Soft laser-plasma X-ray sources for differential absorption imaging of tracing elements in thin samples,* Laser Part. Beams 22, 367 (2004).

- **L.A.Gizzi**, C.A.Cecchetti, M.Galimberti, A.Giulietti, D.Giulietti, L.Labate, S.Laville, P.Tomassini, *Transient ionization in plasmas produced by point-like irradiation of solid Al targets* , Phys. Plasmas 10 4601 (2003).

- **L.A.Gizzi**, A.Giulietti, O.Willi, D.Riley, *Soft-x-ray emission dynamics in picosecond laser-produced plasmas,* Phys. Rev. E, 62, 2721 (2000).

- **L.A.Gizzi**, A.Giulietti, O.Willi, Time-*resolved, multiframe X-ray imaging of laser-produced Plasmas*, J. X-ray Sci. Technol. 7, 186 (1997)

- **L.A.Gizzi**, D.Giulietti, A.Giulietti, P.Audebert, S.Bastiani, J.P.Geindre, A.Mysyrovicz, *Simultanoeus measurements of hard X-rays and 2nd harmonic emission in fs laser-target interactions,*Phys. Rev. Lett. 76, 2278 (1996).

- **L.A.Gizzi**, A.J.Mackinnon, D.Riley, S.M.Viana, O.Willi, *Measurements of thermal transport in plasmas produced by picosecond laser pulses,* Laser Part. Beams, 13, 511 (1995).

- **L.A.Gizzi** , D.Giulietti, A.Giulietti, T.Afshar-Rad, V.Biancalana, P.Chessa, E.Schifano, S.M.Viana, O.Willi, *Characterisation of Laser Plasmas for Interaction Studies*, Phys. Rev. E, 49, 5628 (1994).

- D.Riley, **L.A.Gizzi**, F.Y.Khattak, S.M.Viana, O.Willi, *Plasma Conditions Generated by Interaction of a High Brightness, Pre-pulse Free Raman Amplified KrF Laser Pulse with Solid Targets,* Phys. Rev. Lett. 69, 3739 (1992).

- M.Desselberger, **L.A.Gizzi**, V.Barrow, J.Edwards, F.Y.Khattak, S.M. Viana, O.Willi, R.Bann, C.N.Danson, *Generation of High Aspect Ratio Line Focus Using a Random Phase Plate*, Applied Optics, 31, 3759 (1992).

- **L.A.Gizzi**, D.Batani, V.Biancalana, A.Giulietti, D.Giulietti, *X-Ray emission from Thin Foil Laser produced Plasmas*, Laser and Particle Beams, 10, 65 (1992).

- T.Afshar-Rad, **L.A.Gizzi**, M.Desselberger, F.Khattak, O.Willi, A.Giulietti, *Evidence for Whole-Beam Self-Focusing of Induced Spatially Incoherent Laser Light in Large Underdense Plasmas*, Phys Rev.Lett. 68, 942 (1992).

- A.Giulietti, D.Giulietti, D.Batani, V.Biancalana, **L.A.Gizzi**, L.Nocera and E.Schifano, *Spectroscopic Evidence for Sum Frequency of Forward and Backscattered Light in Laser Plasmas*, Phys. Rev. Lett. 63, 524 (1989).

CURRICULUM VITAE

PERSONAL INFORMATION

Name	***MUSTARELLI Chiara***
Date of birth	04.FEBRUARY.1969

WORK EXPERIENCE

• Dates (from – to)	**10 October 2017 to today (full time engagement)**
Name and address of employer	National Institute of Optics (CNR) – Largo E. Fermi n. 6, Florence
• Type of business or sector	Research
• Occupation or position held • Main activities and responsibilities	Project management support: follow up the financial implementation of the grants, analysis of financial reports; maintain, manage and document all project reports and statements; prepare and maintain follow-up tables as tools for decision-making of staff and managers; assist and support project team members in completing projects. Drafting and negotiating of cooperation agreements especially in the field of applied Physics
Main appointments:	Member of the PNNR team appointed by the Director General of CNR by providing support to the scientific staff in the participation at PNRR (Recovery and Resilience Plan) and draw up of SWOT models and guidance documents. Member of the "Rete dei referenti Audit del CNR" team appointed by the *Director General* of CNR by providing support to CNR internal audit unit in auditing procedures (Prot. AMMCNT-CNR n. 18999/2021); Administrative and financial manager of the branch research office of CNR-INO in Trieste, appointment by CNR-INO Director Prot. CNR-INO nr. 7015/2020 and 1025/2021 (Decree nr. 140 dated 19/10/2020 and Decree nr. 14 dated 5/02/2021); Member of the "Cabina di Regia Bando PON INFRASTRUTTURA" team appointed by the *D General* of CNR by providing operational support to the application of research infrastructures projects within the ESFRI roadmap (Prot. AMMCNT-CNR n.38383/2018); CNR Project officer of the EraNET Cofund "QuantERA" and "QuantERA II" project, appointed by the President of CNR, GA nr. 731473 and nr. 101017773 – preparation of the transnational Italian Call for proposals 2017, 2019 and 2021. Collect, verify, and process all financial and legal documents required from internal beneficiaries; Liaise with internal and – when appropriate - transnational beneficiaries on all financial and IPR issues. Member of the Technology Transfer team appointed by the Director of CNR-INO by providing support in the conclusion of cooperation agreements[1] (such as the signature, accession and entry into force) – Prot. CNR-INO n. 4575/2018; Project Manager of the Competence Centre ARTES4.0 financed by the Italian Ministry of Economic Development and Managerial tutor of 3 funded projects within the initiati
Dates (from – to)	**20.04.2010 to 9.10.2017 (full time engagement and part-time 75%)**

[1] Note that the term "agreement" includes convention, memorandum of understanding, exchange of notes

•Name and address of employer	Dipartimento di Scienze Fisiche e Tecnologie della Materia – CNR (the Italian National Research Council, CNR) – Piazzale A. Moro n. 7, 00185 Rome and CNR-INO (National Institute of Optics)
Type of business or sector	Research
Occupation or position held	Financial Chief Officer of the Dipartimento di Scienze Fisiche e Tecnologie della Materia (Prot. AMMCNT-CNR nr. 47701, July 20 2012 up to 4.02.2015) and Project management support. Permanent contract
Main activities and responsibilities	**Main appointments**: Technical Coordinator of the team on digitalization of the CNR, appointed by the *Director General* of CNR; Member of the team appointed by the *Director General* of CNR on the analysis of the processes and procedures within the CNR; Appointed LEAR (Legal Entity Appointed Representative at the EU) of the Coirich consortium, a research organization composed by 4 public research institutions and 2 SMEs, D(2011) 1259609/72, March 22nd 2012; **Finance**: Responsible for financial planning and record-keeping, as well as financial reporting to the Director and to higher management staff; To assess financial transaction in conformity with the Financial Regulation; Coordinating the planning and budgeting processes of the department. Appointed reference person of the DSFTM CNR on the transparency regulation. To provide support in the administrative and financial aspects of grant agreements, model contracts and regulatory provisions and ensure a sound management and follow up of the projects during their lifecycle. **Internal management and coordination**: By representing the department in contacts with other units and departments of CNR as for research funded projects (Prot. AMMCNT-CNR n. 5685/2017); **Project financial management**: Responsible for the management of DSFTM research projects (Prot. AMMCNT-CNR n. 5685/2017); Member of the team appointed by the Director of DSFTM on project management up to January 30th 2017 (Prot. AMMCNT-CNR n. 15544 dated March 6th 2015); Financial Officer of the IPERION CH Coordination Office (up to 13.04.2015) – Technical and administrative Office that provides support to the partnership for the preparatory phase of the IPERION ESFRI; Coordinating Manager of PON 2007-2013 projects (the research and competitiveness National Programme for structural funds) participated by the department, maintaining an overview of progress and financial expenditures of projects, providing the necessary assurance on the regularity of all transactions and coordinating activities with external organisations to ensure the success of the projects and their implementation.
• Dates (from – to)	**1 Feb 2008 to 19.04.2010**
• Name and address of employer	National Institute of Optics – CNR (the Italian National Research Council, CNR) – Largo E. Fermi n. 6, Florence
• Type of business or sector	Research
• Occupation or position held	Technician, Level VI; Permanent Contract (as of 15 December 2010)
• Main activities and responsibilities	Provide support regarding management and financial issues to the scientific coordinator and assistance to project partners to ensure projects run smoothly, their objectives are achieved and obligations to the EU or to regional and national administrative offices are fulfilled. Monitoring of projects, including assessing technical and financial plans, progress and expenditure reports, payments, amendments, award of grants, supply and service contracts. Logs, manages and analyses information on the progress of the project, using specific databases.

Provides access to R&D co-funded programmes. In charge of the International and European INO Project Office.
Project management:

- In charge of the European and International Project Office of CNR-INO;
- Project Manager of the Qibec Project GA 284584;
- Financial Officer of the PRIN Project "Interferometria quantistica" project nr. PRIN2009_125 cofinanced by the Italian Ministry of Education, University and Research (MIUR) within the funding source Research projects of national interest.

• Dates (from – to)	**4 Feb 2003 to 31 Jan 2008**
• Name and address of employer	National Institute of Optics (CNR) – Largo E. Fermi n. 6, Florence
• Type of business or sector	Research
• Occupation or position held	Collaboration contract Project support officer: Management and financial support to the scientific coordinator of regional, national and EC funded projects for the art diagnostic research group: Professional contract (from 04.Feb.03 to 30.July.03) and collaborative and coordination contract (from 01.Sept.03 to 31.Jan.08)
• Main activities and responsibilities	Provide support regarding management and financial issues to the scientific coordinator and assistance to project partners to ensure projects run smoothly, their objectives are achieved and obligations to the EU or to regional and national administrative offices are fulfilled. Monitoring of projects, including assessing technical and financial plans, progress and expenditure reports, payments, amendments, award of grants, works, supply and service contracts. Logs, manages and analyses information on the progress of the project, using specific databases. Provides access to R&D co-funded programmes. Revision of scientific papers, the leaflet and website of the art diagnostic group.
• Dates (from – to)	**20 June 2002 to 28 November 2002**
• Name and address of employer	Leonardo da Vinci Technologies Group, Colle di Val d'Elsa, Siena
• Type of business or sector	SrL
• Occupation or position held	Executive Assistant; Permanent Contract
• Main activities and responsibilities	Manages relationships with international entities. Manages and organizes the personnel at the Budapest work site of the company.
• Dates (from – to)	**01 September 2000 to 19 June 2002**
• Name and address of employer	Consorzio CEO – Center of Excellence for Optronics (Centro di Eccellenza Optronica) – Largo E. Fermi n. 6, Firenze
• Type of business or sector	Mixed Public -Private Consortium: University of Florence, CNR -IFAC, INOA, El.En. SpA
• Occupation or position held	Project Assistant; fixed-term contract
• Main activities and responsibilities	Provides management and financial support to the scientific coordinator and assistance to project partners. Monitoring of projects, including assessing technical and financial plans, progress and expenditure reports, payments, amendments, award of grants, works, supply and service contracts. Logs, manages and analyses information on the progress of the project, using specific databases. Translation and revision of English-language publications and scientific reports.
• Dates (from – to)	**1996 to December 2000**
• Name and address of employer	Free-lance
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for the courts of Rome, Prato and Terni and for the Magistrate's Court of Prato; Consultancy Contract for Freelance.

• Main activities and responsibilities	Transcription of court acts deemed valuable by the courts and consultant for the Public prosecutors as stenotypist in procedural interviews or ats.
• Dates (from – to)	**01 May 1995 to 29 Feb 1996**
• Name and address of employer	Oligamma SnC, Viale Sardegna n. 15, 08100 Nuoro
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for reports in the penal court of Nuoro; Work-Training Contract
• Main activities and responsibilities	Transcription of procedural acts
• Dates (from – to)	**01 Jan 1994 to 06 Feb 1995**
• Name and address of employer	Istituto Pitagora SrL di Sassari
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for the courts of Sassari and Tempio Pausania, for the Court of Youth of Sassari and for the Magistrate's Court of Sassari; Work-Training Contract
• Main activities and responsibilities	Transcription of procedural acts
• Dates (from – to)	**1992-1993**
• Name and address of employer	Free-lance
• Type of business or sector	Courtroom
• Occupation or position held	Stenotypist for the courts of the Magistrate's Court of Rome.
• Main activities and responsibilities	Transcription of procedural acts and advisor to the Public prosecutor for the transcriptions of phone tappings

EDUCATION AND TRAINING

• Dates (from – to)	**2004/5-2008/09**
• Name and type of organisation providing education and training	University for Foreigners of Siena. Degree in Linguistic and Cultural Mediation Curriculum: translation in the field of entrepreneurial tourism (Class L-12).
• Principal subjects/occupational skills covered	Solid cultural base in three European languages (English, Spanish and French); General preparation in the fields of Economics, Law and Literature.
• Title of qualification awarded	Bachelor degree (3 years) in Linguistic Mediation and Culture, curriculum in translation; Thesis topic **"**Il ruolo della comunicazione nell'era della ricerca: il caso Università per Stranieri di Siena (The role of communication in the field of research. A case study: the University for Foreigners of Siena" (A.A. 2008/09) 9.12.2009
• Level in national classification	Mark 103/110
• Dates (from – to)	**1987/88 to 1990/91**
• Name and type of organisation providing education and training	School for Interpreters and Translators - Via Cassia 32/34 – Rome College Education
• Principal subjects/occupational skills covered	Solid cultural and linguistic knowledge in two European languages (English and Spanish); Technical and literary translations in English and Spanish; simultaneous translation; General preparation in the fields of Economics, Law and Literature.
• Title of qualification awarded	Interpreter and Translator – Foreign Language Correspondent – 2 years bachelor degree

• Dates (from – to)	**1982/83 to 1986/87**
• Name and type of organisation providing education and training	High School in the Scientific field "Galileo Galilei" in Terni
• Principal subjects/occupational	High School Leaving Examination
• Title of qualification awarded	High School Diploma

PERSONAL SKILLS AND COMPETENCES

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MOTHER TONGUE **ITALIAN**

Understanding				**Speaking**				**Writing**	
Listening		Reading		Spoken interaction		Spoken produ			
C1	English	C1	English	C1	English	C1	English	C1	English
B2	Spanish	B2	Spanish	B2	Spanish	B2	Spanis h	B2	Spanish
A2	French	A2	French	A2	French	A2	French	A2	French

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ORGANIZATIONAL SKILLS AND COMPETENCES

Precision and respect of schedules in realizing assigned complex tasks;
Management of human resources, coordinating collaborators, supporting and motivating colleagues;
Problem solving attitude developed in the project management experience;
Knowledge of European Commission rules, procedures and organization;
Acquaintance with scientific research issues, researchers and technologists attitude and with specific problems common to scientific research projects;
Knowledge of process analysis methodology and experience in process rationalization;
Knowledge and experience of digitalization of administrative processes;
Experience in applying risk analysis to projects and programs.

TECHNICAL SKILLS AND COMPETENCES

Teaching assignment by CNR on management procedures on RRP projects: 2 days teaching. Subject: Illustration of the functioning of the HUB&Spoke structure of the RRP financial models such as National Centres, Innovation Ecosystems and Extended Partnerships; illustration of the aforementioned structure in GEPRO and definition of the economic plan structure.

Certified Project Manager issued by the Istituto Italiano di Project Management (ISIPM) in January 11th , 2021 nr.. 14029;

Professional consultancy service for Paolo Annunziato (advisor to the UAE Minister of Economy of Dubai) on the following subject: a) support to the renewal of the collaboration agreement between EU and UAE in the field of research and development; b) support to the drafting of an analysis on IPR management in the UAE (fror 4.05.2018 al 3.06.2018);

Master in Structural funds: issued by CEIDA - Scuola Superiore di Amministrazione Pubblica e degli Enti Locali, December 2011 (Prot. CNR-INO 10795/2011);

Certified translator for English and Spanish language at the Civil and Penal Court of Rome as of 2000;

Nominated as English Language expert by the Selection board for the competition for Financial Officer in Public Research Entity (Directorial Decree INOA n. 269 of 9 July 2004.)

Appointed Quality Control Manager for the Consorzio CEO – Center of Excellence for Optronics. The Consortium implemented its quality system according to UNI EN ISO 9001-00 regulations.

Expert Certification MOUS: MOUS is the standard, recognized all over the world, that attests to the utilization of the Microsoft Office Applications. The certificate was granted by Microsoft after passing an exam.

European Computer Driving Licence (ECDL) n. IT 378656, issued on 14.Dec.2002 by the President of the *Associazione Italiana per l'Informatica ed il Calcolo Automatico* (AICA) (Italian Association for Computer Science and Automatic).

REPORTS AND PUBLICATIONS

- **Vasco Ronchi Colloquia: vision on Technology Transfer Firenze** University Press, Firenze (Italia), 2023 – F. S. Cataliotti, G. Adembri, C. Mustarelli, A. Fedele, G. Lombardo, R. Cicchi, M. Locatelli, L. Gizzi (2023) -DOI 10.36253/cdg-1473 ;
- **Quantum Technologies Public Policy Report – Deliverable** Francesco S. Cataliotti, C. Mustarelli, Watse Castelein, Sylwia Koska, Justyna Milan-Pinat et altri (2023);
- **PROGRESS FINAL REPORT MACRONODO CNR-MACRONODO@ARTES4.0** Andrea Passarella, Chiara Mustarelli, Jacopo Catani, Ignazio Infantino, Giuseppe Amato, Francesca Rossi, Guido Toci (2023);
- **PE0000023 NQSTI - Presentazione del Bando NQSTI - QuantERA Call 2023** Chiara Mustarelli (2023)
- **PE0000023 NQSTI - Kick off meeting Spoke 3** Chiara Mustarelli, Claudia Firino (2023);
- **EuPRAXIA Advanced Photon Sources - PNNR_EuAPS project** Technical Report M. Ferrario, Ferro, L. Gizzi, M. G. Iungo, L. Labate, C. Mustarelli, G. Petringa, A. R. Rossi **(2023);**
- **Istruzioni operative per l'inserimento in PdGP di Finanziamento esterno, Progetto e Sotto**
- **Technical report** di aggiornamento sull'attuazione dei progetti nell'ambito degli avvisi D.D. n. 424 del 28.02.2018 e D.D. n. 2595 del 24.12.2019 (M. Rapallini. B. Cagnana, C. Mustarelli)
- **Nota tecnica su flussi finanziari e regole di rendicontazione progetti PNRR, Missione 4, Componente 2, Investimento 3.1, "Fondo per la realizzazione di un sistema integrato di infrastrutture di ricerca e innovazione** a cura di C.Mustarelli, D.Selisca, F. Usala (2022)
- **Nota tecnica su flussi finanziari progetti PNRR tipologia "Hub&Spoke" (CN, EI e PE), Missione 4, Componente 2, Investimento 3.1 e linee guida piattaforma AtWork** a cura di D. Fornaciari, C. Mustarelli, F. Usala (2022)
- **Technical Report "Artes4.0 Report MISE Test-before-invest"** Prot. CNR-INO n. 728 del 28/01/2022
- **Relazione su Piano Stralcio Ricerca e Innovazione 2015-2017 – "PNIR – Programma Nazionale Infrastrutture di Ricerca**" CNR-AMMCEN N. 84422 data 29/12/2020;
- **Relazione tecnica relativo al SAL2 del Centro di Competenza ARTES** CNR-INO N. 9374 data 10/12/2020;
- **Relazione tecnica per la costituzione dell'URT Interdipartimentale DSFTM-DISBA presso il Campus Biomedico di Roma** CNR-INO N. 6061 data 3/09/2020;
- **Report sulle attività al 31.12.2019** del progetto QuantERA ERA-NET Cofund in Quantum Technologies - Project no. 731473 - CNR-INO N. 971 data 5.02.2020
- QuantERA Project GA 731473
  - **Technical report Task 6.1 "Exploring the possibilities of additional joint funding activities and future developments in QT"** F. S. Cataliotti, D. Fornaciari, C. Mustarelli – Prot. CNR-INO n. 1227/2018.
- Qibec Project GA 284584 (FP7-ICT-2011-C):
  - D1.1" **Project Reporting Templates and Guidance**" Prot. CNR-INO nr. 7959, 10/09/2013.
  - D1.2 "**Periodic Activity and Management report**" - Prot. CNR-INO nr. 7960, 10/09/2013.
  - D6.2 "**Dissemination Strategy**" Prot. CNR-INO nr. 7961, 10/09/2013.
  - D6.3 "**International Conference**" Prot. CNR-INO n. 10836, 22.12.2015.
  - D.6.4 "**Second Reporting Period**" Prot. CNR-INO n. 10836, 22.12.2015.
  - "**Final Report**" Prot. CNR-INO n. 10836, 22.12.2015.
- **Information note** to the Board of Directors of CNR "**Relazione sullo stato di avanzamento della dematerializzazione delle procedure amministrative"** Prot. AMMCNT-CNR n. 10379, 16.02.2016;
- **Report "Mappatura dei processi e dei relativi procedimenti dell'Ente**" – Prot. AMMCNT-CNR n. 7376, 5.02.2016;
- **Information note** to the Board of Directors of CNR "**Mappatura dei processi e dei relativi procedimenti dell'Ente**" Prot. AMMCNT-CNR n. 10120, 16.02.2016.

ACKNOWLEDGEMENT

- Acknowledgment for assistance in preparing documents for ethical committee approval in the paper: M. Lombardo, G. Lombardo, "Non-invasive and real-time

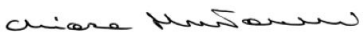
assessment of riboflavin consumption in standard and accelerated corneal cross-linking", J Cataract Refract Surg 45, 80-86 (2019)

- Acknowledgment for assistance in preparing documents for ethical committee approval in the paper B. Zappone, N. J. Patil, M. Lombardo, G. Lombardo, "Transient viscous response of the human cornea probed with the Surface Force Apparatus", PLoS ONE 13(5): e019777 (2018) (I.F 2,776)";
- Acknowledgment for assistance in preparing documents for ethical committee approval in the paper G. Lombardo, V. Villari, N. L. Micali, N. Leone, C. Labate, M.P. De Santo, M. Lombardo, "Non-invasive optical method for real-time assessment of intracorneal riboflavin concentration and efficacy of corneal cross-linking", J. Biophotonics 11, e201800028 (2018) (IF. 4.328). - J. Biophotonics 2/2018

I accept that my personal data - provided during this procedure – will be processed in accordance with Regulation (EC) No 2016/679 of the European Parliament.

Florence, 27.11.2023

Chiara Mustarelli

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Nome FERNANDO
nato il 21/04/1971
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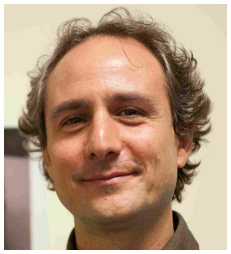
a PISA (PI)
Cittadinanza ITALIA
Residenza GENOVA (GE)
Via [redacted]
Stato civile Celibe
Professione RICERCATORE
CONTRASSEGNI SALIENTI
Statura 1,70
Capelli Castani
Occhi Castani
Segni particolari
GENOVA (GE) 30/04/2013
IL SINDACO


SCADENZA 21/04/2024
AU [redacted]
REPVBBLICA ITALIANA
COMVNE DI
GENOVA
CARTA D'IDENTITA'
N° AU [redacted]
DI
BRANDI
FERNANDO

Curriculum Vitae

PERSONAL INFORMATION

Fernando Brandi



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Sex Male | Date of birth 21/04/1971 | Nationality Italian

WORK EXPERIENCE

From 01/01/2023 to today

Full time Senior Researcher

Intense Laser Irradiation Laboratory, Istituto Nazionale di Ottica-CNR, SS-PISA (Italy)

-) Ultra-intense laser-matter interaction, laser-plasma acceleration,
-) Applied research and technology transfer activity
-) Design and development of optical diagnostic techniques for plasma and gas targets;
-) Support in the development and menagement of ultra-intense laser-plasma interaction facility;

From 03/02/2014 to 31/12/2022

Full time Researcher

Intense Laser Irradiation Laboratory, Istituto Nazionale di Ottica-CNR, SS-PISA (Italy)

-) Design and development of optical diagnostic techniques for plasma and gas targets;
-) Support in the development and menagement of ultra-intense laser-plasma interaction facility;
-) Green synthesis of colloidal nanoparticles solution by pulsed laser ablation in liquid;
-) Advanced additive and subtractive Laser Micro/Nano fabrication;
-) Applied research and technology transfer activity

From 15/07/2008 to 02/02/2014

Full time Researcher

Nanophysics Department, Istituto Italiano di Tecnologia-Genova (Italy)

Responsible of the Laser Laboratory.
He set-up and managed a new high-power laser laboratory for multidisciplinary applications.
Specific activities were:
-) Laser laboratory management: procurement of equipment and maintainance, implementing safety procedures, and coordinating multidisciplinary research supervising Post-docs and PhD amd Internship students.
-) Development of novel quantitative phase imaging technique for label-free imaging and optical metrology of dispersive materials, (e.g., biological samples, neutral gases and plasma);
-) Laser based green syntheses of bio-functionalized nanoparticles;
-) Laser processing of thin films (e.g., metals and single layer graphene), polymers and hard materials (e.g., silicon and diamond) for lab-on-a-chip development;
-) Fabrication and characterization of 3D bio-compatible and biodegradable scaffolds via novel layer-by-layer stereolithography methods;

From 01/09/2007 to 14/07/2008

Full time Post-Doc fellow

Physics Department, University of Pisa (Italy)

Design, install and run diagnostic techniques for burning plasma. Specifically, he was in charge of the installation of interferometric and spectroscopic diagnostics on a new plasma machine at the TriAlphaEnergy Inc. company (Irvine, USA).

From 01/09/2006 to 31/08/2007

Full time Post-Doc fellow

Consorzio Nazionale Inter-Universitario Scienze Fisiche della Materia (CNISM) at the Physics Department, University of Pisa (Italy)

Experimental and theoretical investigation of harmonic generation with short intense laser pulses. In particular, he studied the influence of plasma dynamics on the harmonic spectral purity.

From 01/01/2006 to 31/08/2006

Full time Post-Doc fellow

Physics Department, University of Pisa (Italy)

Development of novel interferometric diagnostic techniques for plasma. Specifically, he design and developed a novel dispersion interferometer with high sensitivity and high temporal resolution using both pulsed and continuous wave laser sources. Write proposals for industrial collaborations and management of projects.

From 01/08/2004 to 31/07/2005

Full time Post-Doc fellow

Physics Department, University of Pisa (Italy)

Development of an experimental apparatus to perform laser ablation and study the plasma dynamics in the ablated plume.

From 01/01/2000 to 31/07/2004

Research Assistant

Laser Center-Vrije Universiteit Amsterdam (The Netherlands)

Research activity in the field of optical harmonic generation in gases and plasma, and high-resolution XUV laser spectroscopy.

From 01/07/1998 to 31/12/1999

Full time Post-graduate fellow

Italian National Institute for Nuclear Physics (INFN), Pisa (Italy)

Design, build and test an original ultra-high-vacuum compatible polarization modulator device.

From 01/05/1997 to 31/08/1997

Collaborator

Physics Department, University of Pisa (Italy)

Design and test an original ultra-high-vacuum chamber to host the high-sensitivity ellipsometer and optical cavity to measure the magnetic vacuum birefringence.

From 01/05/1996 to 30/04/1997

Full time Under-graduate Fellow

Italian National Institute for Nuclear Physics (INFN), National Laboratory of Legnaro (Padova, Italy)

Build and test the prototype ellipsometer and optical cavity of the experimental apparatus to measure the magnetic vacuum birefringence.

EDUCATION

01/07/2004

PhD in Physics

Laser Center-Vrije Universiteit Amsterdam (The Netherlands)

Thesis title “Table-top XUV sources for high resolution spectroscopy: from low to high-order harmonic generation”

20/03/1997

First-Class Honours Degree in Physics (Laurea cum Laude)

Physics Department-University of Pisa (Italy)

Thesis title “Prototype of an apparatus to measure vacuum polarization”

Academic year 1993-1994

Erasmus student at the University of Edinburgh

Faculty of Science and Engineering

Classes: Experimental Physics, third year, mark 82%; Quantum Physics and Atomic and molecular Physics, third year, mark 81%; Nuclear Physics 1 and 2, fourth year, mark 87%.

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Excellent	Excellent	Excellent	Excellent	Excellent
French	Good	Good	Basic	Basic	Basic

Communication skills: Excellent communication skills gained through experience in international working environments and coordinated team activities.

List of scientific publications
H-index: 32 from Google Scholar, 29 from Scopus,

2021 - Fabrication of ZnO-nanowire-coated thin-foil targets for ultra-high intensity laser interaction experiments
D Calestani, M Villani, G Cristoforetti, **F Brandi**, P Koester, L Labate, LA Gizzi
Matter and Radiation at Extremes 6 (4), 046903

2021 - Enhanced laser-driven proton acceleration via improved fast electron heating in a controlled pre-plasma
LA Gizzi, E Boella, L Labate, F Baffigi, PJ Bilbao, **F Brandi**, G Cristoforetti, A Fazzi, L Fulgentini, D Giove, P Koester, D Palla, P Tomassini
Scientific Reports 11, 13728

2021 - A Few MeV Laser-Plasma Accelerated Proton Beam in Air Collimated Using Compact Permanent Quadrupole Magnets
F Brandi, L Labate, D Palla, S Kumar, L Fulgentini, P Koester, F Baffigi, M Chiari, D Panetta, L A Gizzi
Applied Sciences 11 (14), 6358

2021 - Overview and specifications of laser and target areas at the Intense Laser Irradiation Laboratory
LA Gizzi, L Labate, F Baffigi, **F Brandi**, G Bussolino, L Fulgentini, P Köster, D. Palla
High Power Laser Science and Engineering 9, e10

2020 - Erratum to: EuPRAXIA Conceptual Design Report
RW Assmann, et al.
The European Physical Journal Special Topics 229 (1), 11-31

2020 - EuPRAXIA conceptual design report
RW Assmann, et al.
The European Physical Journal Special Topics 229 (24), 3675-4284

2020 - Toward an effective use of laser-driven very high energy electrons for radiotherapy: Feasibility assessment of multi-field and intensity modulation irradiation schemes
L Labate, D Palla, D Panetta, F Avella, F Baffigi, **F Brandi**, F Di Martino, L. Fulgentini, A. Giulietti, P. Köster, D. Terzani, P. Tomassini, C. Traino, L A Gizzi
Scientific Reports 10, 17307

2020 - Laser-driven proton acceleration via excitation of surface plasmon polaritons into TiO2 nanotube array targets
G Cristoforetti, F Baffigi, **F Brandi**, G D'Arrigo, A Fazzi, L Fulgentini, D Giove, P Koester, L Labate, G Maero, D Palla, M Romé, R Russo, D Terzani, P Tomassini, LA Gizzi
Plasma Physics and Controlled Fusion 62 (11), 114001

2020 - Intense proton acceleration in ultrarelativistic interaction with nanochannels
LA Gizzi, G Cristoforetti, F Baffigi, **F Brandi**, G D'Arrigo, A Fazzi, L Fulgentini, D Giove, P Koester, L Labate, G Maero, D Palla, M Romé, M Russo, D Terzani, P Tomassini
Physical Review Research 2 (3), 033451

2020 - Experimental study on the performances of second-harmonic dispersion interferometers at 10.6 μm and 1064 nm for plasma density measurements
F Brandi, F Wessel, CM Lohff, JR Duff, ZO Haralson
Applied Optics 59 (27), 8486-8493

2020 - Widefield quantitative phase imaging by second-harmonic dispersion interferometry
F Brandi, F Wessel
Optics Letters 45 (15), 4304-4307

2020 – **F. Brandi**, L. Labate, D. Rapagnani, R. Buompane, A. di Leva, L. Gialanella, and L. A. Gizzi
Optical and spectroscopic study of a supersonic flowing helium plasma: energy transport in the afterglow
Scientific Reports, 10 (1), 5087

2019 – **F. Brandi**, L. A. Gizzi
Optical diagnostics for density measurement in high-quality laser-plasma electron accelerators
High Power Laser Science and Engineering 7, e26

2019 - P Tomassini, D Terzani, F Baffigi, **F Brandi**, L Fulgentini, P Koester, L Labate, D Palla, L. A. Gizzi
High-quality 5 GeV electron bunches with resonant multi-pulse ionization injection
Plasma Physics and Controlled Fusion 62 014010

2018 – X. Chen, Y. Zhao, X. Li, Z. Xiao, Y. Yao, Y. Chu, B. Farkas, I. Romano, **F. Brandi** and J. Dai
Functional multichannel poly(propylene fumarate)-collagen scaffold with collagen-binding neurotrophic factor 3 promotes neural regeneration after transected spinal cord injury
Adv. Healthcare Mater. **7**, 1800315

2018 - **F. Brandi**, F. Giammanco, F. Conti, F. Sylla, G. Lambert, and L. A. Gizzi
Measurement of the particle number density in a pulsed flow gas cell with a second-harmonic interferometer''
J. Phys.: Conf. Ser., 'The proceedings of the 6th Target Fabrication Workshop (TFW6) and the Targetry for High Repetition Rate Laser-Driven Sources (Targ3) Conference'
J. Phys.: Conf. Ser., **1079** 012006

2018- L.A.Gizzi, F.Baffigi, **F.Brandi**, G.Bussolino, G.Cristoforetti, A.Fazzi, L.Fulgentini, D.Giove, P.Koester, L.Labate, G.Maero, D.Palla, M.Romé, and P.Tomassini
Light Ion Accelerating Line (L3IA): Test experiment at ILIL-PW
Nuclear Instruments and Methods in Physics Research A, **909,** 160-163

2018 – M.Ferrario et. al.
EuPRAXIA@SPARC_LAB Design study towards a compact FEL facility at LNF
Nuclear Instruments and Methods in Physics Research , **909,** 134-138

2017 - P A Walker et. al.
Horizon 2020 EuPRAXIA design study
J. Phys.: Conf. Ser. **874** 012029

2017 – L. A. Gizzi, D. Giove, C. Altana, **F. Brandi**, P. Cirrone, G. Cristoforetti A. Fazzi, P. Ferrara, L. Fulgentini, P. Koester, L. Labate, G. Lanzalone, P. Londrillo, D. Mascali, A. Muoio, D. Palla, F. Schillaci, S. Sinigardi, S. Tudisco, and G. Turchetti
A new Line for Laser driven Light Ions Acceleration and related TNSA studies
Applied Sciences 7 (10), 984

2017 - C. Altana, S. Tudisco, G. Lanzalone, D. Mascali, A. Muoio, **F. Brandi**, G. Cristoforetti, P. Ferrara, L. Fulgentini, P. Koester, L. Labate, D. Pallae and L. Gizzi
Experimental investigation of ion production and acceleration mechanism in laser-produced plasma at moderate intensity for nuclear studies @ ELI-NP
Journal of Instrumentation **12** C04011

2017 – A Zsedenyi, B Farkas, G N. Abdelrasoul, I Romano, E Gyukity-Sebestyen, K Nagy, M Harmati, G Dobra, S Kormondi, G Decsi, I B Nemeth, A Diaspro, **F Brandi**, S Beke, K Buzas
Gold nanoparticle-filled biodegradable photopolymer scaffolds induced muscle remodeling: in vitro and in vivo findings
Materials Science and Engineering C, **72,** 625–630

2017 - B. Farkas, S. Dante, and **F. Brandi**
Photoinitiator-free 3D scaffolds fabricated by excimer laser photocuring
Nanotechnology, **28,** 034001, http://dx.doi.org/10.1088/1361-6528/28/3/034001

2016 - **F. Brandi**, F. Giammanco, F. Conti, F. Sylla, G. Lambert, and L. A. Gizzi
Real-time monitoring via second-harmonic interferometry of a flow gas cell for laser wakeeld acceleration
Review of Scientific Instruments, **87**, 086103; http://dx.doi.org/10.1063/1.4960399

2016 - D Palla, F Baffigi, **F. Brandi**, L Fulgentini, P Koester, L Labate, P Londrillo, LA Gizzi
Comparison of Self-Injection Thresholds in He and N_2 and Role of Self-Focusing in LWFA
Nuclear Instruments and Methods in Physics Research A, **829**, 408-412, doi:10.1016/j.nima.2016.03.109

2016 - C. Altana, A.Muoio, G.Lanzalone, S.Tudisco, **F. Brandi**, G.A.P.Cirrone, G. Cristoforetti, A.Fazzi, P.Ferrara, L.Fulgentini, D.Giove, P.Koester, L.Labate, D. Mascali, D.Palla, F.Schillaci, L.A.Gizzi
Investigation of ion acceleration mechanism through laser-matter interaction in femtosecond domain
Nuclear Instruments and Methods in Physics Research A, **829**, 159-162, doi:10.1016/j.nima.2016.02.016

2016 - L.A.Gizzi, C.Altana, **F. Brandi**, P.Cirrone, G.Cristoforetti, A.Fazzi, P.Ferrara, L. Fulgentini, D.Giove, P.Koester, L.Labate, G.Lanzalone, P.Londrillo, D. Mascali, A.Muoio, D.Palla, F.Schillaci, S.Sinigardi, S.Tudisco, G.Turchetti
Role of laser contrast and foil thickness in target normal sheath acceleration
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2016 - S. Tudisco, C. Altana, G. Lanzalone, A. Muoio, G.A.P. Cirrone, D. Mascali, F. Schillaci, **F. Brandi**, G. Cristoforetti, P. Ferrara, L. Fulgentini, P. Koester, L. Labate, D. Palla, L.A. Gizzi
Investigation on Target Normal Sheath Acceleration through the measure of Ions energy distribution
Review of Scientific Instruments **87** 02A909

2015 – I. Romano, F. Ayadi, L. Rizzello, M. Summa, R. Bertorelli, P.P. Pompa, **F. Brandi**, I. Bayer, and A. Athanassiou
Passive to Active Tuning of Wound Dressings: Controlled Drug Release from Hydrogel Modified Fibrous Substrates,
Carbohydrate Polymers **131** 306–314

2015 – B. Farkas, I. Romano, L. Ceseracciu, **F. Brandi** and S. Beke
Four-order stiffness variation of laser-fabricated photopolymer biodegradable scaffolds by modulating the laser parameters
Materials Science and Engineering C **55** 14–21

2015 – A. Milionis, D. Fragouli, **F. Brandi**, I. Liakos, S. Barroso, R. Ruffilli and A. Athanassiou
Superhydrophobic/Superoleophilic Magnetic Elastomers by Laser Ablation
Applied Surface Science **351** 74–82

2015 – L. A. Gizzi, L. Labate, F. Baffigi, **F. Brandi**, G. C. Bussolino, L. Fulgentini, P. Koester, D. Palla, F. Rossi
Laser-plasma acceleration of electrons for radiobiology and radiation sources
Nuclear Instruments & Methods In Physics Research B **355** 241–245

2015 - E. Maccioni, M. Morganti, and **F. Brandi**
Strain sensitivity comparison between fiber Bragg gratings inscribed on 125 and 80 micron cladding diameter fibers, case study on the solidification monitoring of a photo-curable resin
Review of Scientific Instruments **86** 026106, doi: 10.1063/1.4908573.

2015 - B. Farkas, A. Zsedenyi, E. Gyukity-Sebestyen, I. Romano, K. Nagy, A. Diaspro, **F. Brandi**, K. Buzas and S. Beke
Excimer laser-produced biodegradable photopolymer scaffolds do not induce immune rejection in vivo
Journal of Laser Micro/Nanoengineering **10** 11-14.

2014 – R. Barenghi, S. Beke, I. Romano, P. Gavazzo, B. Farkas, M. Vassalli, **F. Brandi** and Silvia Scaglione
Elastin-coated biodegradable photopolymer scaffolds for tissue engineering applications
BioMed Research International **2014** 624645, http://dx.doi.org/10.1155/2014/624645

2014 - S. Beke, B. Farkas, I. Romano and **F. Brandi**
3D scaffold fabrication by Mask Projection Excimer laser Stereolithography
OPTICAL MATERIAL EXPRESS 4 2032-2041

2014 - S. Beke, R. Barenghi, B. Farkas, I. Romano, L. Kőrösi, S. Scaglione and **F. Brandi**
Improved cell activity on biodegradable photopolymer scaffolds using titanate nanotube coatings
MATERIALS SCIENCE and ENGINEERING C 44 38-43

2014 – M. Lau, I. Haxhiaj, P. Wagener, R. Intartaglia, **F. Brandi**, J. Nakamura and S. Barcikowski
Ligand-free gold atom clusters adsorbed on graphene nano sheets generated by oxidative laser fragmentation in water
CHEMICAL PHYSICS LETTERS 610–611 256–260

2014 – M. Manca, S. Beke, L. De Marco, P. Pareo, A. Qualtieri, A. Cannavale, **F. Brandi**, and G. Gigli
3D Photoelectrode for Dye Solar Cells Realized by Laser Micromachining of Photosensitive Glass
JOURNAL OF PHYSICAL CHEMISTRY C **118** 17100–17107

2014 – R. Intartaglia, K. Bagga, and **F. Brandi**
Study on the productivity of silicon nanoparticles by picosecond laser ablation in water: towards gram per hour yield
OPTICS EXPRESS **22** 3117-3127

2014 - L. Servoli, **F. Brandi**, R.Carzino, M. Citroni, S. Fanetti, S. Lagomarsino, G. Parrini, D. Passeri, S. Sciortino, A. Scorzoni

Characterization of Silicon-On-Diamond chip with ionizing radiation
JOURNAL of INSTRUMENTATION **9** C04019

2013 - S. Sciortino, **F. Brandi**, R. Carzino, M. Citroni, A. De Sio, S. Fanetti, S. Lagomarsino, E. Pace, G. Parrini, D. Passeri, A. Scorzoni, L. Servoli, L. Tozzetti
Electrical properties of laser-bonded Silicon-On-Diamond samples
NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH A **730** 159-163

2013 - M. Lorenzoni, **F. Brandi**, S. Dante, A. Giugni, and B. Torre
Simple and effective graphene laser processing for neuron patterning application
SCIENTIFIC REPORTS **3** 1954

2013 - K. Bagga, A. Barchanski, R. Intartaglia, S. Dante, R. Marotta, A. Diaspro , C. L. Sajti and **F. Brandi**
Laser-assisted synthesis of staphylococcus aureus protein-capped silicon quantum dots as bio-functional nanoprobes
LASER PHYSICS LETTERS **10** 065603

2013 - S. Beke, L. Kőrösi, A. Scarpellini, F. Anjum, **F. Brandi**
Titanate nanotube coatings on biodegradable photopolymer scaffolds
MATERIALS SCIENCE and ENGINEERING C **33** 2460–2463

2013- F. Conti, M. Tiberi, F. Giammanco, A. Diaspro, and **F. Brandi**,
High-spatial resolution second-harmonic interferometry,
LASER PHYSICS LETTERS **10** 056003

2013- B. Harke, W. Dallari**,** G. Grancini, D. Fazzi, **F. Brandi**, A. Petrozza, A. Diaspro,
Polymerization Inhibition via Triplet State Absorption for Nanoscale Lithography,
ADVANCED MATERIALS **25** 904–909

2013- A. Accardo, F. Mecarini, M. Leoncini, **F Brandi**, E. Di Cola, M. Burghammer, C. Riekel, E. Di Fabrizio.
Fast, active droplet interaction: coalescence and reactive mixing controlled by electrowetting on a superhydrophobic surface,
LAB ON A CHIP **13** 332-335

2013- S. Beke, F. Anjum, L. Ceseracciu, I. Romano, A. Athanassiou, A. Diaspro, **Brandi F**.
Rapid fabrication of rigid biodegradable scaffolds by excimer laser mask projection technique: a comparison between 248 nm and 308 nm
LASER PHYSICS **23** 035602

2013- Intartaglia R, Das G, Bagga K, Gopalakrishanan A, Genovese A, Povia M, Di Fabrizio E, Cingolani R, Diaspro A, **Brandi F.**
Laser synthesis of ligand-free metallic nanoparticles for plasmonic applications,
PHYSICAL CHEMISTRY CHEMICAL PHYSICS, **15**, 3075-3082

2013 – I. Bayer, **Brandi F**, R. Cingolani, A. Athanassiou.
Modification of wetting properties of laser-textured surfaces by depositing triboelectrically charged Teflon particles.
COLLOID AND POLYMER SCIENCE **291** 367 – 373

2012- Beke S, Anjum F, Tsushima H, Ceseracciu L, Chieregatti E, Diaspro A, Athanassiou A, **F Brandi**
Towards excimer-laser-based stereolithography: a rapid process to fabricate rigid biodegradable photopolymer scaffolds.
JOURNAL OF THE ROYAL SOCIETY INTERFACE **9** 3017-3026
Note: COVER IMAGE of the November 2012 journal issue.

2012 - Beke S, Korosi L, Nanai L, **Brandi F**.
In-situ optical emission spectroscopy of laser-induced vanadium oxide plasma in vacuum.
VACUUM **86** 2002-2004

2012 - Intartaglia R, Bagga K, Scotto M, Diaspro A, **Brandi F**.
Luminescent silicon nanoparticles prepared by ultra short pulsed laser ablation in liquid for imaging applications.
OPTICAL MATERIALS EXPRESS **2** 510-518

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2001 - **Brandi F**, Bregant M, Cantatore G, Della Valle F, Carusotto S, Di Domenico G, Gastaldi U, Milotti E, Pengo R, Polacco E, Rizzo C, Ruoso G, Zavattini E, Zavattini G.
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1997 - **Brandi F**, DellaValle F, DeRiva AM, Micossi P, Perrone F, Rizzo C, Ruoso G, Zavattini G.
Measurement of the phase anisotropy of very high reflectivity interferential mirrors.
APPLIED PHYSICS B: LASERS AND OPTICS, vol. 65, p. 351-355

Book chapters

2017 – **F. Brandi**
Invited - Book Chapter title: “Silicon Nanoparticles via Pulsed Laser Ablation in Liquid”, Book title: “Silicon Nanomaterials Sourcebook: Low-Dimensional Structures, Quantum Dots, and Nanowires”, Volume One
Editor: Prof. Klaus D. Sattler, Publisher: CRC Press | Taylor & Francis Group,
Augurst 7, 2017 (https://www.crcpress.com/Silicon-Nanomaterials-Sourcebook-Low-Dimensional-Structures-Quantum-Dots/Sattler/p/book/9781498763776)

2013 - A. Milionis, I. Bayer, D. Fragouli, **F. Brandi** and A. Athanassiou
Book Chapter title: "Combination of lithography and coating methods for surface wetting control", Book title: "Updates in Advanced Lithography", ISBN 980-953-307-530-8, Editor: Prof. Sumio Hosaka, Publisher: Intech

Fernando Brandi, 27/11/2023

PERSONAL INFORMATION

Leonida Antonio GIZZI
Male | 24/01/1963 | Italian

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WORK EXPERIENCE

- **Research Director** (Dirigente di Ricerca) at Istituto di Ottica CNR-INO, Pisa (current)
- **Head** of the Pisa Unit of Istituto Nazionale di Ottica (http://www.pi.ino.cnr.it/pisa/) (current)
- **Scientific Director** of the Intense Laser Irradiation Laboratory (current)

ONGOING RESEARCH PROJECT WITH LEADING ROLE
> Next Generation EU (PNRR) - Tuscany Health Ecosystem (THE) 2022-2025 – Principal Investigator of Spoke 1 – "Advanced radiotherapies and diagnostics in oncology" (€ 9.140.725,78)
> Next Generation EU (PNRR) - IPHOQS - INTEGRATED INFRASTRUCTURE INITIATIVE IN PHOTONIC AND QUANTUM SCIENCES, WP Leader (3,262,429.00)
> EU H2020 - Innovation Fostering in Accelerator Science and Technology (I.FAST) 2020-2024, Task Leader on Laser Driver Development for Plasma Accelerators (€ 110.000,00)
> EU H2020 - Compact European Plasma Accelerator with Superior Beam Quality (EuPRAXIA) 2022-2026, PP pf Research Infrasturcure, WP Leader (Laser Development); (€ 90.000,00)
> IT MoD - "APOLLO (Advanced Pulsed Orientable Laser for Long distance Operations) – 2019-2024, High repetition rate Ultrafast Laser development (€ 3.350.000,00)

SAMPLE OF PAST PROJECTS WITH LEADING ROLE
> IT MUR-CNR – Implementation of the European Roadmap ESFRI: "Extreme Light Infrastructure" (ELI), 2013-2019, PI of Research Unit at CNR-INO (€ 2.640,000).
> EU FP7 - High Power laser Energy Research Facility (HiPER), Research Infrastructures, 2008-2011, PI of IPCF- CNR research unit; (€ 112.000,00)
> INFN Commissione Nazionale V, Progetto FAST - Femtosecond timing and sync, 2007-2009, PI of Pisa Research Unit – INFN Sez. Pisa; (€ 95.500,00)
> MIUR-FISR- national project on *Compact Ultrafast X-ray Sources*, National Coordinator, 2003-2007; (€ 276.097,00)
> EU FP5 European training network XPOSE, *X-ray probing of the structural evolution of matter*, Head of IPCF-CNR node, 2000-2004; (€ 147.000,00)
> ASI Italian Space Agency, Laue-diffraction optics for gamma-ray astronomy, Scientist in charge of Pisa research unit, 2000-2001; (€ 13.000,00)

SAMPLE OF OTHER RESEARCH PROJECTS WITH PARTICIPANT ROLE
> EC European training network GAUS-XRP II, Generation and application of ultrashort, laser-produced X-ray pulses, 1996-200;
> EC European training network SILASI, Superintense Laser Solid Interactions, 1996-2000;
> EC European training network GAUS-XRP I, Generation and application of ultrashort, laser-produced X-ray pulses, 1993-1995;
> CNR institutional projects on *High power density laser-matter interactions*, 1989-1996.

CONFERENCES AND WORKSHOPS
More than 70 oral and invited presentations at international conferences and workshops.

PUBLICATIONS
Author of 312 publications (Source ISI Web of Science) including more than 210 articles on **refereed** (JCR) journals (as of Feb 2022) with more than 5500 citations.H-Index: 43 (G. Scholar)SEP H-Index: 35 (ISI WOS)

MASTER AND PhD SUPERVISION: more than 20 Master and PhD Theses Supervision

EDUCATION AND TRAINING

PhD: (1990-2004) 1994: Ph.D. in Plasma Physics and D.I.C (Imperial College of Science technology and Medicine, University of London;

FIRST DEGREE (Laurea): (1983-1989) Laurea in Fisica, Università degli studi di Pisa, Laurea in Fisica (Università di Pisa);

OTHER POSITIONS, SCHOLARSHIPS AND AWARDS: EU Marie Curie Fellowship at Imperial College, London, UK, 1995 • Scholarship of the Italian Space Agency at IFAM-CNR, Pisa, 1994 • Scholarship of the National Research Council at l'Imperial College di London, UK, 1993-94 • Research Associate at Imperial College, London, UK, 1993 • Scholarship of the National Research Council at IFAM-CNR, Pisa, 1991-92 • Scholarship of the National Research Council at Imperial College di London, UK, 1991.

MAIN RESEARCH FIELDS: Radiation Sources • High Power Laser Interaction with Matter •X-Ray Emission From Laser Produced Plasmas – X and Gamma Ray Generation and Applications • High Energy Astrophysics.

RESEARCH INTERESTS: Ultra Short, Ultraintense Laser Plasma Interactions • E.m. wave propagation • Atomic physics of ionised species • Collective phenomena and instabilities • Inertial confinement fusion related studies • X-ray generation and characterisation • Particle acceleration in laser-matter interactions • X-ray and gamma ray optics • Plasma acceleration of particles • Dosimetry • Radiobiology.

REVIEWER ROLE

CAMBRIDGE JOURNALS Member of the Editorial Board of "High Power Laser Science and Engineering"

APS since 1997 *Referee* of *Phys. Rev. Lett., Phys Rev. E*

APS since 2008 *Outstanding Referee of the American Physical Society (APS).*

nature since 2010, *Referee of Nature, Nature Communications, Nature Physics, Scientific Reports.*

Other referee roles: *Physics of Plasmas*, *Laser and Particle Beam*, *New J. Physics*

RESEARCH ACHIEVEMENTS

During my career I have conducted and promoted research activities that have led me and my institution to gain leadership roles in the most innovative fields of physics with high intensity lasers, plasmas and their applications in the main sectors of socio-economic interest, such as medicine, environment and cultural heritage, also in collaboration with high-tech companies. Since my first degree thesis (1989) I have been dealing with the experimental study of laser-plasma interactions in conditions relevant for laser fusion. In this context I have promoted, with roles of coordinator or work-package leader, experimental campaigns at the main international laser facilities, including the Vulcan laser at the Central Laser Facility (CLF, GB), the Prague Asterix Laser (PALS, Czech Rep.), the OMEGA laser (USA), the J-KAREN laser (Japan). Since 1992, I have been developing experimental study of laser-plasma interaction with ultra-intense lasers of the Chirped Pulse Amplification type and in 1999 I have promoted and coordinated the first Italian project (MURST) on the development of ultrashort radiation pulses based on laser-plasma interaction for materials and medical

*Figure 1. World map of laser with peak power >100 TW, tratto da "Gerard Mourou: Nobel Lecture: Extreme light physics and application", Rev. Mod. Phys., **91**, 030501 (2019).*

applications. I have carried out and coordinated experimental activities at international laboratories of high power ultra-short pulse lasers at the Rutherford Appleton Laboratory (GB), the Laboratoire d'Optique Appliquée (Ecole Polytechnique, France), the CEA of Saclay (France), the Japan Atomic Energy Research Institute (Japan). Following the results obtained, I was able to establish a program for the development of laser-plasma acceleration of particles for X-ray imaging and novel radiotherapy approacheswithin the ESFRI Extreme Light Infrastructure (ELI) initiative which, in 2007, led to the first demonstration of laser-plasma acceleration in Italy, at the ILIL laboratory of the INO-CNR in Pisa, a key international infrastructure (see figure) of which I became Scientific Director in 2009. On the basis of these results and European developments, I coordinated, from 2009 to 2013, the establishment of the FLAME Laboratory at the National Laboratories of Frascati (LNF) of the INFN which to date constitutes another key infrastructure of the SparcLAB project at the LNF (see Figure) and of the new ESFRI infrastructure on Plasma Acceleration called EuPRAXIA. Starting from 2013, I have been responsible for the design and construction, at the Pisa headquarters of the National Institute of Optics, of the ILIL-PW installation, the first infrastructure in Italy based on ultra-intense sub-PW class lasers, entirely dedicated to the study of laser-plasma interaction and laser-plasma acceleration, which was inaugurated in March 2018. Thanks to these results, the ILIL laboratory is today among the main laboratories in the world for plasma physics with ultra-intense lasers and plasma acceleration. ILIL is also a node of the European Network on Innovative Accelerators (Euronnac), a partner of the ESFRI EuPRAXIA Infrastructure Project and a member of LASERLAB-EUROPE association. Since 2013, I have also been responsible for the CNR-INO-Pisa node of the Italian Extreme Light Infrastructure Network (ELI-Italy, ELI-Attosecond, ELI-Nuclear Physics) coordinated by CNR and participated by the Sincrotrone of Trieste and the INFN. Within this Network, the Pisa node is home to the development of plasma acceleration of particles for applications to high-energy radiation sources, diagnostics and radiotherapy in the biomedical field, focused on the role of the ultrashort (femtosecond domain) nature of laser-driven radiation sources.

As of today, my research group carries out basic research and develops applications of plasmas in the main sectors of socio-economic interest and, in particular in biology and medicine, energy and cultural heritage. The research activity on plasmas today constitutes the main research line for planning and scientific production active at the Pisa Branch of the National Institute of Optics and one of the main ones of the Institute at a national level. As head of the Pisa section of the National Institute of Optics, I have attracted regional/national/European resources and collaborations in particle acceleration and applications to radiobiology. I have engaged a major research programme in the development of innovative radiobiology and future radiation therapies also based on Very High Energy Electron (VHEE) and ultra-high dose rate for FLASH radiotherapy. This programme, supported by the Next Generation EU programme through the Italian Ministry of Research, includes infrastructure development and a full multi-disciplinary approach to the investigation of biological effects of ionizing radiations, from the microscopic, ultrafast scale to the clinics.

SELECTED PUBLICATIONS

- G. Cristoforetti, P. Koester, S. Atzeni, D. Batani, S. Fujioka, A. Schiavi, K. Shigemori, R. Takizawa, T. Tamagawa, D. Tanaka, A. Tentori, Y. Umeda, A. Yogo, and **L.A. Gizzi**, Multibeam laser–plasma interaction […] for direct-drive inertial confinement fusion, High Power Laser Science and Engineering 11, 24 (2023).

- A. Borghini , C. Vecoli, L. Labate, D. Panetta, MG Andreassi, **L.A.Gizz**i. FLASH ultra-high dose rates in radiotherapy: preclinical and radiobiological evidence. Int J Radiat Biol. 98, 127-135 (2022).

- **L.A. Gizzi**, M.G. Andreassi, Ready for translational research. *Nat. Phys.* 18, 237–238 (2022).

- F. Albert, M E Couprie, A. Debus, M. C. Downer, J. Faure, A. Flacco, **L. A. Gizzi** et al., *2020 roadmap on plasma accelerators,* New J. Phys. 23, 031101 (2021).

- L. Labate, D. Palla, D. Panetta, F. Avella, F. Baffigi, F. Brandi, F. Di Martino, L. Fulgentini, A. Giulietti, P. Köster, D. Terzani, P. Tomassini, C. Traino, **L. A.Gizzi**, Toward an effective use of laser-driven very high energy electrons for radiotherapy: Feasibility assessment of multi-field and intensity modulation irradiation schemes, Scientific Reports 10, 17307 (2020).

- **L. A. Gizzi**, G. Cristoforetti, F. Baffigi, F. Brandi, G. D'Arrigo, A. Fazzi, L. Fulgentini, D. Giove, P. Koester, L. Labate, G. Maero, D. Palla, M. Romé, M. Russo, D. Terzani, and P. Tomassini, Intense proton acceleration in ultrarelativistic interaction with nanochannels, Phys. Rev. Research 2, 033451 (2020).

- P. Tomassini, D. Terzani, F. Baffigi, F. Brandi, L. Fulgentini, P. Koester, L. Labate, D. Palla and **L. A. Gizzi**, High- quality 5 GeV electron bunches with resonant multi-pulse ionization injection, Plasma Physics and Contr. Fusion, 62, 014010 (2020).

- **L.A. Gizzi**, L. Labate, F. Baffigi, F. Brandi, G.C. Bussolino, L. Fulgentini, P. Koester, D. Palla, F. Rossi, Laser– plasma acceleration of electrons for radiobiology and radiation sources, Nuclear Instruments and Methods in Physics Research B355, 241–245 (2015).

- P. Ferrara, M. Ciofini, L. Esposito, J. Hostaša, L. Labate, A. Lapucci, A. Pirri, G. Toci, M. Vannini, and **L. A. Gizzi**, 3-D numerical simulation of Yb:YAG active slabs with longitudinal doping gradient for thermal load effects assessment, Optics Express 22, 5375–5386 (2014).

-**L. A. Gizzi**, S. Betti, E. Förster, D. Giulietti, S. Höfer, P. Köster, L. Labate, R. Lötzsch, A. P. L.Robinson, and I. Uschmann, Role of resistivity gradient in laser-driven ion acceleration Phys. Review ST Acc. Beams, 14, 011301 (2011).

- F. Zamponi, A. Lübcke, T. Kämpfer, I. Uschmann, E. Förster, A. P. L. Robinson, A. Giulietti, P. Köster, L. Labate. T. Levato, and **L.A. Gizzi**, *Directional Bremsstrahlung from a Ti Laser- Produced X-Ray Source at Relativistic Intensities in the 3–12 keV Range*, Phys. Rev. Lett, 105, 085001 (2010).

- S. Betti, C. A. Cecchetti, E. Förster, A. Gamucci, A. Giulietti, D. Giulietti,T. Kämpfer, P. Köster, L. Labate, T. Levato, A. Lübcke, I. Uschmann, F. Zamponi, and **L. A. Gizzi**, *On the effect of rear-surface dielectric coatings on laser-driven proton acceleration*, Phys. Plasmas, 16, 100701 (2009).

- **L. A. Gizzi**, S. Betti, M. Galimberti, A. Giulietti, D. Giulietti, L. Labate T. Levato, P. Tomassini, P. Monot, T. Ceccotti, P. De Oliveira, and Ph. Martin, *Tracking propagation of ultrashort intense laser pulses in gases via probing of ionization*, Phys. Rev. E 79, 056405 (2009).

- **L.A. Gizzi**, A. Giulietti, D. Giulietti, P. Koester, L. Labate, T. Levato, F. Zamponi, A. Luebcke, T. Kaempfer, I. Uschmann, E. Foerster, A. Antonicci, D. Batani, Observation of electron transport dynamics in high intensity laser interactions using multi-energy monochromatic X-ray imaging, Plasma Phys. Control. Fusion 49, B221-B221 doi: 10.1088/0741-3335/49/12B/S19 (2007).

- **L.A. Gizzi**, M. Galimberti, A. Giulietti, D. Giulietti, P. Köster, L. Labate, P. Tomassini, Ph. Martin, T. Ceccotti, P. D'Oliveira, P. Monot, *Femtosecond interferometry of propagation of a laminar ionization front in a gas*, Phys. Rev. E , 144609PRE, (2006).

- **L.A. Gizzi**, C.A. Cecchetti, M. Galimberti, A. Giulietti, D. Giulietti, P. Köster, L. Labate, S. Laville, P. Tomassini, *Soft laser-plasma X-ray sources for differential absorption imaging of tracing elements in thin samples,* Laser Part. Beams 22, 367 (2004).

- **L.A.Gizzi**, C.A.Cecchetti, M.Galimberti, A.Giulietti, D.Giulietti, L.Labate, S.Laville, P.Tomassini, *Transient ionization in plasmas produced by point-like irradiation of solid Al targets* , Phys. Plasmas 10 4601 (2003).

- **L.A.Gizzi**, A.Giulietti, O.Willi, D.Riley, *Soft-x-ray emission dynamics in picosecond laser-produced plasmas,* Phys. Rev. E, 62, 2721 (2000).

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- **L.A.Gizzi**, A.J.Mackinnon, D.Riley, S.M.Viana, O.Willi, *Measurements of thermal transport in plasmas produced by picosecond laser pulses,* Laser Part. Beams, 13, 511 (1995).

- **L.A.Gizzi** , D.Giulietti, A.Giulietti, T.Afshar-Rad, V.Biancalana, P.Chessa, E.Schifano, S.M.Viana, O.Willi, *Characterisation of Laser Plasmas for Interaction Studies*, Phys. Rev. E, 49, 5628 (1994).

- D.Riley, **L.A.Gizzi**, F.Y.Khattak, S.M.Viana, O.Willi, *Plasma Conditions Generated by Interaction of a High Brightness, Pre-pulse Free Raman Amplified KrF Laser Pulse with Solid Targets,* Phys. Rev. Lett. 69, 3739 (1992).

- M.Desselberger, **L.A.Gizzi**, V.Barrow, J.Edwards, F.Y.Khattak, S.M. Viana, O.Willi, R.Bann, C.N.Danson, *Generation of High Aspect Ratio Line Focus Using a Random Phase Plate*, Applied Optics, 31, 3759 (1992).

- **L.A.Gizzi**, D.Batani, V.Biancalana, A.Giulietti, D.Giulietti, *X-Ray emission from Thin Foil Laser produced Plasmas*, Laser and Particle Beams, 10, 65 (1992).

- T.Afshar-Rad, **L.A.Gizzi**, M.Desselberger, F.Khattak, O.Willi, A.Giulietti, *Evidence for Whole-Beam Self-Focusing of Induced Spatially Incoherent Laser Light in Large Underdense Plasmas*, Phys Rev.Lett. 68, 942 (1992).

- A.Giulietti, D.Giulietti, D.Batani, V.Biancalana, **L.A.Gizzi**, L.Nocera and E.Schifano, *Spectroscopic Evidence for Sum Frequency of Forward and Backscattered Light in Laser Plasmas*, Phys. Rev. Lett. 63, 524 (1989).