

CURRICULUM VITAE SINTETICO DI LEONIDA A. GIZZI

INDIRIZZO e CONTATTI

CONSIGLIO NAZIONALE DELLE RICERCHE
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POSIZIONE ATTUALE

Primo Ricercatore presso l'Istituto Nazionale di Ottica (INO) – del CNR, Pisa
Ricercatore associato INFN - Sezione di Pisa
Responsabile del Laboratorio di Irraggiamento Laser Intensi - ILIL

Laureato in Fisica presso l'Università di Pisa nel 1989, ottiene il Ph.D. in Fisica presso l'Imperial College of Science, Technology and Medicine (Londra, GB) nel 1994. È fisico sperimentale con competenze nel settore dei laser di alta potenza, dell'interazione laser-materia ad altissime intensità e della diagnostica di plasmi, con riferimento ai plasmi per l'accelerazione di particelle, per le sorgenti di raggi X e γ , per la fusione nucleare e le applicazioni alla medicina.

Su queste tematiche il sottoscritto ha avuto responsabilità di coordinamento e ruoli di principal investigator in oltre 20 tra progetti Europei e Nazionali dedicati alla fisica dell'interazione laser-materia ad altissime intensità e, a partire dal 2003, allo sviluppo dell'accelerazione laser-plasma di particelle. Grazie ai risultati ottenuti con questi progetti, il laboratorio ILIL di Pisa (diretto dal sottoscritto) oggi è oggi tra i principali laboratori europei per la fisica con i laser ultraintensi e dell'accelerazione laser-plasma ed è nodo del Network Europeo sugli Acceleratori Innovativi (Euronac) e partner del Progetto di Infrastruttura Europea (H2020) di Accelerazione a Plasma (EuPRAXIA).

Leonida A. Gizzi è autore di oltre 250 pubblicazioni censite dai principali database di pubblicazioni (ISI WOS, SCOPUS), comprendenti oltre 170 pubblicazioni su riviste con referee internazionale. Le sue pubblicazioni hanno raccolto circa 4500 citazioni bibliografiche con H-index google scholar pari a 34 e H-index ISI WOS pari a 28. È stato relatore di oltre 50 presentazioni orali e su invito a congressi internazionali. È stato membro di Advisory e Programme committee di numerose conferenze internazionali e co-editor di riviste internazionali. È stato chair della Sezione "Beam Plasma and Inertial Fusion" dell'European Physical Society. È referee delle principali riviste internazionali e dal 2008 è stato riconosciuto "Outstanding Referee" dall'American Physical Society.

Pisa, 18/04/2017

Firma



Firma 1



18/04/2017



Europass Curriculum Vitae

Personal information

Surname(s) / First name(s)

Labate / Luca Umberto

Nationality(-ies)

Italian

Date of birth

December 30, 1971

Place of birth

Reggio Calabria, Italy

title

Dr.

Sex

Male

Addresses

Home: via San Michele degli Scalzi 123 - 56124 Pisa, Italy

Office: Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (CNR), CNR Research Area, via Moruzzi 1 - 56124 Pisa, Italy

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Education

2004: PhD in Physics, University of Bologna, Italy

PHD THESIS TITLE: *Progress in laser-plasma X-ray sources: time-resolved spectroscopic studies and applications to μ -imaging*

THESIS ADVISORS: dr. L. A. Gizzi (Consiglio Nazionale delle Ricerche, Pisa) and dr. G. Di Cocco (Istituto Nazionale di Astrofisica, Bologna)

2000: M.Sc. (Laurea Magistrale) in Physics, University of Pisa, Italy

M.Sc. THESIS TITLE: *Spettroscopia di riga con risoluzione spaziale dell'emissione X di plasmi prodotti da laser*

THESIS ADVISOR: prof. D. Giulietti (University of Pisa, Italy).

Positions

Current

since **November 2, 2011**: permanent staff researcher at the Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy

Past

since **February 1, 2010**: researcher (term position) at the Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy

February 1, 2007 - January 31, 2010: researcher (term position) at the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy, for a scientific activity in the field of the *Development of a high power nanosecond laser system with large bandwidth and controllable temporal profile*

November 1, 2006 - January 31, 2007: post-doc research grant (art. 2222 Italian Civil Code) from the Laboratori Nazionali di Frascati, Istituto Nazionale di Fisica Nucleare (INFN), Frascati, Italy

October 1, 2006 - December 31, 2006: post-doc research grant (art. 2222 Italian Civil Code) from the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy (research activity on *Study of the X-ray emission from laser plasmas and of FEL produced X-ray radiation in the framework of the SPARX project*)

August 1, 2005 - July 31, 2006: post-doc research grant (art. 2222 Italian Civil Code) from the Laboratori Nazionali di Frascati, Istituto Nazionale di Fisica Nucleare (INFN), Frascati, Italy

February 1, 2006 - December 31, 2006: research associate at the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy

May 2005 - December 2005: research associate at the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy

April 2005: grant from the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy for the *Migration of an MPI parallel PIC code for laser-plasma simulation to a Linux cluster*

April 1, 2004 - March 31, 2005: post-doc research grant from the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy for the *Study of the X-ray emission from ultrashort and ultraintense laser plasmas*

May 1, 2003 - February 29, 2004: research grant from the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy for the *Development of X-ray sources from laser-plasmas and X- and γ -ray detectors*

2003-2010: teaching assistant for the courses of Quantum Optics and Laboratory of Quantum Optics at the Department of Physics, University of Pisa, Italy

Main scientific interests

October 1, 2002 - April 30, 2003: research fellow from the Institut für Optik und Quantenelektronik, Friedrich-Schiller-Universität, Jena, Germany
October 1, 2001 - September 30, 2002: research grant from the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche (CNR), Pisa, Italy for the *Development of X-ray sources from laser plasmas and X- and γ -ray detectors*
September 2001: grant from the Istituto per i Processi Chimico-Fisici, Consiglio Nazionale delle Ricerche, Pisa, Italy for the *Project of a monochromator for laser-plasma X-ray radiation*
2001 - 2004: PhD student, University of Bologna, Italy

- Ultrashort and/or ultraintense laser-matter interaction
- Optics of short and ultrashort lasers
- Laser-driven electron acceleration and X/ γ secondary sources
- Laser-driven proton acceleration
- Experimental issues involved in the design, commissioning and operational management of small and medium scale laser facilities
- Medical applications of novel concept (laser-driven) electron accelerators
- Numerical simulations of (short/ultrashort) laser pulse generation and beam transport/focusing
- Advanced optical/X-ray diagnostics of laser-plasmas
- Laser-matter interaction in Inertial Confinement Fusion relevant regimes (plasma instabilities, fast electron transport, etc.)
- Numerical simulations of laser-plasma interaction (using hydro and PIC codes) and particle transport/interaction (Monte Carlo GEANT4 code)

Teaching, awards and other scientific activities

- ▷ H-index (according to the SCOPUS database as of September 2017): 19
- ▷ Referee for the following journals: *Applied Optics, Applied Physics B, Chinese Optics Letters, Europhysics Letters, Journal of Physics B - At. Mol. Opt. Phys., Journal of Physics D - Applied Physics, High Power Laser Science and Engineering, Laser Part. Beams, New Journal of Physics, Nucl. Instrum. Meth. Phys. Res. A, Nucl. Instrum. Meth. Phys. Res. B, Nuclear Fusion, Optics Express, Phys. Rev. E, Phys. Rev. Lett., Plasma Phys. Controlled Fusion, Rev. Sci. Instrum., Scientific Reports*
- ▷ Since 2011 he is in charge of the laser systems hosted at the Intense Laser Irradiation Laboratory of the National Institute of Optics of the CNR (INO-CNR) (the laboratory features, among others, a 10TW TiSa systems currently being upgraded to the 250TW level)
- ▷ August 2011: winner of a public call for a permanent position as researcher in the field of physics at Consiglio Nazionale delle Ricerche
- ▷ 2011: he received a funding of 540k€ (total project cost 747k€) from the Italian Ministry of Health through the call for projects "Giovani Ricercatori" ("Young Researchers"), for a project in the field of medical applications of laser-driven electron beams
- ▷ since 2016 he acts as reviewer for projects funded by the Italian National Institute of Nuclear Physics (INFN) (through the CSN5)
- ▷ Evaluator for a PhD thesis in the field of laser-driven particle acceleration, discussed in the academic year 2016-2017 at the University of Messina (Italy)
- ▷ Supervisor of the PhD thesis work of the student Naveen C. Pathak (PhD program in Physics at the Department of Physics of the University of Pisa, final thesis title *Laser pulse propagation in plasmas and its implication of frequency upshift and electron acceleration*, discussed on June 2011)
- ▷ Since 2007 he has served several times as a member of the examining board for the assignment of research grants in the field of laser-plasma interaction by the Consiglio Nazionale delle Ricerche
- ▷ Since 2007 he is associated ("associazione scientifica") with the Pisa Section of the Italian National Institute of Nuclear Physics (INFN)
- ▷ He was awarded for the 2nd best presentation in the Section "Biophysics and Medical Physics" at the 100th national congress of the Italian Society of Physics (SIF), held in 2014
- ▷ He acted as scientific responsible of 4 post-doc research grants assigned in the years 2013-2015 for research activities in the field of laser-driven electron acceleration
- ▷ He acted as scientific responsible for a post-doc research grant assigned since 01/11/2012 to 31/10/2014 for a scientific activity in the field of optics of ultrashort lasers
- ▷ "Outstanding referee" for the review *Rev. Sci. Instrum.* in the year 2010
- ▷ Responsible for the operational management of the 250TW laser system and responsible for the laser beam modelling, control, diagnostics and focusing in the Target Area of the "FLAME (Frascati Laser for Acceleration and Multidisciplinary Experiments)" laboratory, during its commissioning phase at the Laboratori Nazionali di Frascati in the framework of the INFN (Istituto Nazionale di Fisica Nucleare) strategic project "PLASMONX (Plasma Acceleration and Monochromatic X-ray generation)"
- ▷ Research fellow at the Institut für Optik und Quantenelektronik of the Friedrich-Schiller-Universität, Jena (Germany), from 01/12/2012 to 30/04/2013

Participation in/responsibility of scientific projects

- ▷ Scientific coordinator of the CNR - Pisa unit for the project "Preclinical Tool for Advanced Translational Research with Ultrashort X-ray Pulses" funded by the Italian Ministry of Research through the call MIUR PRIN2015 (the project is expected to last from 2017 to 2019)
- ▷ Participation as "WP expert" to the WP4 ("Laser design and optimization") and participation to the WP3 ("High gradient laser plasma acceleration bunches") of the European project "EuPRAXIA", aimed at producing a CDR for a laser-driven accelerator and FEL (funded in the framework of the H2020 program)
- ▷ Principal Investigator of the project *Study of radiobiological and radiotherapeutic effects of a novel laser driven electron accelerator*, funded by the Italian Ministry of Health in the call "Giovani Ricercatori 2009" (total budget k€ 747, total funding from the Ministry of Health k€ 540), project duration February 2012 - January 2016
- ▷ Scientific coordinator of the INFN - Pisa unit for the INFN project "SiCilia" (expected project duration 01/01/2016 - 31/12/2018)
- ▷ Work Package 5 ("Radiobiological Testing Facility") leader within the INFN CNS5 experiment "L3IA - Line for Laser Light Ions Acceleration", started in 2016
- ▷ Scientific Coordinator for the Italian participation to the Joint Research Activity "European Research Objectives on Lasers for Industry, Technology and Energy (EURO-LITE)" in the framework of the EC project "LASERLAB Europe" (June 2012 - November 2015, total funding allocated for Italy k€ 40)
- ▷ WP2 ("Laser-plasma diagnostic") leader in the years 2014-2015 for the INFN project "PLASMAMED"
- ▷ Scientific coordinator of the project *AdOpRad - R&D of innovative wavefront sensors and adaptive optics for laser-driven radiological devices*, funded by the Tuscany Region (project duration 01/11/2012 - 31/10/2014)
- ▷ Participation to the project *BLISS - broadband laser for ICF strategic studies* from 01/02/2007 to 31/01/2011, funded by the Italian Ministry of Research (FIRB RBNE03N48B)
- ▷ Scientific Coordinator for the Italian side of the Executive Program of Cooperation in the Field of Science and Technology between Italy and Japan on the *Study of laser pulse guiding conditions for laser-plasma acceleration* (years 2008 and 2009)

Peer-reviewed publications

Author of more than 150 peer-reviewed papers, according to the Scopus database (as of September 2017). H-index: 19.

He also authored 4 book chapters and several conference proceedings, internal and technical reports, etc.

A list of selected peer-reviewed publications relative to the past 5 years activity is reported in the following.

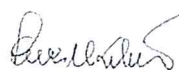
- G. Chatterjee, P. K. Singh, A. P. L. Robinson, D. Blackman, N. Booth, O. Culfa, R. J. Dance, L. A. Gizzi, R. J. Gray, J. S. Green, P. Koester, G. R. Kumar, L. Labate, A. D. Lad, K. L. Lancaster, J. Pasley, N. C. Woolsey, P. P. Rajeev, *Micron-scale mapping of megagauss magnetic fields using optical polarimetry to probe hot electron transport in petawatt-class laser-solid interactions*, Sci. Rep. 7, 8347 (2017)
- L. Labate, P. Ferrara, L. Fulgentini, L. A. Gizzi, *Effects of small misalignments on the intensity and Strehl ratio for a laser beam focused by an Off-Axis Parabola*, Appl. Opt. 55, 6506-6515 (2016)
- M. G. Andreassi, A. Borghini, S. Pulignani, F. Baffigi, L. Fulgentini, P. Köster, M. Cresci, C. Vecoli, D. Lamia, G. Russo, D. Panella, M. Tripodi, L. A. Gizzi, L. Labate, *Radiobiological effectiveness of ultrashort laser-driven electron bunches: micronucleus frequency, telomere shortening and cell viability*, Rad. Res. 186, 245-253 (2016)
- L. Labate, M. G. Andreassi, F. Baffigi, R. Bizzarri, A. Borghini, G. C. Bussolino, L. Fulgentini, F. Ghetti, A. Giulietti, P. Köster, D. Lamia, T. Levato, Y. Oishi, S. Pulignani, G. Russo, A. Sgarbossa, L. A. Gizzi, *LESM: a laser-driven sub-MeV electron source delivering ultra-high dose rate on thin biological samples*, J. Phys. D - Appl. Phys. 49, 275401 (2016)
- D. Palla, F. Baffigi, F. Brandi, L. Fulgentini, P. Köster, L. Labate, P. Londrillo, L. A. Gizzi, *Comparison of self-injection thresholds in He and N₂ and role of self-focusing in LWFA*, Nucl. Instrum. Meth. Phys. Res. A 829, 408-412 (2016)
- L. A. Gizzi, C. Altana, F. Brandi, P. Cirrone, G. Cristoforetti, A. Fazzi, P. Ferrara, L. Fulgentini, D. Giove, P. Köster, 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*, Nucl. Instrum. Meth. Phys. Res. A 829, 144-148 (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. Köster, L. Labate, D. Palla, L. A. Gizzi, *Investigation on target normal sheath acceleration through measurements of ions energy distribution*, Rev. Sci. Instrum. 87, 02A909 (2016)
- N. Booth, A. P. L. Robinson, P. Hakel, R. J. Clarke, R. J. Dance, D. Doria, L. A. Gizzi, G. Gregori, P. Köster, L. Labate, T. Levato, B. Li, M. Makita, R. C. Mancini, J. Pasley, P. P. Rajeev, D. Riley, E. Wagners, J. N. Waugh, N. C. Woolsey, *Laboratory measurements of resistivity in warm dense plasmas relevant to the microphysics of brown dwarf*, Nature Commun. 6, 8742 (2015)
- P. Köster, G. C. Bussolino, G. Cristoforetti, A. Faenov, A. Giulietti, D. Giulietti, L. Labate, T. Levato, T. Pikuz, L. A. Gizzi, *High-charge divergent electron beam generation from a high-intensity laser interaction with a gas-cluster target*, Laser Part. Beams 33, 331-338 (2015)
- L. A. Gizzi, L. Labate, F. Baffigi, F. Brandi, G. C. Bussolino, L. Fulgentini, P. Köster, D. Palla, F. Rossi, *Laser-plasma acceleration of electrons for radiobiology and radiation sources*, Nucl. Instrum. Meth. Phys. Res. B 355, 241-245 (2015)
- L. Labate, *A laser-driven electron accelerator for radiobiology experiments*, Nuovo Cimento C 38, 76 (2015)
- D. Lamia, G. Russo, C. Casarino, L. Gagliano, G. C. Candiano, L. Labate, F. Baffigi, L. Fulgentini, A. Giulietti, P. Köster, D. Palla, L. A. Gizzi, M. C. Gilardi, *Monte Carlo application based on GEANT4 toolkit to simulate a laser-plasma electron beam line for radiobiological studies*, Nucl. Instrum. Meth. Phys. Res. A 786, 113-119 (2015)

- P. Köster, N. Booth, C. A. Cecchetti, H. Chen, R. G. Evans, G. Gregori, L. Labate, T. Levato, Bin Li, M. Makita, J. Mithen, C. D. Murphy, M. Nolley, R. Pattathil, D. Riley, N. Woolsey, L. A. Gizzi, *Evidence of locally enhanced target heating due to instabilities of counter-streaming fast electron beams*, Phys. Plasmas **22**, 020701 (2015)
- Y. Oishi, D. Giulietti, F. Baffigi, L. Fulgentini, A. Giulietti, P. Köster, L. Labate, M. Kando, L. A. Gizzi, *Focusing and stabilizing laser-plasma-generated electron beams with magnetic devices*, Japan. J. Appl. Phys. **53**, 092702 (2014)
- G. Cristoforetti, A. Anzalone, F. Baffigi, G. Bussolino, G. D'Arrigo, L. Fulgentini, A. Giulietti, P. Köster, L. Labate, S. Tudisco, L. A. Gizzi, *Investigation on laser-plasma coupling in intense, ultrashort irradiation of a nanostructured silicon target*, Plasma Phys. Contr. Fusion **56**, 095001 (2014)
- F. Baffigi, G. Cristoforetti, L. Fulgentini, A. Giulietti, P. Köster, L. Labate, L. A. Gizzi, *X-ray conversion of ultra-short laser pulses on a solid sample: role of electron waves excited in the pre-plasma*, Phys. Plasmas **21**, 071208 (2014)
- D. Batani, L. Antonelli, S. Atzeni, J. Badziak, F. Baffigi, T. Chodukowski, F. Consoli, G. Cristoforetti, R. De Angelis, R. Dudzak, G. Folpini, L. Giuffrida, L. A. Gizzi, Z. Kalinowska, P. Köster, E. Korusky, M. Krus, L. Labate, T. Levato, Y. Maheut, G. Malka, D. Margarone, A. Marocchino, J. Nejd, Ph. Nicolai, T. O'Dell, T. Pisarczyk, O. Renner, Y. J. Rhee, X. Ribeyre, M. Richetta, M. Rosinski, M. Sawicka, A. Schiavi, J. Skala, M. Smid, Ch. Spindloe, J. Ullschmied, A. Velyhan, T. Vinci, *Generation of high pressure shocks relevant to the shock-intensity regime*, Phys. Plasmas **21**, 032710 (2014)
- G. Grillani, M. P. Anania, G. Gatti, D. Giulietti, M. Kando, M. Krus, L. Labate, T. Levato, P. Londrillo, F. Rossi, L. A. Gizzi, *High energy electrons from interaction with a structured gas-jet at FLAME*, Nucl. Instrum. Meth. Phys. Res. A **740**, 257-265 (2014)
- P. Ferrara, M. Ciofini, L. Esposito, J. Hostaša, L. Labate[†], A. Lapucci, A. Pirri, G. Toci, M. Vannini, L. A. Gizzi, *3D numerical simulation of Yb:YAG active slabs with longitudinal doping gradient for thermal load effects assessment*, Optics Express **22**, 5375-5386 (2014) [†] corresponding author
- P. Köster, L. Antonelli, S. Atzeni, J. Badziak, F. Baffigi, D. Batani, C. A. Cecchetti, T. Chodukowski, F. Consoli, G. Cristoforetti, R. De Angelis, G. Folpini, L. A. Gizzi, Z. Kalinowska, E. Korusky, M. Kucharik, L. Labate, T. Levato, R. Liska, G. Malka, Y. Maheut, A. Marocchino, P. Nicolai, T. O'Dell, P. Parys, T. Pisarczyk, P. Raczk, O. Renner, Y. J. Rhee, X. Ribeyre, M. Richetta, M. Rosinski, L. Ryc, J. Skala, A. Schiavi, G. Schurtz, M. Smid, C. Spindloe, J. Ullschmied, J. Wolowski, A. Zaras, *Recent results from experimental studies on laser-plasma coupling in a shock ignition relevant regime*, Plasma Phys. Contr. Fusion **55**, 124045 (2013)
- T. Ceccotti, V. Floquet, A. Sgattoni, A. Bigongiani, O. Klimo, M. Raynaud, C. Riconda, A. Heron, F. Baffigi, L. Labate, L. A. Gizzi, L. Vassura, J. Fuchs, M. Passoni, M. Kveton, F. Novotny, M. Possolt, J. Prokupek, J. Proska, J. Psikal, L. Stolcova, A. Velyhan, M. Bougeard, P. D' Oliveira, O. Tcherbakoff, F. Reau, P. Martin, A. Macchi, *Evidence of resonant surface-wave excitation in the relativistic regime through measurements of proton acceleration from grating targets*, Phys. Rev. Lett. **111**, 185001 (2013)
- V. Floquet, O. Klimo, J. Psikal, A. Velyhan, J. Limpouch, J. Proska, F. Novotny, L. Stolcova, A. Macchi, A. Sgattoni, L. Vassura, L. Labate, F. Baffigi, L. A. Gizzi, Ph. Martin, T. Ceccotti, *Micro-sphere layered targets efficiency in laser-driven proton acceleration*, J. Appl. Phys. **114**, 083305 (2013)
- A. Giulietti, A. André, S. Dobosz Dufrénoy, D. Giulietti, T. Hosokai, P. Koester, H. Kolaki, L. Labate, T. Levato, R. Nuter, N. C. Pathak, P. Monot, L. A. Gizzi, *Space- and time-resolved observation of extreme laser frequency upshifting during ultrafast ionization*, Phys. Plasmas **20**, 082307 (2013)
- L. A. Gizzi, M. P. Anania, G. Gatti, D. Giulietti, G. Grillani, M. Kando, M. Krus, L. Labate, T. Levato, Y. Oishi, F. Rossi, *Acceleration with self-injection for an all-optical radiation source at LNF*, Nucl. Instrum. Meth. Phys. Res. B **309**, 202-209 (2013)
- G. C. Bussolino, A. Faenov, A. Giulietti, D. Giulietti, P. Köster, L. Labate, T. Levato, T. Pikuz, L. A. Gizzi, *Electron radiography using a table-top laser-cluster plasma accelerator*, J. Phys. D - Appl. Phys. **46**, 245501 (2013)
- M. Ferrario, D. Alesini, M. P. Anania, A. Bacci, M. Bellaveglia, O. Bogdanov, R. Boni, M. Castellano, E. Chiadroni, A. Cianchi, S. B. Dabagov, C. De Martinis, D. Di Giovenale, G. Di Pirro, U. Dosselli, A. Drago, A. Esposito, R. Faccini, A. Gallo, M. Gambaccini, C. Gatti, A. Ghigo, D. Giulietti, A. Ligidov, P. Londrillo, S. Lupi, A. Mostacci, E. Pace, L. Palumbo, V. Petrillo, R. Pompili, A. R. Rossi, L. Serafini, B. Spataro, P. Tomassini, G. Turchetti, C. Vaccarezza, F. Villa, G. Dattoli, E. Di Palma, L. Giannessi, A. Petralia, C. Ronsivalle, I. Spasovskiy, V. Surrenti, L. A. Gizzi, L. Labate, T. Levato, J. V. Rau, *SFARC.LAB present and future*, Nucl. Instrum. Meth. Phys. Res. B **309**, 183-188 (2013)
- G. Cristoforetti, M. P. Anania, A. Ya. Faenov, A. Giulietti, D. Giulietti, S. B. Hansen, P. Koester, L. Labate, T. Levato, T. A. Pikuz, L. A. Gizzi, *Spatially resolved analysis of K α X-ray emission from plasmas induced by a femtosecond weakly relativistic laser pulse at various polarizations*, Phys. Rev. E **87**, 023103 (2013)

The Undersigned hereby authorises the CNR to utilize and store the personal sensitive data contained in the attached Curriculum Vitae for the purposes of bilateral Joint research projects and within the framework of the Data protection Act No. 196, dates 30 June 2003 as promulgated by the Italian Government.

Pisa (Italy), 25 September 2017

Luca U. Labate



Curriculum Vitae

PERSONAL INFORMATION



Fernando Brandi

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☎ +39 (0)10 8603147 📠 +39 324 687 9806

✉ fernando.brandi@ino.it
fbrandi2000@gmail.com
Skype name: ferbra1

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

JOB APPLIED FOR

WORK EXPERIENCE

From 03/02/2014 to today

Full time Researcher

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

-) Ultra-intense laser-plasma interaction for particle acceleration applications;
-) Design and development of optical diagnostic techniques for plasma and gas target;
-) Green synthesis of colloidal nanoparticles solution by pulsed laser ablation in liquid;
-) Advanced additive and subtractive Laser Micro/Nano fabrication;

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

Full time Researcher

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

Responsible of the Laser Micromachining Laboratory. He set-up and managed a new laser laboratory for multidisciplinary applications. Specific activities were:

-) 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;
-) Development of novel quantitative phase imaging technique for label-free imaging and optical metrology of dispersive materials, (e.g., biological samples and plasma);
-) Laser laboratory management: procurement of equipment, implementing safety procedures and coordinating multidisciplinary research activity.

From 01/12/2008 to 01/05/2009

Consultant

TriAlpha Energy inc. Irvine-California (USA)

Design and installation of three fully fibre coupled and remotely controlled second-harmonic interferometers for electron density measurements.

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.

Organisational / managerial skills

- ❑ Leadership, supervisors of Post-Doc researchers, PhD and Internship Students;
- ❑ Managing laboratory;
- ❑ Coordinated work within large experimental facilities;
- ❑ Writing proposals, and managing funded research projects.
- ❑ Participation in PhD selection and evaluation commissions.

Job-related skills

- ❑ high intensity laser matter interaction;
- ❑ laser micro/nano fabrication and material processing;
- ❑ nano-biotechnology;
- ❑ cw and high-power pulsed solid state and gas lasers, light amplification;
- ❑ high-resolution spectroscopy, ellipsometry, and interferometry;
- ❑ high-order optical harmonic generation;
- ❑ servo-loop controls and optical cavity locking;
- ❑ optical diagnostics for burning plasma;
- ❑ ultra-high-vacuum instrumentation;
- ❑ material characterization and clean room equipment;
- ❑ data acquisition and analysis.

Computer skills

- ❑ Knowledge of both DOS and Linux based systems;
- ❑ Knowledge of Microsoft Office tools and open-source software;
- ❑ Knowledge of CAD and LabView programming.

Other skills

- ❑ First Aid procedures, gained during the Italian Civil Service (01/09/1997 - 30/06/1998);
- ❑ Referee for international scientific journals;
- ❑ EU Driving licence A/B

Funded Projects and grants

-) Participation in the project “European Plasma Research Accelerator with eXcellence In Applications” (EuPRAXIA), a design study for a novel laser-plasma based accelerator facility, 2015-2018, 3 Meuro. European Union’s Horizon 2020 research and innovation programme Grant Agreement No. 653782.
-) Responsible for Work Package 2, aiming at the fabrication of biodegradable scaffolds to be implanted for in-vivo test, within the EU funded project "Rapid prototyping scaffolds for the nervous system"-Neuroscaffolds (n. 604263, NMP.2013.2.2-2 Biomaterials: Imaging and rapid precise prototyping technology for custom made scaffolds - coordinated call with China), total budget: 2.3 Meuro, of which 1.8 Meuro from EC, 2013-2016.
-) Principal investigator in an industrial research project between the Istituto Italiano di Tecnologia (Genova, Italy) and the company Tyrolit Schleifmittelwerke Swarovski KG (Schwaz, Austria), budget: 115 Keuro, 2009-2010.
-) Participation in an industrial collaboration with TriAlphaEnergy Inc. (Irvine, USA).
-) Principal Investigator of the LCVU-1094 project at the Laser Centre of the Vrije Universiteit Amsterdam funded by the Laserlab Europe Access Program, EC Integrated Infrastructure Initiative Action (RI3-CT-2003-506350).
-) In July 2004 he was granted with a Marie-Curie "Intra European Fellowship", mark 92,8/100, proposal n. 011036-QED-VACUUM.

Seminars

-) Invited speaker at the 2016 Suzhou Symposium on Material-Cell Interfaces, 30/05/2016 Suzhou Industrial Park, Suzhou-China
Title: *Mask Projection Excimer laser StereoLithography: a novel 3D fabrication method for tissue engineering applications.*
-) Invited speaker at the 20th Symposium on Application of Plasma Processes and COST TD1208 Workshop on Application of Gaseous Plasma with Liquids, January 17-22 2015 in Tatranská Lomnica Vysoké Tatry, Slovakia.
Title: *NANOPARTICLE GENERATION BY PULSED LASER ABLATION IN LIQUID.*
-) Invited speaker at the 15th International Symposium on laser Precision Microfabrication, 17-20 June, 2014 Vilnius, Lithuania.
Title: *Laser-generated photo-luminescent colloidal silicon nanoparticles: size control, in-situ surface bio-functionalization, and productivity studies.*
-) 30/01/2014, class on “*Fabrication of 3D biodegradable scaffolds for tissue engineering application*” at the XVIII School of Pure and Applied Biophysics, Venice (Italy), 27-31 January 2014
-) 09/07/2012, seminar on *Recent developments and future prospectives in second-harmonic interferometry for diagnostics applications*, Source de Particules par Laser, ENSTA-ParisTech Palaiseau (France)
-) 28/04/2010, lecture on *Laser Micromachining and some applications@IIT*, Nanoantenna Project-Workshop, IIT Genova.
-) 23/11/2006, *High-resolution spectral analysis of XUV harmonics: frequency redshift from plasma dynamics in the laser focus*, LASERLAB-EUROPE user meeting “Non-linear optics and laser spectroscopy, Politecnico di Milano (Italy).

-) 16/01/2004, *Table-top sources of narrow-band tunable VUV/XUV radiation: from low to high-order optical harmonic generation*, European Laboratory for Nonlinear Spectroscopy (LENS, Florence).

-) 16/10/2003 *Narrow-band high-order harmonics*, LaserNET meeting on Strategies to increase the Spectral Range, Biarritz (France).

-) 16/04/2002, *Generation of narrow-band tunable VUV/XUV laser radiation: spectroscopic applications and future perspectives*, Istituto per i Processi Chimico-Fisici (IPCF, Pisa) of the Consiglio Nazionale delle Ricerche (CNR).

- Awards** Awarded for the best article of the year 2003 from the laser Center Vrije Universiteit Amsterdam with the manuscript "High-Order Harmonic Generation Yielding Tunable Extreme-Ultraviolet Radiation of High Spectral Purity", 2003 Phys. Rev. Lett. 91 163901. Money award 500 euro.
- Schools**
-) 25-27 March 2002, *Research school on new X-ray science, X-ray investigation of fast and ultrafast processes*, DESY, Hamburg (Germany).
 -) 02- 05 March 1999, *School on detectors, IXth Giornate di Studio sui Rivelatori*, Torino (Italy).
 -) 20-26 Sept. 1998, *XI Seminario di Fisica Nucleare e Subnucleare*, Otranto (Italy)
- Patents**
-) Priority TO2012A000785, date 12/09/2012 (PCT/IB2013/058483)
"Micro-interferometro per microscopia interferenziale in n-esima armonica"
 -) Priority TO2012A000121, date 13/02/2012
"Dispositivo ElectroWetting-On-Dielectric superidrofobico provvisto di una configurazione di elettrodi multipli"
 -) Priority TO2013A000639 date 29/07/2013 (PCT/IB2014/063524)
"Metodo di preparazione di un substrato per un dispositivo plasmonico"
- Outreach activity
(Publication in
Magazines etc.)**
-) S. Beke and F. Brandi "Laser-Based Process Rapidly Fabricates Implants" *BioPhotonics*, 2013 20 36-38
 -) Contribution to an article in the magazine "Espresso" N.43 - 31 Ottobre 2013 page 110 entitled "Dalla cellula all'Organo".
 -) Article on the specialized magazine "MediTech" n. 3 SETTEMBRE 2013 page 28 entitled "Biomateriali 3D biorisorbibili"
 -) Article in the section "IIT Innovazione" of the magazine "MIT TECHNOLOGY REVIEW" EDIZIONE ITALIANA 5/2013 page 40 entitled "Strutture per l'ingegneria tissutale"
- other qualifications**
-) In 2011 and in 2016 got the qualification ("idoneità") as researcher of the National Research Council of Italy (CNR) through a public comparative evaluation.