

Salvatore Stagira – Curriculum vitae

Personal data

Date of birth: August 1969

Nationality: Italian

Scientific IDs

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Researcher ID: C-7415-2011

Present position

Since 2005 **Associate Professor in Experimental Physics**, Politecnico di Milano (Italy).

Past experiences

2001 – 2005 **Assistant professor in Experimental Physics** (permanent position), Politecnico di Milano;

2000 – 2001 **Researcher**, Centro di Elettronica Quantistica e Strumentazione Elettronica of the Italian National Research Council (CEQSE-CNR) in Milan (Italy);

1999 – 2000 **Post Doc**, Istituto Nazionale per la Fisica della Materia (INFM) in Milan (Italy).

Education

June 1998 **Ph.D. in Electronic and Communication Engineering** from Politecnico di Milano with a thesis on *Femtosecond lasers and their application to the study of nonlinear optical properties in low-dimensional materials*. Advisor: Prof. S. De Silvestri (Politecnico di Milano);

June 1994 **Master degree in Electronic Engineering** at Politecnico di Milano with the mark 100/100 cum laude; thesis on *Development of resonators optimized for femtosecond Ti:Sapphire lasers in Kerr-lens mode locking*. Advisor: Prof. S. De Silvestri.

Teaching and Supervision

Since 2002 Supervisor of >20 Bachelor, >10 Master and 6 PhD students at Politecnico di Milano;

Since 1998 Coordinator and lecturer for Physics courses at the Engineering Faculty of Politecnico di Milano (Mechanics and Electromagnetism, >220 students per year);

1996 – 2003 Teaching Assistant for Physics courses, Politecnico di Milano.

Grants

1999 – 2000 Postdoctoral fellowship from the Istituto Nazionale per la Fisica della Materia (INFM)

1995 – 1997 Ph.D. grant at the Physics Department of Politecnico di Milano.

Main professional activities

2015 Co-author of the Technical Design Reports for two high repetition rate attosecond beamlines at the ELI-ALPS facility (Szeged, Hungary);

Since 2014 **Leader of the research group in THz Time Domain Spectroscopy at the Physics Department of Politecnico di Milano;**

Since 2013 **Italian Habilitation for Full Professorship in Experimental Physics;**

2010 Co-author of the Technical Design Report of the SPARX-FEL project (Italy);

Since 2005 **Leader of the research group in Strong-Field Mid-IR Laser Physics at the Physics Department of Politecnico di Milano;**

1995 Fulfilment of military obligations as 2nd lieutenant in the Italian Army (Corp of Engineers);

1994 Licensed as a profession Electronic Engineer.

Organization of scientific meetings

2011 member of the “Ultrafast Laser Science” program subcommittee for the IQEC/CLEO PACIFIC RIM Conference;

2008 – 2010 member of the program committee of the first (3-5 December 2008, Frascati – Italy) and of the second (5-7 May 2010, Lund - Sweden) “*International Workshop on High Harmonic Seeding for present and future short wavelength Free-Electron Lasers*”.

Institutional responsibilities at Politecnico di Milano

Since 2013 member of the Council of the Physics Department;

Since 2013 member of the Board of Professors of the PhD Course in Physics;

Since 2013 member of the Safety Committee of the Physics Department.

Commissions of trust

- Since 2014 Member of assessment boards in public procurement tenders for large instrumentation;
 Since 2013 PhD examination panel member;
 Since 2012 Member of selection panels for post-doc and research positions;
 Since 2012 Reviewer for the Italian funding programs PRIN, FIRB and SIR;
 Since 2010 Reviewer for funding programs of several institutions among which: the German Research Foundation (DFG), the Netherlands Organization for Scientific Research (NWO), the Austrian Science Fund (FWF), the Portuguese Foundation of Science and Technology (FCT), the Israeli PAZY Foundation, the Canada Foundation for Innovation (CFI), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Swiss National Science Foundation (SNF) and the European Commission (within the topic FP7-PEOPLE-2013-CIG).
 Since 2001 Referee for several publishers in Physics, Optics and Multidisciplinary Science, among which: Nature Physics, Nature Photonics, Nature Communications, Physical Review Letters, Physical Review A, Physical Review B, Optics Letters, Optics Express, Applied Physics B, Journal of Physics B, Journal of Nanoparticle Research, Zeitschrift für Naturforschung A, Applied Optics.

Research Activity

The research activity concerns the laser-matter interaction in the regime of high laser intensities and few-optical-cycles laser pulse durations. This activity includes:

- Nonlinear optics, temporal compression of intense laser pulses, optical filamentation;
- Development and characterization of ultrafast laser sources, optical parametric amplifiers in visible, near- and mid-infrared spectral regions, generation and detection of THz radiation;
- Generation and detection of coherent XUV-soft X radiation by high-order harmonics driven by intense laser pulses (HHG), generation and exploitation of XUV-soft X attosecond pulses, HHG-based molecular orbital tomography;
- Generation of X ray radiation by laser-plasma interaction and its exploitation to imaging and ion spectroscopy;
- Ultrafast spectroscopy of organic and inorganic materials in bulk and in low-dimensional structures from the THz to the XUV spectral regions.

Major collaborations

- V. Makhija and M. Spanner, Steacie Institute for Molecular Sciences (NRC) – Ottawa (Canada)
- C. Trallero, University of Connecticut (US)
- V. Kumarappan and J. Tross, Kansas State University (US)
- N. Dudovich (Weizmann Institute of Science, Israel)
- E. Frumker (Ben Gurion University, Israel)
- Y. Mairesse, E. Constant, V. Blanchet (CELIA and Université Bordeaux, France)
- J. Marangos (Imperial College London, UK)
- V. Tosa (National Institute for R&D in Isotopic and Molecular Technologies, Romania)
- A. Faenov, T. Pikuz (Joint Institute for High Temperatures, Russian Academy of Sciences, Russia)
- A. Petrozza, L. Manna (IIT, Italy)
- A. Molle (IMM-CNR, Italy)
- L. Poletto, S. Bonora (IFN-CNR, Italy)
- G. De Ninno (ELETTRA, Italy)

IMPACT OF RESEARCH

Bibliometric data (updated on 4 March 2018)

Source	N. public.*	Articles*	Proceedings*	Book chapt.*	N. citations	h-index
WOS	204	143	86	3	5948	35
Scopus	307	145	162	-	6496	37
Google scholar	389	-	-	-	7243	40

Note (*) WOS database assigns some publications to both Article and Proceeding classes; Scopus does not report citations to book chapters; Google scholar does not refine the classification of publications.

Funding acquired as Principal Investigator

Project Title	Funding source	Budget (€)	Period	Role of the PI
Green nanomaterials for next-generation photovoltaics (GREENS)	Fondazione Cariplo	351'000,00	2014-2017	Project Coordinator
Local micro-tailoring of conjugated polymer emission by spatially resolved nanoparticles implantation for next-generation light-emitting devices	Fondazione Cariplo	255'000,00	2010-2012	Project Coordinator
Impulsi IR ultrabrevi di alta energia autostabilizzati in fase assoluta per la generazione di radiazione coerente XUV-X soffice	MIUR (PRIN)	185'000,00	2007-2009	Project Coordinator

Acknowledgements of the scientific activity

1. Invited lectures

S. Stagira, "High-order harmonic generation and applications to molecular orbital tomography", 5th International School on Lasers in Materials Science (SLIMS2016), July 10-17 2016 – Venice (Italy).

2. Invited talks

Salvatore Stagira co-authored more than 30 invited talks at international conferences; here are reported those in the last 10 years (underlined when given by the applicant):

- V. S. Makhija, V. Kumarappan, J. Tross, C. Trallero, A. G. Ciriolo, D. Faccialà, M. Devetta, C. Vozzi and S. Stagira, "Novel approaches in high harmonic spectroscopy of molecules", Conference on High Intensity Laser and attosecond science in Israel, (CHILI 2017, December 11-13 2017, Tel-Aviv, Israel).
- D. Shafir, H. Soifer, B.D. Bruner, M. Dagan, Y. Mairesse, C. Vozzi, S. Stagira, S. Patchkovskii, M.Y. Ivanov, O. Smirnova, and N. Dudovich, "Looking Inside the Recollision Process", Conference on Lasers and Electro-Optics Europe 2013 (CLEO Europe 2013, May 12-16 2013, Munich, Germany).
- C. Vozzi, M. Negro, F. Calegari, F. Frassetto, K. Kovacs, C. Altucci, R. Velotta, M. Nisoli, L. Poletto, G. Sansone, P. Villorosi, V. Tosa, S. De Silvestri, S. Stagira, "High order harmonics driven by infrared parametric sources: applications to attosecond science and molecular orbital tomography", 3rd International Conference on Ultraintense Laser Interaction Science (ULIS2011, October 10-13 2011, Lisbon, Portugal).
- F. Calegari, F. Ferrari, M. Lucchini, C. Vozzi, S. Stagira, G. Sansone, M. Nisoli, "High-Energy Isolated Attosecond Pulses and Applications to Molecular Physics", High-Intensity Lasers and High-Field Phenomena (HILAS 2011, February 16 – 18, 2011, Istanbul, Turkey).
- C. Vozzi, M. Negro, F. Calegari, F. Frassetto, M. Nisoli, L. Poletto, G. Sansone, P. Villorosi, S. De Silvestri, S. Stagira, "High Order Harmonics Driven by 1.5 μm Parametric Source: A Tool for Attosecond Science", Frontiers in Optics 2010 – Laser Science XXVI (October 24-28, 2010, Rochester, NY, USA).
- M. Lucchini, F. Ferrari, F. Calegari, C. Vozzi, S. Stagira, G. Sansone, M. Nisoli, "High-Energy Isolated Attosecond Pulses", 17th International Conference on Ultrafast Phenomena (UP 2010, July 18 – 23, 2010, Snowmass Village, CO, USA).
- M. Negro, F. Calegari, S. De Silvestri, C. Vozzi, S. Stagira, "Optical filamentation in molecular gases: applications to Raman spectroscopy and Extreme nonlinear optics", 3rd International Symposium on Filamentation (COFIL 2010, May 31 – July 5, 2010, Agia Pelagia - Crete, Greece).
- P. Villorosi, F. Frassetto, L. Poletto, C. Vozzi, F. Calegari, G. Sansone, M. Nisoli, S. De Silvestri, S. Stagira, "Mixing phase stable pulses in the IR to target at high-energy attosecond pulses" 8th Pacific Rim Conference on Lasers and Electro-Optics (CLEO/Pacific Rim 2009, August 30 – September 3, 2009, Shanghai, Cina).

- C. Vozzi, F. Calegari, F. Frassetto, L. Poletto, G. Sansone, P. Villoriesi, M. Nisoli, S. De Silvestri, S. Stagira, "High order harmonics driven by a self-phase-stabilized IR parametric source", 18th International Laser Physics Workshop (LPHYS'09, July 13 – 17, 2009, Barcelona, Spain).
- C. Vozzi, F. Calegari, M. Nisoli, G. Sansone, S. De Silvestri, S. Stagira, F. Frassetto, L. Poletto, P. Villoriesi, "Coherent XUV generation by an IR parametric source: a step towards attosecond pulses at 100 eV", Ultra-intense Laser Interaction Science 2009 (ULIS2009, May 24 – 29, 2009, Frascati, Italy).

3. Invited seminars

S. Stagira, "Principles and spectroscopic applications of High-order Harmonic Generation", Ben Gurion University, Beersheba, Israel, 14 December 2017.

Most important 20 publications in the last 10 years

1. F. Calegari, G. Sansone, S. Stagira, C. Vozzi, M. Nisoli, "Advances in attosecond science", Journal of Physics B: Atomic, Molecular and Optical Physics 49, 062001 (2016).
2. D. Faccialà, S. Pabst, B. D. Bruner, A. G. Ciriolo, S. De Silvestri, M. Devetta, M. Negro, H. Soifer, S. Stagira, N. Dudovich, and C. Vozzi, "Probe of Multielectron Dynamics in Xenon by Caustics in High-Order Harmonic Generation", Physical Review Letters 117, 093902 (2016).
3. B. D. Bruner, Z. Mašín, M. Negro, F. Morales, D. Brambila, M. Devetta, D. Faccialà, A. G. Harvey, M. Ivanov, Y. Mairesse, S. Patchkovskii, V. Serbinenko, H. Soifer, S. Stagira, C. Vozzi, N. Dudovich and O. Smirnova, "Multidimensional high harmonic spectroscopy of polyatomic molecules: detecting sub-cycle laser-driven hole dynamics upon ionization in strong mid-IR laser fields", Faraday Discussions 194, 369-405 (2016).
4. E. Cinquanta, G. Fratesi, S. dal Conte, C. Grazianetti, F. Scotognella, S. Stagira, C. Vozzi, G. Onida, and A. Molle, "Optical response and ultrafast carrier dynamics of the silicene-silver interface", Phys. Rev. B 92, 165427 (2015).
5. L. Poletto, P. Miotti, F. Frassetto, C. Spezzani, C. Grazioli, M. Coreno, B. Ressel, D. Gauthier, R. Ivanov, A. Ciavardini, M. de Simone, S. Stagira, and G. De Ninno, "Double-configuration grating monochromator for extreme-ultraviolet ultrafast pulses", Applied Optics 53, 5879-5888 (2014).
6. D. Fazzi, F. Scotognella, A. Milani, D. Brida, C. Manzoni, E. Cinquanta, M. Devetta, L. Ravagnan, P. Milani, F. Cataldo, L. Lüer, R. Wannemacher, J. Cabanillas-Gonzalez, M. Negro, S. Stagira and C. Vozzi, "Ultrafast spectroscopy of linear carbon chains: the case of dinaphthylpolyynes", Phys. Chem. Chem. Phys. 15, 9384-9391 (2013).
7. C. Vozzi, M. Negro, S. Stagira, "Strong-field phenomena driven by mid-infrared ultrafast sources", Journal of Modern Optics 59, 1283-1302 (2012).
8. V. Tosa, C. Altucci, K. Kovacs, M. Negro, S. Stagira, C. Vozzi, R. Velotta, "Isolated Attosecond Pulse Generation by Two-Mid-IR Laser Fields" (Invited paper), IEEE Journal of Selected Topics in Quantum Electronics 18, 239-247 (2012).
9. M. Negro, C. Vozzi, K. Kovacs, C. Altucci, R. Velotta, F. Frassetto, L. Poletto, P. Villoriesi, S. De Silvestri, V. Tosa, S. Stagira, "Gating of high-order harmonics generated by incommensurate two-color mid-IR laser pulses", Laser Physics Letters 8, 875-879 (2011).
10. C. Vozzi, M. Negro, F. Calegari, G. Sansone, M. Nisoli, S. De Silvestri, S. Stagira, "Generalized molecular orbital tomography", Nature Physics 7, 822-826 (2011).
11. C. Vozzi, M. Negro, F. Calegari, S. Stagira, K. Kovács, V. Tosa, "Phase-matching effects in the generation of high-energy photons by mid-infrared few-cycle laser pulses", New Journal of Physics 13, 073003 (2011).
12. C. Vozzi, R. Torres, M. Negro, L. Brugnera, T. Siegel, C. Altucci, R. Velotta, F. Frassetto, L. Poletto, P. Villoriesi, S. De Silvestri, S. Stagira, J. P. Marangos, "High harmonic generation spectroscopy of hydrocarbons", Applied Physics Letters 97, 241103 (2010).
13. F. Ferrari, F. Calegari, M. Lucchini, C. Vozzi, S. Stagira, G. Sansone, M. Nisoli, "High-energy isolated attosecond pulses generated by above-saturation few-cycle fields", Nature Photonics 4, 875-879 (2010).
14. C. Altucci, R. Velotta, V. Tosa, P. Villoriesi, F. Frassetto, L. Poletto, C. Vozzi, F. Calegari, M. Negro, S. De Silvestri, S. Stagira, "Interplay between group-delay-dispersion-induced polarization gating and ionization to generate isolated attosecond pulses from multicycle lasers", Optics Letters 35, 2798-2800 (2010).
15. F. Calegari, C. Vozzi, M. Negro, G. Sansone, F. Frassetto, L. Poletto, P. Villoriesi, M. Nisoli, S. De Silvestri, S. Stagira, "Efficient continuum generation exceeding 200 eV by intense ultrashort two-color driver", Optics Letters 34, 3125-3127 (2009).
16. C. Vozzi, F. Calegari, F. Ferrari, M. Lucchini, S. De Silvestri, O. Svelto, G. Sansone, S. Stagira, M. Nisoli, "Advances in laser technology for isolated attosecond pulse generation", Laser Physics Letters 6, 259-267 (2009).
17. C. Vozzi, F. Calegari, F. Frassetto, L. Poletto, G. Sansone, P. Villoriesi, M. Nisoli, S. De Silvestri, S. Stagira, "Coherent continuum generation above 100 eV driven by an ir parametric source in a two-color scheme", Phys. Rev. A 79, 033842 (2009).
18. F. Calegari, C. Vozzi, S. Stagira, "Optical propagation in molecular gases undergoing filamentation-assisted field-free alignment", Phys. Rev. A 79, 023827 (2009).
19. C. Vozzi, C. Manzoni, F. Calegari, E. Benedetti, G. Sansone, G. Cerullo, M. Nisoli, S. De Silvestri, S. Stagira, "Characterization of a high-energy self-phase stabilized near-infrared parametric source", J. Opt. Soc. Am. B 25, B112-B117 (2008).
20. F. Calegari, C. Vozzi, S. Gasilov, E. Benedetti, G. Sansone, M. Nisoli, S. De Silvestri, S. Stagira, "Rotational Raman effects in the wake of optical filamentation", Phys. Rev. Lett. 100, 123006 (2008).

Relevant roles in other research projects

<i>Project</i>	<i>Funding source</i>	<i>Period</i>	<i>Role</i>
H2020-INFRAIA-2014-2015: LASERLAB-EUROPE	EU	2015-2019	Leader of Subtask 3.3 <i>Femtosecond Electron Diffraction</i> in the Joint Research Activity <i>Photonic Techniques for Material Analysis, Nanoscience and Sensing</i> (PHOTMAT)
H2020-MSCA-ITN-2014: MEDEA	EU	2015-2018	PhD supervisor for Politecnico di Milano

Participation to other research projects

<i>Project</i>	<i>Duration (months)</i>	<i>Role</i>
FIRB Ideas 2008: SERAPIDE "Singola ricollisione elettronica per la generazione di impulsi ad attosecondi di alta intensità e per lo studio delle dinamiche dei pacchetti d'onda elettronici"	60	Participant
ERC-2008-AdG ELYCHE Electron-scale dynamics in chemistry	60	Participant
FP5-Research Training Network HPRN-CT-2000-00133, ATTO	48	Participant
FP6-2002-INFRASTRUCTURES-1: Integrated European Laser Laboratories	48	Participant
FP6-PEOPLE-2004-ITN Marie Curie Training Network -CT- 2003-505138 XTRA	48	Participant
FP7-INFRASTRUCTURES-2007-1: European Laser Laboratories Integrated Initiative Continued	15	Participant
FP7- INFRASTRUCTURES-2008-1: The Integrated Initiative of European Laser Research Infrastructures II	36	Participant
FP7- INFRASTRUCTURES-2011-1: The Integrated Initiative of European Laser Research Infrastructures III	42	Participant
FP7-PEOPLE-2008-ITN Marie Curie Initial Training Network ATTOFEL	48	Participant
Progetto di Ricerca Avanzata 1997: FEXRAYS (Femtosecond soft-X-ray generation by high energy laser pulses)	30	Participant
Progetto di Ricerca Avanzata 2001: CLUSTERS (Clusters as nano-environments for laser-induced extreme states of matter and chemical reactions)	36	Participant
PRIN Progetti di Ricerca di Interesse Nazionale "Processi fisici nel dominio degli attosecondi" 2004	24	Participant
Ministero dell'Università e della Ricerca Scientifica e Tecnologica, FISR-Fondo Integrativo Speciale per la Ricerca: SPARC (Sorgente pulsate auto-amplificata di radiazione coerente)	36	Participant