

# Curriculum Vitae of Gabriele Cristoforetti

## Overview

Gabriele Cristoforetti is a senior researcher at the National Institute of Optics (INO), which is part of the National Council of Research (CNR) in Italy. He works in the Intense Laser Irradiation Laboratory (ILIL), at the Pisa section "Adriano Gozzini" of the INO institute (Headquarters in Florence). After graduating in Physics in 1998 at the University of Pisa, he has been studying laser-induced plasmas and plasma spectroscopy, obtaining his PhD in Applied Physics in 2004.

He is the author of 128 publications, of which 104 are ISI publications and 4 chapters in books, with a **H-index of 46** (Google Scholar), **40** (ISI-web of knowledge). He presented his research in numerous international conferences, including 17 invitations/Keynote speakers. He organized two international conferences (LIBS 2000, Tirrenia, 8-12/10/2000 e EMSLIBS 2009, Tivoli, 28/09-1/10 2009), was member of Scientific Committees (EPS 2019, ECPD 2023) and of project/experiment review boards (ERIC-ELI). He has experience in teaching in international Schools and in following students in Physics as supervisor. He is habitual referee of many international journals. He covered several responsibility roles, including responsible of scientific activities in the Institute, Principal Investigator in experimental campaigns (PALS, GEKKO), responsible of unit research in international projects, and member of the Council of the Institute. He won two prizes, including the Award 2010 of the Journal Spectrochimica Acta part B : atomic spectroscopy for the best paper (G. Cristoforetti et al. Spectrochim. Acta part B 65, 86-95, 2010 - 685 citations according to Google Scholar) and the prize 2005 for young researchers assigned by Italian CNR. He is finally engaged in the Scientific Outreach by publishing dissemination papers, meeting students in secondary schools and organizing outreach events and seminars.

## Experiments in international Facilities

G. Cristoforetti has an established experience in running and leading experiments (Principal Investigator – PI) in high-energy laser facilities

- **ELI-NP**, Magurele (Romania) **2023** on the interaction of relativistic lasers on structured targets
- **ELI-Beamlines**, Prague (Czech Republic) **2023** focused on Laser Plasma Interaction (LPI) at ICF
- **Prague Asterix Laser System (PALS)**, Prague (Czech Rep.) **2012, 2014, 2016 (PI), 2017, 2018, 2020 (PI), 2023 (PI)**, focused on Laser Plasma Interaction (LPI) at ICF and SI laser intensities
- **GEKKO XII laser**, Osaka (Japan), **2019 (PI), 2020 (PI), 2021 (PI)**, focused on LPI at ICF intensities
- **LMJ laser** 9-12/04/**2019**, focused on LPI at ICF and SI intensities
- **Vulcan laser** at RAL (UK) **2018, 2022, 2023**, focused on LPI at ICF and SI intensities
- **Laboratory Physique à Haute Intensité, CEA-DSM/IRAMIS/LIDYL**, Paris (France) on the interaction of relativistic lasers on structured targets, **2016**
- **Tata Institute Of Fundamental Research (TIFR)**, Mumbai (India) on the interaction of relativistic lasers on structured targets, **2014**
- **Gemini Laser** – at RAL (UK) **2014** on the interaction of relativistic lasers on structured targets
- **NILES laboratory**, Il Cairo (Egypt), analysis of material by laser spectroscopy **2003**

## Scientific Projects

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| <b>2024-2026</b> | Unit responsible of the European project "High gain direct drive ignition with Foams as a Pathway to Energy (FoPIFE)", Progetto ENR03.CEA03 finanziato da Eurofusion  |
| <b>2019-2024</b> | Unit and WP responsible of the European project "Advancing shock ignition for direct-drive inertial fusion", Progetto ENR01.CEA02 finanziato da Eurofusion  |
| <b>2018-2020</b> | International Exchanges 2017 project with York University, Hot, dense matter creation via ultraintense laser interaction with nanoengineered targets  |
| <b>2019-2020</b> | Unit responsible of the European project "Study of Direct Drive and Shock Ignition for IFE: theory, simulations, experiments, diagnostics development" finanziato da EuroFusion, Progetto ENR-IFE19.CEA01", funded by the Eurofusion Consortium |

<b>2017-2018</b>	Unit responsible of the European project "Preparation and Realization of European Shock Ignition Experiments", funded by the Eurofusion Consortium
<b>2014-today</b>	ELI project (Extreme Light Infrastructure/ ELI Nuclear Physics)
<b>2016-2019</b>	L3IA (Line for Laser Light Ion Acceleration)
<b>2008-2013</b>	<b>HiPER</b> project (High Power laser Energy Research facility), devoted to investigate the feasibility of ICF schemes, funded by UE FP7
<b>2011-2013</b>	PRIN on <b>Shock Ignition</b> , funded by Italian Ministry of research
<b>2003-2007</b>	FIRB-MIAO (micro-systems for applications in hostile and hazardous environments) funded by Italian Ministry of research
<b>2009-2010</b>	PRIN 2008, for the production of nanoparticles vial Laser Ablation in liquid environment, funded by Italian Ministry of research
<b>2007-2008</b>	Coordinator of italian Unit of the project <i>Estudio de la viabilidad de la determinacion de elementos traza em orteros de cemento mediante la tecnica no destructiva LIBS</i> , funded by Comunidad Valenciana
<b>2007-2009</b>	research project with Marwan Technology for the realization of a portable LIBS prototype
<b>2000-2002</b>	CE Brite-Euram « LIBSGRAIN », european FP5 project for the LIBS analysis of metallic pipes at high temperature in industrial environment.
<b>2007</b>	Project with INO-Canada for the analysis of plasma spectra obtained with fs pulses.
<b>2001-2002</b>	Research project with Quanta System for the realization of LIBS analysis of precious alloys.
<b>2000-2004</b>	MURST project, funded by the Italian, Methodologies and devices for materials and environment.
<b>1999</b>	MICA-CNR « PRO-ART » funded by the Italian government

#### ISI Publications

- Corsi et al. - The European Physical Journal D – 13 (2001) 373
- Bicchieri et al. – Spectrochimica Acta B – 56 (2001) 915
- Bulajic et al. – Spectrochimica Acta B – 57 (2002) 339-353
- Bicchieri et al. – Spectrochimica Acta B – 57 (2002) 1235-1249
- Bulajic et al.- Spectrochimica Acta B – 57 (2002) 1181-1192
- Tognoni et al. - Spectrochimica Acta B – 57 (2002) 1115-1130
- M. Corsi et al., Czechoslovak Journal of Physics, 52, 2002, Suppl. D., D335 – D341.
- Corsi et al. – Applied Spectroscopy, 57 [6] 715-721 (2003)
- Corsi et al.- Applied Optics – 42 (2003) 6133-6137
- Corsi et al. - Spectrochimica Acta B, 59[2] (2004) 723-735
- **Cristoforetti** et al.- Spectrochimica Acta B, 59[12] (2004) 1907-191
- **Cristoforetti** et al., Applied Physics B, Lasers and Optics, 80 (2005) 559-568
- **Cristoforetti** et al., Spectrochimica Acta B, 60 (2005) 888-896
- Corsi et al., Spectrochimica Acta B, 60 (2005) 872-875
- Corsi et al., Applied Spectroscopy, 59 (2005) 853-860
- Corsi et al., Microchimica Acta, 152 (2005) 105-111
- Benedetti et al., Spectrochimica Acta B, 60 (2005) 1392-1401
- El Sherbini et al., Spectrochimica Acta B, 60 (2005) 1573-1579
- Ismail et al., Analytical & Bioanalytical Chemistry, 385 (2006) 316-325
- Bertolini et al., Analytical & Bioanalytical Chemistry, 385 (2006) 240-247
- **Cristoforetti et al.**, Spectrochimica Acta B, 61 (2006) 340-350
- Corsi et al., Applied Geochemistry, 21 (2006) 748-755
- **Cristoforetti** et al. , J. Anal. At. Spectrom., 21 (2006) 696-702
- Bredice et al. , Spectrochimica Acta B, 61 (2006) 340-350
- D'Ulivo et al., Spectrochimica Acta B, 61 (2006) 797-802
- Angeli L. et al. , Laser Chemistry, (2006) ID 61607, 1-7
- Benedetti et al., *Micron*, 38 (2007) 104-108
- El Sherbini et al. , Spectroscopy Letters 40 (2007) 1-16
- Tognoni et al., Spectrochimica Acta Part B, 62 (2007) 435-443
- Bredice et al., Spectrochimica Acta Part B, 62 (2007) 836-840
- Ferretti et al., Spectrochimica Acta Part B, 62 (2007) 1512-1518
- Tognoni et al., *Spectrochimica Acta Part B*, 62, 1287-1302 (2007)
- Visentini et al., *Optoelectronic Letters*, 3 (3) (2007) 222-226

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- **G. Cristoforetti et al., *Spectrochimica Acta B*, 63 (2008) 312-323**
- Bredice et al., *Spectrochimica Acta B*, 62 (2007) 1237-1245
- **Cristoforetti et al., *J. Anal. Atom. Spectr.*, 23 (2008) 1518-1528**
- De Giacomo et al., *Spectrochim. Acta B*, 63 (2008) 980-987
- **Cristoforetti, *Spectrochim. Acta B*, 64 (2009) 26-34**
- Aguilera et al., *Spectrochim. Acta B*, 64 (2009) 685-689
- **Cristoforetti et al., *Appl. Phys. A*, 98 (2010) 219-225**
- **Cristoforetti et al., *Spectrochim. Acta B*, 64 (2009) 357-358**
- Sorrentino et al., *Spectrochimica Acta Part B* 64 (2009) 1068-1072
- **Cristoforetti et al., *J. Phys. D: Appl. Phys.* 42 (2009) 225207**
- Tognoni et al., *J. Anal. Atom. Spectr.* 24, 655 (2009)
- **Cristoforetti et al., *Spectrochimica Acta B* 65 (2010) 86-95**
- Tognoni et al., *Spectrochim. Acta B* 65 (2010) 1-14
- Amato et al., *Spectrochim. Acta B*, 65 (2010) 664-670
- Andrade et al., *Spectrochim. Acta B*, 65 (2010) 658-663
- **Cristoforetti et al., *Spectrochim. Acta B*, 65 (2010) 787-796**
- Senesi et al., *Spectrochim. Acta Part B*, 65 (2010) 557-564
- **Cristoforetti et al., *J. Phys. Chem. C*, 115 (2011) 5073-5083**
- **Cristoforetti et al., *Appl. Surf. Sci.* 258 (2012) 3289- 3297**
- **Cristoforetti et al., *Appl. Opt.* 51 (2012)**
- Tiberi et al., *Appl Phys A* (2013)
- Cristoforetti et al., *Phys. Rev. E* 87, 023103 (2013)
- **Cristoforetti et al., *Spectrochim. Acta Part B* 79-80 (2013) 63-71.**
- **Cristoforetti et al., *Spectrochim. Acta Part B*, 90 (2013) 1-22.**
- Koester et al., *Plasma Physics and Controlled Fusion* 124045, 55, 2013
- Pisarczyk et al., *Phys. Plasmas*, 21 (2014) 012708.
- Batani et al., *Phys. Plasmas*, 21 (2014) 032710
- Maheut et al., *Phys. Scripta*, T161 (2014), 014017
- Baffigi et al., *Phys. Plasmas*, 21 (2014) 072108
- Tognoni et al., *J. Anal. Atom. Spectrometry*, 29 (2014) 1318-1338
- **Cristoforetti et al., *Plasma Phys. Control. Fusion*, 56 (2014) 095001**
- Badziak et al., *Laser and Particle Beams* 33 (3), 561-575, 2015
- Koester, et al., *Laser and Particle Beams* 33 (02), 331-338, 2015
- Pisarczyk et al., *Laser and Particle Beams* 34, 94-108, 2016
- Tognoni et al., *Optics & Laser Technology*, 79, 164-172, 2016
- Tudisco et al., *Review of Scientific Instruments*, 87, 02A909, 2016
- Antonelli et al., *Journal of Physics: Conference Series* 688 (1), 012003, 2016
- Altana et al., *Nucl. Instrum. Methods Phys. Res., Sect. A* 829, 2016, 159-162
- Gizzi et al., *Nucl. Instrum. Methods Phys. Res., Sect. A* 829, 2016, 144-148
- **Cristoforetti et al., *Scientific Reports*, 7,1479, 2017**
- **Cristoforetti et al., *EuroPhysics Letters*, 117, 35001, 2017**
- Sarkar et al., *APL Photonics*, 2, 066105, 2017
- Altana et al., *Journal of Instrumentation* 12 (04), C04011, 2017
- Gizzi et al., *Appl. Sci.*, 7 (10), 984, 2017
- **Cristoforetti et al., *Phys. Plasmas*, 25, 012702, 2018**
- Gizzi et al., *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, <https://doi.org/10.1016/j.nima.2018.03.016>, 2018
- Pisarczyk et al., *Laser and Particle Beams*, 36, 405, 2018
- Batani et al., *Nuclear Fusion*, 59, 032012, 2019
- Safi et al., *Anal. Chem.*, 91, 8595, 2019
- Safi et al., *Journal of advanced research*, 18, 1, 2019
- **Cristoforetti et al., *High Power Laser Science and Engineering*, 7, e51, 2019**
- Antonelli et al., *Phys. Plasmas*, 26, 112708, 2019
- Baton et al., *High Energy Density Physics* 36, 100796, 2020
- Rezai et al., *Spectrochim. Acta Part B: Atomic Spectroscopy*, 169, 105878, 2020 – INVITED REVIEW
- Pisarczyk et al., *Plasma Phys. Contr. Fusion*, 62, 115020, 2020
- **Cristoforetti et al., *Plasma Phys. Contr. Fusion* 62, 114001, 2020**
- Gizzi et al., *Phys. Rev. research* 2, 033451, 2020

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- Koester et al., Review of Scientific Instruments **92**, 013501, 2021
- Calestani et al., Matter and Radiation at Extremes **6**, 046903, 2021
- Gizzi et al., Sci. Rep. **11**, 13728, 2021
- Palla, G. Cristoforetti, Appl. Sci. **11**, 10154 (2021)
- **Cristoforetti** et al., High Power Laser Sci. Engineering **9**, e60 (2021)
- Tamagawa et al., Rev. Sci. Instrum. **93**, 063505 (2022)
- **Cristoforetti** et al., High Power Laser Sci. Engineering, **11**, e24 (2023)
- Filippov et al., Matter and Radiation at Extremes **8** (6), 065602, (2023)
- Wasser et al., Rev. Sci. Instrum. **94**, 093503 (2023)
- Kawasaki et al., Phys. Rev. Research **5**, 033051, (2023)
- **Cristoforetti** et al, Sci. Rep., **13**, 20681 (2023)
- De Leo, Condens. Matter **8**, 98 (2023)
- Wasser et al., Phys. Plasmas, **31**, 022107 (2024)
- Gorman et al., J. Appl. Phys. **135**, 165902 (2024)

### Chapters of Books

- "From sample to signal in laser-induced breakdown spectroscopy: a complex route to quantitative analysis" – E. Tognoni, V. Palleschi, M. Corsi, G. Cristoforetti, N. Omenetto, I. Gornushkin, B.W. Smith, J.D. Winefordner, *Capitolo 3 di Laser-Induced Breakdown Spectroscopy, fundamentals and applications*, Cambridge University Press 2006
- "Optical Chemical Sensors For Cultural Heritage" – G. Cristoforetti, S. Legnaioli, V. Palleschi, A. Salvetti and E. Tognoni, *Optical Chemical Sensors*, F. Baldini et al. (eds.), Springer 2006
- "Analisi chimica elementare di marmi con tecnica LIBS a doppio impulso" - E. Cantisani, G. Cristoforetti, S. Legnaioli, V. Palleschi, E. Pecchioni, E. Tognoni, *Tecniche di analisi di materiali nei Beni Culturali*, ed. A. Maccotta, pag. 43-48, ISBN 88-88803-29-7
- "Double-Pulse Laser Ablation of Solid Targets in Ambient Gas: Mechanisms and Effects", G. Cristoforetti, V. Palleschi, Chapter 1 of *Laser Ablation: Effects and Applications*, Hauppauge, N.Y.; NovaPublishers 2011

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