LAURA CATTANEO — CURRICULUM VITAE

PERSONAL INFORMATION

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CONTACT INFORMATION

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EDUCATION:

January 2008 – February 2011, Ph.D., Physics, Politecnico di Milano, Milano, Italy

- Defended on 18 February 2011
- Adviser: Prof. Dr. Luigi Cavallotti and Prof. Franco Ciccacci
- Mobility during PhD:
  - November 2009 – July 2010: CEMES-CNRS Toulouse, supervisors: Caroline Bonafos and Robert Carles
  - January 2009 - March 2009: Universidad de Barcelona, Barcelona, Spain, supervisor: Professor Dr. Carlos Muller

20th December 2007, M.S., Physics Engineering, Politecnico di Milano, Milano, Italy

- Adviser: Professor Dr. Paola Taroni
- Mobility during the Master Thesis work: March 2007- November 2007: Royal Institute of Technology, Stockholm, Sweden, supervisor: Professor Mamoun Muhammad

22th July 2005, B.S., Physics Engineering, Politecnico di Milano, Milano, Italy

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EMPLOYMENT HISTORY:

CURRENT POSITION:

From May 2020: Max Planck Research Group Leader position (W2), non-tenure track.

- Max-Planck-Institut für Kernphysik, Heidelberg, Germany
- Acquired skills: setting up from scratch a laser lab and a wet bench for LC cells preparation; THz spectroscopy; high harmonic generation spectroscopy from mid-IR radiation; fully and independently responsible for a group of research: team building; data collection; data analysis; financial management; scientific dissemination and students' tutoring.

PREVIOUS POSITION:

October 2014 – April 2020: Postdoc position

- Institute for Quantum Electronics, Ultrafast Laser Physics Group, ETH Zurich, Switzerland
- Group leader: Professor Dr. Ursula Keller
- Acquired skills: strengthening of my knowledge and skills in the ultrafast dynamics field, in particular I learned to operate lasers, to generate High Harmonics in the extreme ultraviolet (XUV) spectral range and to perform photoionization experiments using a specific detector called COLTRIMS. I explored two techniques, such as RABBITT and attosecond streaking, and combined them with the COLTRIMS technique to achieve channel-selective measurements on attosecond time scales.

March 2011 – September 2014: Postdoc position

- Institute of Molecules and Materials, Spectroscopy of Solids and Interfaces Group, Radboud University, Nijmegen, The Netherlands
- Group leader: Professor Dr. Theo Rasing
- Acquired skills: Liquid Crystals and in general Soft Matter. I developed a Liquid Crystal Laboratory for the preparation, characterization (optical and scanning probe microscopy) and (ultrafast) optical investigation of the structure and (ultrafast) dynamics of different Liquid Crystal phases.

Granted Beamtime applications:

- May 2022 – PETRAIII (Desy, Hamburg): X-ray diffraction from free standing 8CB liquid crystal – 9 shifts.
- June 2022 – XFEL (Hamburg): time resolved hard X-ray diffraction on 8CB while pumped by an ultrafast NIR pulse triggering off-resonance ultrafast librations – 2 shifts.
- May 2023 – FELIX (Nijmegen): 8CB free standing polarized imaging of slow (nano- to millisecond) dynamics pumping narrow band and intense THz radiation.
- June 2023 – SwissFEL (PSI, Villigen): time resolved hard X-ray diffraction on 8CB while pumped by THz radiation triggering off-resonance ultrafast librations – 15 shifts.
- September 2023 – FELBE (Helmolz center, Dresden): resonant single-color THz pump-THz probe in LCs across phase transition along specific pump-LC orientations – 7 shifts.
- November 2023 – FELIX (Nijmegen): continuation of the previous beamtime to look at the microsecond time scale – 4 shifts.
- March 2025 – FELIX (Nijmegen): Dynamics of ferroelectric nematic liquid crystals induced by a THz pulse– 4 shifts.

Career breaks:

- March 31st 2019 – August 1st 2019: Maternity leave
- December 1st 2020 – May 31th 2021 Maternity leave

Languages:

- Italian: Mother Tongue
- English: Expert level
- French: Basic level
- German: Medium level (currently A2-B1)

Major collaborations:

Max-Planck Research Group Leader MPIK, Heidelberg, 2020 – 2024:

- Prof. Angel Rubio, Max-Planck-Institut für Struktur und Dynamik der Materie, theory support for the HHG from liquid crystals.
- Dr. Caterina Vozzi, Politecnico di Milano, experimental collaboration on HHG from liquid crystals.
- Dr. Daria Galimberti, Radboud University, theory support on THz to NIR absorption spectra investigation.
- Prof. Steven Johnson, ETH Zurich, collaboration on beamtime at SwissFEL.,
- Dr. Fabio Novelli, Bochum University, collaboration on FELBE beamtime.
- Prof. Andrei Kirliouk, Radboud University, collaboration on FELIX beamtime.
- Prof. Mark Wilson, Duhram University, theory support on LC molecular simulations.
- Dr. Richard Mandle, Leeds University, synthesis of ferroelectric liquid crystals.
- Prof. Andrea Cannizzo, Bern University, transient absorption experiment on diluted LCs.

Postdoc, Keller Group, ETH Zürich, 2014 – 2020:

- Professor Dr. Fernando Martin, Theoretical support of our experimental work on photoionization in H_2 molecules, Universidad Autónoma de Madrid, Spain

- Dr. Serguei Patchkovskii, Theoretical support of our experimental work on photoionization in CO molecules, MBI Berlin, Germany
- Dr. Alexandra Landsman, Theoretical support of our experimental work on photoionization in CO molecules, MPIPKS Dresden, Germany
- Professor Dr. Franz Kärtner, collaboration on algorithms for attosecond streaking traces retrieval, DESY, Hamburg, Germany
- Professor Dr. Luca Argenti, theoretical support of our work on single photon ionization time delay retrieval, University of Central Florida, Orlando, USA

Postdoc, Rasing Group, Radboud University, 2011 – 2014:

- Professor Dr. Igor Muševič, Combining Blue Phase Liquid Crystal and quantum dots for laser application, Inštitut Jožef Stefan, Ljubljana, Slovenia.
- Prof. Miha Ravnik, theory support on LCs static orientation of patterned cells, University of Ljubljana, Slovenia.

Invited at conferences/seminars (last 4 years):

- CLEO USA May 2021 – title: Attosecond photoionization dynamics in model diatomic molecules - online.
- Young Scientist Symposium 2021 – 14th October 2021- title: Time Resolved THz Dynamics in Liquid Crystals – virtual.
- Attochem Webinar – 22nd October 2021 – title: Looking at liquid crystals in the ultrafast time scale – virtual.
- Laser Colloquium - Ruhr-Universität Bochum – 29th November 2021 – title: Liquid crystals meet THz spectroscopy and more... – virtual.
- AttoFridays 2022 – March 6th – virtual.
- MUST 2022, 7th-10th June, International Conference on Molecular Ultrafast Science and Technology, Grindelwald, Switzerland.
- Seminar at the Physics Department of Politecnico di Milano, May 19th 2022.
- SPIE Photonics West, "Emerging Liquid Crystal Technologies XVIII" conference, S. Francisco USA, February 1st 2023.
- CLEO/Europe-EQEC 2023, from 26th – 30th June 2023, Munich, Germany.
- 13th Ringberg Workshop on Science with FELs: Feb 11th –14th, 2024.
- 5th and final Workshop of the AttoChem COST Action, 28th Feb- 1st March 2024, Tenerife, Spain.
- Keynote at the Optical Terahertz Science and Technology (OTST), 8th-12th April 2024, Marburg, Germany.
- Selected at the Network Symposium during the 2024 MPG Annual meeting, 13th June 2024, Harnack Haus, Berlin.
- Rank Prize Symposium: Nov 11th-13th, 2024, United Kingdom.
- PQE-2025: January 6th-10th, 2025, Snowbird, UT.
- "Engineering Physics Colloquia", Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, 13th March 2025, Venice, Italy.
- Seminar at Institut für Physikalische Chemie, Friedrich-Schiller-Universität Jena, 1st -3rd April, 2025.
- Cicle of lecture entitled “HHG in soft matter” at the school *The frontiers of attosecond and ultrafast X-ray science*, 7th -13th April, 2025, Ettore Majorana Centre in Erice, Sicily, Italy.
- CLEO2025, from 5th - 9th May 2025, Long Beach, California, USA.
- 2026 International Workshop on Ultra-Fast & X-Ray Science (WUFXS2026), 16th-19th April 2026, East China Normal University, Shanghai, Cina.

External funding history and awards:

- Mildred Dresselhaus Guest Professorship 2024, CUI: Advanced Imaging of Matter, Universität Hamburg, July 2024.
- Selected for a position as a Max-Planck Research Group leader, April 17th 2019, and two years extension contract until July 2027.
- Robert Gnehm Grant for Conference Attendance and Specific Business Trips, ETH Zürich, November 20th 2019.
- Fellowship for Postdoc Mothers, Physics Department at ETH Zürich, November 22nd 2018 where I received funding to support a four-year PhD position within the Department of Physics.

Other contributions to the research community:

Organization of scientific meetings

- 2020 Soft Matter meets ultrafast spectroscopy SMUS2020 – 31st August-1st September (online) 10 invited and 2 oral contributions. Co-organised with COST Action AttoChem (CA18222).

Institutional Responsibilities

- 2020 – ongoing Graduate Student Advisor, Heidelberg University/Germany
- 2020 – 2025 Nominated as 2nd deputy equal opportunity officer / MPIK / Heidelberg / Germany.
- 2020 Committee member in the COST Action ATTOChem (CA18222)
- 2023 – ongoing COST Action NEXT, CPC on gender balance (CA22148)

Reviewing activities

- 2025 – PhD thesis reviewer /Politecnico of Milano/ Milano/ Italy
- 2024 – PhD thesis reviewer /Ca' Foscari University/ Venice/ Italy
- 2023 – Scientific Advisory Board H2020 X-PIC, Politecnico di Milano/ Milano/Italy.
- 2023 – PhD thesis reviewer /Politecnico of Milano/ Milano/ Italy.
- 2021 – Editorial Board, Frontiers in Physics special issue connected to the SMUS2020 workshop.
- 2019 – Members of the Doctoral Examination Board for the PhD thesis defense of Dr. Yulong / Radboud University/Nijmegen / the Netherland.
- 2015 – Members of the Doctoral Examination Board for the PhD thesis defense of Dr. A. Alvarez Fernandez/ Radboud University/ Nijmegen/ the Netherland.

Outreach activities (e.g. public engagement in science, technology and knowledge transfer activities, etc.)

- Active design of one experiment to show at the 'Scientifica' event in Zürich in September 2015.
- Invited talk to the 'Science Day' event in Caldogno (Vicenza, Italy) to a general audience in April 2018.
- Invited talk at the Workshop STEM: Progetto scienziate, Universita' Ca' Foscari, Venezia, November 2020 and March 2021.
- Published interview on 'LEI' Journal, Ca Foscari Editor, July 2021 (http://doi.org/10.30687/Lei/2724-6094/2021/03).
- Invited to CARLA camp -the Photonic Career Hub-Milano, May 13th 2022.
- International day of light, Politecnico di Milano, May 18th 2022.
- Public talk September 9th, 2022, Ca Foscari -Venice.
- Organization of several meetings within the MPIK called 'Coffee Connect' for all women employed within the insititute (students, HR, technical workshop, scientists) for networking/mentoring and career perspective purposes.
- Invited as speaker at the Meet&Mingle@IsoQuant meeting (SFB 1225 IsoQuant), Heidelberg, 31st January 2024.
