Dr. Laura Foglia

ORCiD: orcid.org/0000-0002-2218-3886 Last updated on May 17, 2024

SELECTED PUBBLICATIONS

- L. Foglia *et al.*, Nanoscale polarization transient gratings (Submitted 2024)
- F. Steinbach *et al.*, Exploring the fundamental limits of magnetic all-optical switching, Nano letters (Accepted 2024)
- M. Hadi *et al.*, The effect of echoes interference on phonon attenuation in a nanophononic membrane, Nature Communications 15, 1317 (2024)
- V. Ukleev *et al.*, Transient grating spectroscopy on a DyCo5 thin film with femtosecond extreme ultraviolet pulses, Structural Dynamics 11, 025101 (2024)
- D. Fainozzi, L. Foglia *et al.*, Stimulated Brillouin Scattering in the Time Domain at 1 nm-1 Wave Vector, Physical Review Letters 132, 033802 (2024)
- I. Vaskivski *et al.*, A high-efficiency programmable modulator for extreme ultraviolet light with nanometre feature size based on an electronic phase transition, Nature Photonics 18, 458 (2024)
- R. Mincigrucci *et al.,* Noncollinear, inelastic four-wave mixing in the extreme ultraviolet, Optica 10, 1383 (2023)
- W. K. Peters *et al.*, Hard x-ray – optical four-wave mixing using a split-and-delay line, Optics Express 31, 31410 (2023)
- D. De Angelis *et al.*, Free electron laser stochastic spectroscopy revealing silicon bond softening dynamics, Physical Review B 107, 214305 (2023)
- L. Foglia, R. Mincigrucci, (…), F. Bencivenga, Extreme ultraviolet transient gratings: A tool for nanoscale photoacoustics, Photoacoustics 29, 100453 (2023)
- R. Mincigrucci *et al.*, Element- and enantiomer-selective visualization of molecular motion in real-time, Nature Communications 14, 386 (2023)
- D. Fainozzi *et al.*, Three-dimensional coherent diffraction snapshot imaging using extreme-ultraviolet radiation from a free electron laser, Optica 10, 1053 (2023)
- F. Bencivenga, F. Capotondi, L. Foglia, R. Mincigrucci, C. Masciovecchio, Extreme ultraviolet transient gratings, Advances in Physics: X 8, 2220363 (2023)
- M. Pancaldi *et al.*, The COMIX polarimeter: a compact device for XUV polarization analysis, Journal of Synchrotron Radiation 29, 969 (2022)
- K. Yao *et al.*, All-Optical Switching on the Nanometer Scale Excited and Probed with Femtosecond Extreme Ultraviolet Pulses, Nano Letters 22, 4452 (2022)
- G. Penco *et al.*, Nonlinear harmonics of a seeded free-electron laser as a coherent and ultrafast probe to investigate matter at the water window and beyond, Physical Review A 105, 053524 (2022)
- I. Ilyakov *et al.*, Terahertz-wave decoding of femtosecond extreme-ultraviolet light pulses, Optica Vol. 9 - 5, pp. 545-550 (2022)
- C. Ferrante *et al.*, Non-linear self-driven spectral tuning of Extreme Ultraviolet Femtosecond Pulses in monoatomic materials, Light: Science and Applications 10, 92 (2021)
- A. Milloch *et al.*, Nanoscale Thermoelasticity in Silicon Nitride Membranes: Implications for Thermal Management, ACS Applied Nano Materials 4, 10519 (2021)
- C.P. Schwartz *et al.*, Angstrom-Resolved Interfacial Structure in Buried Organic-Inorganic Junctions, Physical Review Letters 127, 096801 (2021)
- A.A. Maznev *et al.*, Generation and detection of 50 GHz surface acoustic waves by extreme ultraviolet pulses, Applied Physics Letters 119, 044102 (2021)
- J.R. Rouxel *et al.*, Hard X-ray transient grating spectroscopy on bismuth germanate, Nature Photonics 15, 499-503 (2021)
- D. Ksenzov *et al.*, Nanoscale Transient Magnetization Gratings Created and Probed by Femtosecond Extreme Ultraviolet Pulses, Nano Letters 21, 2905-2911 (2021)
- W.K. Peters *et al.*, T. Jones, A. Efimov, (...), F. Bencivenga, P. Bowlan, All-optical single-shot complete electric field measurement of extreme ultraviolet free electron laser pulses, Optica 8, 545-55(2021)

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- J.S.P. Cresi *et al.*, Ultrafast dynamics of plasmon-mediated charge transfer in Ag@CeO2 studied by free electron laser time- resolved x-ray absorption spectroscopy, Nano Letters 21, 1729-1734 (2021)
- E. Principi *et al.*, Atomic and Electronic Structure of Solid-Density Liquid Carbon, Physical Review Letters 125, 155703 (2020)
- D. Naumenko *et al.*, Thermoelasticity of Nanoscale Silicon Carbide Membranes Excited by Extreme Ultraviolet Transient Gratings: Implications for Mechanical and Thermal Management, ACS Applied Nano Materials 2, 5132 (2019)
- P. Rebernik Ribič *et al.*, Coherent soft X-ray pulses from an echo-enabled harmonic generation free-electron laser, Nature Photonics 13, 555 - 561 (2019)
- F. Bencivenga *et al.*, Nanoscale transient gratings excited and probed by extreme ultraviolet femtosecond pulses, Science Advances 5, eaaw5805 (2019)
- L. Foglia *et al.*, Exploring the multiparameter nature of EUV-visible wave mixing at the FERMI FEL, Structural Dynamics 6, 040901 (2019) * Invited Perspective *,
- R. Bohinc *et al.*, Nonlinear XUV- optical transient grating spectroscopy at the Si L2,3-edge, Applied Physics Letters 114, 181101 (2019)
- L. Foglia *et al*, Revealing the Competing Contributions of Charge Carriers, Excitons and Defects to the Non-Equilibrium Optical Properties of ZnO, Structural Dynamics 6, 034501 (2019)
- A.A. Maznev *et al.*, Generation of coherent phonons by coherent extreme ultraviolet radiation in a transient grating experiment, Appl. Phys. Lett. 113, 221905 (2018)
- R. Mincigrucci, L. Foglia *et al.*, Advances in instrumentation for FEL-based four-wave-mixing experiments, Nucl. Instrum. Methods Phys. Res. A 907, 132 (2018)
- R.K. Lam *et al.*, Two-photon absorption of soft X-ray free electron laser radiation by graphite near the carbon K-absorption edge, Chem. Phys. Lett. 703, 112 (2018)
- L. Foglia *et al.*, First Evidence of Purely Extreme-Ultraviolet Four-Wave Mixing, Phys. Rev. Lett. 120, 263901 (2018)
- R.K. Lam *et al.*, Soft X-ray Second Harmonic Generation as an Interfacial Probe, Phys. Rev. Lett. 120, 023901 (2018)*Editors' suggestion*
- F. Capotondi, L. Foglia *et al.*, Characterization of ultrafast free-electron laser pulses using extreme-ultraviolet transient gratings, J. Synchrotron Rad. 25, 32 (2018)
- P. Rebernik Ribič *et al.*, Extreme-Ultraviolet Vortices from a Free-Electron Laser, Phys. Rev. X 7, 031036 (2017)
- L. Foglia, M. Wolf and J. Stähler, Ultrafast dynamics in solids probed by femtosecond time-resolved broadband electronic sum frequency generation, Appl. Phys. Lett. 109, 202106 (2016)
- L. Foglia, L. Bogner, M. Wolf and J. Stähler, Localization-dependent charge separation efficiency at an organic/inorganic hybrid interface, Chem. Phys. Lett. 646, 25 (2016) * Frontiers and cover article *
- S. Wall, L. Foglia *et al.*, Tracking the evolution of the electronic and structural properties of VO2 during the ultrafast photoinduced insulator-metal transition, Phys. Rev. B 87, 115126 (2013)
- S. Wall *et al.*, Ultrafast changes in lattice symmetry probed by coherent phonons, Nat. Commun. 3, 721 (2012)

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SELECTED TALKS

2024
- * Invited * CLEO, Charlotte (NC)
  Evolution of XUV Four Wave Mixing: from Transient Grating Spectroscopy to nanoscale polarization control

2023
- * Invited * CLEO Europe – EQEC, Munich (DE)
  Nanoscale transient magnetization dynamics with EUV transient gratings
- * Invited * DanScatt E-XFEL Workshop 2023, Aalborg (DK)
  Lengthscale control of ultrafast fundamental excitations: nanoscale transient grating.
- Ultrafast Optics XIII, Bariloche (AR)
  Accessing fundamental dynamics at the nanoscale: EUV transient grating.

2022
- * Invited * Deutsche Physikalische Gesellschaft Spring Meeting – Focus session on "Ultrafast Spin, Lattice and Charge Dynamics of Solids", Regensburg (D)
  Nanoscale transient magnetization dynamics: a comprehensive EUV TG study.
- * Invited * Trends in Magnetism 2022, Venice (I)
  Nanoscale transient magnetization dynamics: a comprehensive EUV TG study.
- * Invited * Workshop – Ultrafast X-ray Science at the Soft X-ray Laser, Stockholm (SE)
  From the lab to the FEL: extending ultrafast spectroscopy to shorter wavelengths.

2021
- * Invited * LCLS Users Meeting , Menlo Park (CA — online).
  XUV Transient Grating: a tool for accessing fundamental dynamics at the nanoscale.
- * Invited * I-LAMP seminar series, Universitá Cattolica Brescia (online).
  Nanoscale lattice dynamics: the XUV transient grating approach.

2020
- * Invited * Science at FELs, Hamburg (online).
  From ultrafast lasers to FELs: extending experimental techniques to short wavelengths.

2019
- * Invited * Phonon lifetime from disordered to complex systems: Measurement and Interpretation Workshop, Lyon.
  Accessing phonons in the mesoscopic regime: the XUV transient grating and beyond.
- * Invited * APS Physics Next: X-Ray Laser Science - A New Frontier, Long Island (NY).
  XUV wave-mixing methods.
- * Invited * LACUS DAY 2019, Lausanne (CH).
  XUV Free Electron Laser based Nonlinear Optics
- * Invited * 10th Ringberg-Workshop, Schloss Ringberg (D).
  Joy and sorrow of XUV wave-mixing.

2018
- * Invited * AVS 65th International Symposium, Long Beach (CA).
  Probing collective excitations at the nanoscale: XUV transient grating and beyond.
- * Invited * Seminar at the Stanford Institute for Materials and Energy Sciences, Menlo Park (CA).
  Probing collective excitations at the nanoscale: XUV transient grating and beyond.
- * Young Investigator Award * GRC on Ultrafast Phenomena in Cooperative Systems, Galveston (TX).
  Probing collective excitations at the nanoscale: XUV four-wave-mixing.

2017
- * Invited * Advances in Free-electron Laser Science - Workshop of the Peter Paul Ewald Fellows, Hamburg (D).
  Probing excitons at FELs: broadband pump-probe and XUV wave mixing.
- * Invited * SPIE Optics and Optoelectronics, Prague (CZ).
  Four-wave-mixing experiments and beyond: the TIMER/mini-TIMER setups at FERMI.

2016
- HoW exciting! 2016 - Workshop on excitations in solids, Berlin (D).
  Electronic sum-frequency generation and XUV four wave mixing: Novel non-linear optical probes of exciton dynamics.