

# Thomas Elsaesser

## Publications in refereed journals and books

*January 30, 2012*

392. **Transient charge density maps from femtosecond x-ray diffraction**  
T. Elsaesser and M. Woerner  
in: Modern Charge Density Analysis, C. Gatti, P. Macchi (Eds.), Springer, New York 2012, pp. 697-714
391. **High-field transport in an electron-hole plasma: Transition from ballistic to drift motion**  
P. Bowlan, W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, R. Hey, and C. Flytzanis  
Phys. Rev. Lett. **107**, 256602 (2011)
390. **Near-field dynamics of broad area diode laser at very high pump levels**  
M. Hempel, J. W. Tomm, M. Baeumler, H. Konstanzer, J. Mukherjee, and T. Elsaesser  
AIP Advances **1**, 042148 (2011)
389. **Decelerated water dynamics and vibrational couplings of hydrated DNA mapped by two-dimensional infrared spectroscopy**  
M. Yang, L. Szyc, and T. Elsaesser  
J. Phys. Chem. B **115**, 13093 (2011)
388. **Ultrafast energy migration pathways in self-assembled phospholipids interacting with confined water**  
N.E. Levinger, R. Costard, E. T. J. Nibbering, and T. Elsaesser  
J. Phys. Chem. A **115**, 11952 (2011)
387. **Strong correlation of electronic and lattice excitations in GaAs/AlGaAs semiconductor quantum wells revealed by two-dimensional terahertz spectroscopy**  
W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, R. Hey, and U. Schade  
Phys. Rev. Lett. **107**, 067401 (2011)
386. **Emission properties of diode laser bars during pulsed high-power operation**  
M. Hempel, J. W. Tomm, P. Hennig, and T. Elsaesser  
Semicond. Sci. Technol. **26**, 092001 (2011)
385. **Highly efficient THG in TiO<sub>2</sub> nanolayers for third-order pulse characterization**  
S. K. Das, C. Schwenke, A. Pfuch, W. Seeber, M. Bock, G. Steinmeyer, T. Elsaesser, and R. Grunwald  
Opt. Express **19**, 16985 (2011)

384. **The rotating-crystal method in femtosecond x-ray diffraction**  
B. Freyer, J. Stingl, F. Zamponi, M. Woerner, and T. Elsaesser  
*Opt. Express* **19**, 15506 (2011)
383. **Two-dimensional UV-vis/NMR correlation spectroscopy: a hetero-spectral signal assignment of hydrogen-bonded complexes**  
B. Koeppel, P.M. Tolstoy, J. Guo, E.T.J. Nibbering, and T. Elsaesser  
*J. Phys. Chem. Lett.* **2**, 1106 (2011)
382. **Two-dimensional terahertz correlation spectra of electronic excitations in semiconductor quantum wells**  
W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
*J. Phys. Chem. B* **115**, 5448 (2011) (Mukamel Festschrift)
381. **Dynamics and couplings of N-H stretching excitations of guanosine-cytidine base pairs in solution**  
M. Yang, L. Szyc, K. Röttger, H. Fidder, E.T.J. Nibbering, T. Elsaesser, and F. Temps  
*J. Phys. Chem. B* **115**, 5484 (2011) (Mukamel Festschrift)
380. **Ultrafast nonequilibrium carrier dynamics in a single graphene layer**  
M. Breusing, S. Kuehn, T. Winzer, E. Malic, F. Milde, N. Severin, J.P. Rabe, A. Knorr, and T. Elsaesser  
*Phys. Rev. B* **83**, 153410 (2011)
379. **Defect evolution during catastrophic optical damage of diode lasers**  
M. Hempel, F. La Matina, J.W. Tomm, U. Zeimer, R. Broennimann, and T. Elsaesser  
*Semicond. Sci. Technol.* **26**, 075020 (2011, invited paper)
378. **Mechanisms and fast kinetics of the catastrophic optical damage (COD) in diode lasers**  
J.W. Tomm, M. Ziegler, M. Hempel, and T. Elsaesser  
*Laser Photon. Rev.* **5**, 422 (2011)
377. **High-resolution near-field optical investigation of crystalline domains in oligomeric PQT-12 thin films**  
S. Kuehn, P. Pingel, M. Breusing, T. Fischer, J. Stumpe, D. Neher, and T. Elsaesser  
*Adv. Funct. Mat.* **21**, 860 (2011)
376. **Femtosecond two-dimensional infrared spectroscopy of adenine-thymine base pairs in DNA oligomers**  
M. Yang, L. Szyc, and T. Elsaesser  
*J. Phys. Chem. B* **115**, 1262 (2011)
375. **Ultrafast dynamics of phosphate-water interactions in hydrated DNA**  
L. Szyc, M. Yang, and T. Elsaesser  
Ultrafast Phenomena XVII, M. Chergui et al. (Eds.), Oxford University Press, New York 2011, p. 493

374. **Ultrafast vibrational dynamics of hydrated DNA studied by 2D infrared spectroscopy**  
M. Yang, L. Szyc, T. Elsaesser  
Ultrafast Phenomena XVII, M. Chergui et al. (Eds.), Oxford University Press, New York 2011, p. 472
373. **Coherent energy transport between coupled quantum wells studied by two-dimensional terahertz spectroscopy**  
W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
Ultrafast Phenomena XVII, M. Chergui et al. (Eds.), Oxford University Press, New York 2011, p. 299
372. **Ultrafast coherent high-field electron transport in GaAs**  
W. Kuehn, P. Gaal, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
Ultrafast Phenomena XVII, M. Chergui et al. (Eds.), Oxford University Press, New York 2011, p. 317
371. **X-ray powder diffraction with femtosecond time resolution**  
F. Zamponi, Z. Ansari, J. Dreyer, M. Woerner, T. Elsaesser  
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370. **Catastrophic optical damage at front and rear facets of diode lasers**  
M. Hempel, J. W. Tomm, M. Ziegler, T. Elsaesser, M. Michel, and M. Krakowski  
Appl. Phys. Lett. **97**, 231101 (2010)
369. **The hydrogen bonded 2-pyridone dimer model system. 2. Femtosecond mid-infrared pump-probe study**  
M. Yang, L. Szyc, J. Dreyer, E.T.J. Nibbering, and T. Elsaesser  
J. Phys. Chem. A **114**, 12195 (2010)
368. **Nonlinear terahertz studies of ultrafast quasiparticle dynamics in semiconductors**  
M. Woerner, and T. Elsaesser  
in: Dynamics at solid state surfaces and interfaces, vol. 1, U. Bovensiepen, H. Petek, M. Wolf (Eds.), Wiley VCH, Weinheim 2010, p. 3
367. **Concerted electron and proton transfer in ionic crystals mapped by femtosecond x-ray powder diffraction**  
M. Woerner, F. Zamponi, Z. Ansari, J. Dreyer, B. Freyer, M. Prémont-Schwarz, and T. Elsaesser  
J. Chem. Phys. **133**, 064509/1-8 (2010)
366. **InGaAs tunnel-injection structures with nanobridges: excitation transfer and luminescence kinetics**  
V.G. Talalaev, A.V. Senichev, B.V. Novikov, J.W. Tomm, T. Elsaesser, N.D. Zakharov, P. Werner, U. Gösele, Yu. B. Samsonenko, and G.E. Cirlin  
Semiconductors **44**, 1050 (2010)

365. **THz-induced interband tunneling of electrons in GaAs**  
W. Kuehn, P. Gaal, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
Phys. Rev. B **82**, 075204 (2010)
364. **Ultrafast spatio-temporal dynamics of terahertz generation by ionizing two-color femtosecond pulses in gases**  
I. Babushkin, W. Kuehn, C. Köhler, S. Skupin, L. Berge, K. Reimann, M. Woerner, J. Herrmann, and T. Elsaesser  
Phys. Rev. Lett. **105**, 053903 (2010)
363. **Physical limits of semiconductor laser operation - a time-resolved analysis of catastrophic optical damage**  
M. Ziegler, M. Hempel, H.E. Larsen, J.W. Tomm, P.E. Andersen, S. Clausen, S.N. Elliott, and T. Elsaesser  
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362. **Time-resolved analysis of catastrophic optical damage in 975 nm emitting diode lasers**  
M. Hempel, M. Ziegler, J. W. Tomm, T. Elsaesser, N. Michel, and M. Krakowski  
Appl. Phys. Lett. **96**, 251105 (2010)
361. **The hydrogen bonded 2-pyridone dimer model system. I. Combined NMR and FT-IR study**  
L. Szyc, J. Guo, M. Yang, J. Dreyer, P.M. Tolstoy, E.T.J. Nibbering, B. Czarnik-Matusiewicz, T. Elsaesser, and H.H. Limbach  
J. Phys. Chem. A **114**, 7749 (2010)
360. **Ultrafast energy exchange via water-phosphate interactions in hydrated DNA**  
L. Szyc, M. Yang, and T. Elsaesser  
J. Phys. Chem. B **114**, 7951 (2010)
359. **Ultrafast vibrational dynamics and local interactions of hydrated DNA**  
L. Szyc, M. Yang, E.T.J. Nibbering, and T. Elsaesser  
Angewandte Chemie Int. Ed. **49**, 3598 (2010, invited paper)  
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358. **Coherent ballistic motion of electrons in a periodic potential**  
W. Kuehn, P. Gaal, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
Phys. Rev. Lett. **104**, 146602 (2010)
357. **Photoinduced structural dynamics of polar solids studied by femtosecond x-ray diffraction**  
T. Elsaesser and M. Woerner  
Acta Cryst. A **66**, 168 (2010, invited paper)
356. **Femtosecond powder diffraction with a laser-driven hard x-ray source**  
F. Zamponi, Z. Ansari, M. Woerner, and T. Elsaesser  
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355. **Ultrafast structural dynamics of polar solids studied by femtosecond x-ray diffraction**  
T. Elsaesser, C. von Korff Schmising, N. Zhavoronkov, M. Bargheer, M. Woerner, M. Braun, P. Gilch, W. Zinth, I. Vrejoiu, D. Hesse, and M. Alexe  
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354. **Ultrafast vibrational dynamics of adenine-thymine base pairs in hydrated DNA**  
J.R. Dwyer, L. Szyc, E.T.J. Nibbering, and T. Elsaesser  
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353. **Nano-confined light and electron sources driven by few-cycle optical pulses**  
C.C. Neacsu, C. Ropers, T. Elsaesser, M. Albrecht, R. Olmon, M.B. Raschke, and C. Lienau  
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352. **Teasing a quasiparticle - the ultrafast nonlinear response of the Frohlich polaron in GaAs**  
P. Gaal, W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
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351. **Rabi oscillations in a shallow donor system driven by intense THz radiation**  
P. Gaal, W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
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350. **Femtosecond x-ray diffraction study of the ultrafast coupling between magnetization and structure in the ferromagnet SrRuO<sub>3</sub>**  
C. v. Korff Schmising, M. Bargheer, A. Harpoeth, N. Zhavoronkov, Z. Ansari, M. Woerner, T. Elsaesser, I. Vrejoiu, D. Hesse, and M. Alexe  
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349. **Ultrafast temperature jumps in liquid water studied by infrared pump and x-ray absorption probe spectroscopy**  
G. Gavrila, P. Wernet, K. Godehusen, C. Weniger, E.T.J. Nibbering, T. Elsaesser, and W. Eberhardt  
Ultrafast Phenomena XVI, P. Corkum, S. de Silvestri, K.A. Nelson, E. Riedle, R.W. Schoenlein (Eds.), Springer, Berlin 2009, p. 505
348. **Ultrafast memory loss and relaxation processes in hydrogen bonded systems**  
T. Elsaesser  
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347. **Two-dimensional infrared spectroscopy of intermolecular hydrogen bonds in the condensed phase**  
T. Elsaesser  
Acc. Chem. Res. **42**, 1220 (2009) (invited paper)
346. **Pathways for H<sub>2</sub>O bend vibrational relaxation in liquid water**  
R. Rey, F. Ingrosso, T. Elsaesser, and J.T. Hynes  
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345. **Ultrafast energy transfer from the intramolecular bending vibration to librations in liquid water**  
F. Ingrosso, R. Rey, T. Elsaesser, and J. T. Hynes  
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344. **Ultrafast x-ray science: probing transient structures in condensed matter - Editorial**  
T. Elsaesser  
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343. **Time-resolved x-ray absorption spectroscopy of infrared-laser induced temperature jumps in liquid water**  
G. Gavrilu, K. Godehusen, C. Weniger, E. T. J. Nibbering, T. Elsaesser, W. Eberhardt, and P. Wernet  
Appl. Phys. A **96**, 11 (2009)
342. **Femtosecond hard x-ray plasma sources with a kilohertz repetition rate**  
F. Zamponi, Z. Ansari, C. v. Korff Schmising, P. Rothhardt, N. Zhavoronkov, M. Woerner, T. Elsaesser, M. Bargheer, T. Tobitzsch-Ryll, and M. Haschke  
Appl. Phys. A **96**, 51 (2009)
341. **Ultrafast structural dynamics of perovskite superlattices**  
M. Woerner, C. v. Korff Schmising, M. Bargheer, N. Zhavoronkov, I. Vrejoiu, D. Hesse, M. Alexe, and T. Elsaesser  
Appl. Phys. A **96**, 83 (2009)
340. **Ultrafast x-ray experiments on structural changes in single crystals of polar molecules**  
M. Braun, C. Root, F.J. Lederer, T.E. Schrader, W. Zinth, C. von Korff Schmising, M. Bargheer, T. Elsaesser, and M. Woerner  
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339. **Catastrophic optical mirror damage in diode lasers monitored during single pulse operation**  
M. Ziegler, J.W. Tomm, D. Reeber, T. Elsaesser, U. Zeimer, H.E. Larsen, P.M. Petersen, and P.E. Andersen  
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338. **Phase-resolved two-dimensional spectroscopy based on collinear n-wave mixing in the ultrafast time domain**  
W. Kuehn, K. Reimann, M. Woerner, and T. Elsaesser  
J. Chem. Phys. **130**, 164503 (2009)
337. **Ultrafast redistribution of vibrational energy after excitation of NH stretching modes in DNA oligomers**  
V. Kozich, L. Szyc, E.T.J. Nibbering, W. Werncke, and T. Elsaesser  
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336. **Ultrafast carrier dynamics in graphite**  
M. Breusing, C. Ropers, and T. Elsaesser  
Phys. Rev. Lett. **102**, 086809 (2009)
335. **Ultrafast dynamics of N-H and O-H stretching excitations in hydrated DNA oligomers**  
L. Szyc, J.R. Dwyer, E.T.J. Nibbering, and T. Elsaesser  
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334. **Micro-thermography of diode lasers: the impact of light propagation on image formation**  
J. LeClech, M. Ziegler, J. Mukherjee, J.W. Tomm, T. Elsaesser, J.P. Landesman, B. Corbett, J.G. McInerney, J.P. Reithmaier, S. Deubert, A. Forchel, W. Nakwaski, and R.P. Sarzala  
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333. **Ultrafast phase-resolved pump-probe measurements on a quantum cascade laser**  
W. Kuehn, W. Parz, P. Gaal, K. Reimann, M. Woerner, T. Elsaesser, T. Müller, J. Darmo, K. Unterrainer, M. Austerer, G. Strasser, L.R. Wilson, J.W. Cockburn, A.B. Krysa, and J.S. Roberts  
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332. **Miniband-related 1.4-1.8  $\mu\text{m}$  luminescence of Ge/Si quantum dot superlattices**  
 V. G. Talalaev, G. E. Cirlin, A. A. Tonkikh, N. D. Zakharov, P. Werner, U. Gösele, J. W. Tomm, and T. Elsaesser  
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331. **An anchoring strategy for photoswitchable biosensor technology: azobenzene-modified SAMs on Si(111)**  
 P. Dietrich, F. Michalik, R. Schmidt, C. Gahl, G. Mao, M. Breusing, M. Raschke, B. Priwiesch, T. Elsaesser, R. Mendelsohn, M. Weinelt, and K. Rück-Braun  
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330. **Ultrafast vibrational dynamics of adenine-thymine base pairs in DNA oligomers**  
 J.R. Dwyer, L. Szyg, E.T.J. Nibbering, and T. Elsaesser  
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329. **Ultrafast magnetostriction and phonon-mediated stress in a photoexcited ferromagnet**  
 C. v. Korff Schmising, A. Harpoeth, N. Zhavoronkov, Z. Ansari, C. Aku-Leh, M. Woerner, T. Elsaesser, M. Bargheer, M. Schmidbauer, I. Vrejoui, D. Hesse, M. Alexe  
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328. **Ultrafast temperature jump in liquid water studied by a novel infrared pump - x-ray probe technique**  
 P. Wernet, G. Gavrilu, K. Godehusen, C. Weniger, E.T.J. Nibbering, W. Eberhardt  
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327. **Light confinement at ultrasharp metallic tips**  
 C. Ropers, C.C. Neacsu, M.B. Raschke, M. Albrecht, C. Lienau, and T. Elsaesser  
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326. **Ultrafast structural dynamics of hydrogen bonds in the liquid phase**  
 T. Elsaesser  
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325. **Carrier wave Rabi flopping on radiatively coupled shallow donor transitions in n-type GaAs**  
 P. Gaal, W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
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324. **Ultrafast coherent spectroscopy of semiconductor quantum dots**  
 C. Lienau and T. Elsaesser  
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323. **Real-time studies of reversible lattice dynamics by femtosecond x-ray diffraction**  
 C. v. Korff Schmising, M. Bargheer, M. Woerner, and T. Elsaesser  
 Z. Kristallographie **223**, 283 (2008, invited paper)

322. **Cavity enhanced thermal emission from semiconductor lasers**  
M. Ziegler, J.W. Tomm, T. Elsaesser, C. Monte, J. Hollandt, H. Kissel, J. Biesenbach  
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321. **Surface recombination and facet heating in high-power diode lasers**  
M. Ziegler, V. Talalaev, J.W. Tomm, T. Elsaesser, P. Ressel, B. Sumpf, G. Erbert  
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320. **Visualization of the heat flow in high-power diode lasers by lock-in thermography**  
M. Ziegler, J.W. Tomm, T. Elsaesser, G. Erbert, F. Bugge, W. Nakwaski, and R.P. Sarzala  
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319. **Real-time thermal imaging of catastrophic optical damage in red-emitting high-power diode lasers**  
M. Ziegler, J.W. Tomm, T. Elsaesser, C. Matthiesen, M.B. Sanayeh, and P. Brick  
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318. **Accurate determination of absolute temperatures of GaAs based high-power diode lasers**  
M. Ziegler, J.W. Tomm, F. Weik, T. Elsaesser, C. Monte, J. Hollandt, H. Kissel, G. Seibold, and J. Biesenbach  
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317. **Nonlinear terahertz and midinfrared response of n-type GaAs**  
M. Woerner, P. Gaal, W. Kuehn, K. Reimann, T. Elsaesser, R. Hey, and K.H. Ploog  
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316. **Temperature dependence of the two-dimensional infrared spectrum of liquid H<sub>2</sub>O**  
D. Kraemer, M.L. Cowan, A. Paarmann, N. Huse, E.T.J. Nibbering, T. Elsaesser, and R.J.D. Miller  
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315. **Internal motions of a quasiparticle governing its ultrafast nonlinear response**  
P. Gaal, W. Kuehn, K. Reimann, M. Woerner, T. Elsaesser, and R. Hey  
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314. **Ultrafast structure and polarization dynamics in nanolayered perovskites studied by femtosecond x-ray diffraction**  
C. v. Korff Schmiesing, M. Bargheer, M. Kiel, N. Zhavoronkov, M. Woerner, T. Elsaesser, I. Vrejoiu, D. Hesse, and M. Alexe  
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311. **Ultrafast optical excitations of metallic nanostructures: from light confinement to a novel electron source**  
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C. Ropers, C.C. Neacsu, T. Elsaesser, M. Albrecht, M.B. Raschke, and C. Lienau  
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309. **Coupled ultrafast lattice and polarization dynamics in ferroelectric nanolayers**  
C. von Korff Schmising, M. Bargheer, M. Kiel, N. Zhavoronkov, M. Woerner, T. Elsaesser, I. Vrejoiu, D. Hesse, and M. Alexe  
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308. **Accurate time delay determination for femtosecond x-ray diffraction experiments**  
C. von Korff Schmising, M. Bargheer, M. Kiel, N. Zhavoronkov, M. Woerner, T. Elsaesser, I. Vrejoiu, D. Hesse, and M. Alexe  
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307. **Mode-selective O-H stretching relaxation in a hydrogen bond studied by ultrafast vibrational spectroscopy**  
W. Werncke, V. Kozich, J. Dreyer, S. Ashihara, and T. Elsaesser  
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306. **2D-IR photon echo spectroscopy of pure liquid water - combination of novel nanofluidics and diffractive optics deciphers ultrafast structural dynamics**  
A. Paarmann, D. Kraemer, M.L. Cowan, B.D. Bruner, R.J.D. Miller, N. Huse, J. Dwyer, E.T.J. Nibbering, and T. Elsaesser  
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305. **Ultrafast relaxation dynamics in O-H bending and librational excitations in liquid H<sub>2</sub>O**  
S. Ashihara, N. Huse, E.T.J. Nibbering, and T. Elsaesser  
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304. **Femtosecond x-ray diffraction of DIABN single crystals**  
M. Braun, C. Root, T.E. Schrader, P. Gilch, W. Zinth, M. Bargheer, C. v. Korff-Schmiesing, M. Kiel, N. Zhavoronkov, M. Woerner, and T. Elsaesser  
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303. **Probing strain propagation in nanolayered perovskites by diffraction of femtosecond x-ray pulses**  
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302. **Nonlinear THz spectroscopy on n-type GaAs**  
P. Gaal, K. Reimann, M. Woerner, T. Elsaesser, R. Hey, and K.H. Ploog  
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301. **A nanometer-sized femtosecond electron source at 80 MHz repetition rate**  
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