

Stanford

David Reis

Director, PULSE, Professor of Photon Science and of Applied Physics
Photon Science Directorate

Bio

ACADEMIC APPOINTMENTS

- Professor, Photon Science Directorate
- Professor, Applied Physics
- Principal Investigator, Stanford Institute for Materials and Energy Sciences
- Principal Investigator, Stanford PULSE Institute

Teaching

COURSES

2024-25

- Advanced Topics in X-ray Scattering: APPPHYS 322 (Spr)
- Principles of X-ray Scattering: APPPHYS 222, PHOTON 222 (Win)

2023-24

- Principles of X-ray Scattering: APPPHYS 222, PHOTON 222 (Win)

2021-22

- Advanced Topics in AMO Physics: APPPHYS 384, PHOTON 384 (Win)
- Principles of X-ray Scattering: APPPHYS 222, PHOTON 222 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Ian Gabalski, Jiaxuan Guo, Rafi Hessami, Jack Hirschman, Andy Howard, Kuan-Yu Lin, Jun Wang

Postdoctoral Faculty Sponsor

Haidar Al Naseri, Christian Heide, Gal Orenstein, Huaiyu Wang

Doctoral Dissertation Advisor (AC)

Chance Ornelas-Skarin, Tatiana Smorodnikova, Jade Stanton, Leon Zhang

Doctoral Dissertation Co-Advisor (AC)

Griffin Glenn

Doctoral (Program)

Ernesto Flores, Paris Franz, Dongyu Liu, Gabriel Mintzer, Harrison Pasquinilli, Madison Singleton, Yaoju Tarn, Benny Weng

Publications

PUBLICATIONS

- **Nonthermal Bonding Origin of a Novel Photoexcited Lattice Instability in SnSe.** *Physical review letters*
Huang, Y., Teitelbaum, S., Yang, S., De la Peña, G., Sato, T., Chollet, M., Zhu, D., Niedziela, J. L., Bansal, D., May, A. F., Lindenberg, A. M., Delaire, O., Trigo, et al
2023; 131 (15): 156902
- **Ultrafast X-Ray Scattering Reveals Composite Amplitude Collective Mode in the Weyl Charge Density Wave Material (TaSe₄)₂I.** *Physical review letters*
Nguyen, Q. L., Duncan, R. A., Orenstein, G., Huang, Y., Krapivin, V., de la Peña, G., Ornelas-Skarin, C., Reis, D. A., Abbamonte, P., Bettler, S., Chollet, M., Hoffmann, M. C., Hurley, et al
2023; 131 (7): 076901
- **Ultrafast lattice disordering can be accelerated by electronic collisional forces** *NATURE PHYSICS*
de la Pena Munoz, G. A., Correa, A. A., Yang, S., Delaire, O., Huang, Y., Johnson, A. S., Katayama, T., Krapivin, V., Pastor, E., Reis, D. A., Teitelbaum, S., Vidas, L., Wall, et al
2023
- **In situ high-harmonic microscopy of a nanostructured solid** *OPTICA*
Korobenko, A., Rashid, S., Naumov, A., Villeneuve, D. M., Reis, D. A., Berini, P., Corkum, P. B., Vampa, G.
2023; 10 (5): 642-649
- **Influence of local symmetry on lattice dynamics coupled to topological surface states** *PHYSICAL REVIEW B*
Sobota, J. A., Teitelbaum, S. W., Huang, Y., Querales-Flores, J. D., Power, R., Allen, M., Rotundu, C. R., Bailey, T. P., Uher, C., Henighan, T., Jiang, M., Zhu, D., Chollet, et al
2023; 107 (1)
- **High-harmonic generation from artificially stacked 2D crystals** *NANOPHOTONICS*
Heide, C., Kobayashi, Y., Johnson, A. C., Heinz, T. F., Reis, D. A., Liu, F., Ghimire, S.
2023
- **Floquet engineering of strongly driven excitons in monolayer tungsten disulfide** *NATURE PHYSICS*
Kobayashi, Y., Heide, C., Johnson, A. C., Tiwari, V., Liu, F., Reis, D. A., Heinz, T. F., Ghimire, S.
2023
- **Introduction to the Topical Issue high field QED physics.** *The European physical journal. D, Atomic, molecular, and optical physics*
Yu, T., Pegoraro, F., Sarri, G., Reis, D. A.
2023; 77 (4): 55
- **Intense infrared lasers for strong-field science** *ADVANCES IN OPTICS AND PHOTONICS*
Chang, Z., Fang, L., Fedorov, V., Geiger, C., Ghimire, S., Heide, C., Ishii, N., Itatani, J., Joshi, C., Kobayashi, Y., Kumar, P., Marra, A., Mirov, et al
2022; 14 (4): 652-782
- **In-Situ Nanoscale Focusing of Extreme Ultraviolet Solid-State High Harmonics** *PHYSICAL REVIEW X*
Korobenko, A., Rashid, S., Heide, C., Naumov, A., Reis, D. A., Berini, P., Corkum, P. B., Vampa, G.
2022; 12 (4)
- **Probing topological phase transitions using high-harmonic generation** *NATURE PHOTONICS*
Heide, C., Kobayashi, Y., Baykusheva, D. R., Jain, D., Sobota, J. A., Hashimoto, M., Kirchmann, P. S., Oh, S., Heinz, T. F., Reis, D. A., Ghimire, S.
2022
- **Probing electron-hole coherence in strongly driven 2D materials using high-harmonic generation** *OPTICA*
Heide, C., Kobayashi, Y., Johnson, A. C., Liu, F., Heinz, T. F., Reis, D. A., Ghimire, S.
2022; 9 (5): 512-516
- **Observation of a Novel Lattice Instability in Ultrafast Photoexcited SnSe** *PHYSICAL REVIEW X*
Huang, Y., Yang, S., Teitelbaum, S., De la Pena, G., Sato, T., Chollet, M., Zhu, D., Niedziela, J. L., Bansal, D., May, A. F., Lindenberg, A. M., Delaire, O., Reis, et al

2022; 12 (1)

- **Dynamically Tunable Terahertz Emission Enabled by Anomalous Optical Phonon Responses in Lead Telluride** *ACS PHOTONICS*
Guzelturk, B., Trigo, M., Delaire, O., Reis, D. A., Lindenberg, A. M.
2021; 8 (12): 3633-3640
- **All-Optical Probe of Three-Dimensional Topological Insulators Based on High-Harmonic Generation by Circularly Polarized Laser Fields.** *Nano letters*
Baykusheva, D., Chacon, A., Lu, J., Bailey, T. P., Sobota, J. A., Soifer, H., Kirchmann, P. S., Rotundu, C., Uher, C., Heinz, T. F., Reis, D. A., Ghimire, S.
2021
- **Measurements of nonequilibrium interatomic forces using time-domain x-ray scattering** *PHYSICAL REVIEW B*
Teitelbaum, S. W., Henighan, T. C., Liu, H., Jiang, M. P., Zhu, D., Chollet, M., Sato, T., Murray, E. D., Fahy, S., O'Mahony, S., Bailey, T. P., Uher, C., Trigo, et al
2021; 103 (18)
- **Strong-field physics in three-dimensional topological insulators** *PHYSICAL REVIEW A*
Baykusheva, D., Chacon, A., Kim, D., Kim, D., Reis, D. A., Ghimire, S.
2021; 103 (2)
- **The effect of photo-carrier doping on the generation of high harmonics from MoS₂**
Heide, C., Kobayashi, Y., Liu, F., Ghimire, S., Heinz, T. F., Reis, D. A., IEEE
IEEE.2021
- **On the Use of Multilayer Laue Lenses with X-ray Free Electron Lasers**
Prasciolu, M., Murray, K. T., Ivanov, N., Fleckenstein, H., Domaracky, M., Gelisio, L., Trost, F., Ayyer, K., Krebs, D., Aplin, S., Awel, S., Boesenberg, U., Belsak, et al
SPIE-INT SOC OPTICAL ENGINEERING.2021
- **Beating absorption in solid-state high harmonics** *COMMUNICATIONS PHYSICS*
Liu, H., Vampa, G., Zhang, J., Shi, Y., Buddhiraju, S., Fan, S., Vuckovic, J., Bucksbaum, P. H., Reis, D. A.
2020; 3 (1)
- **Attosecond synchronization of extreme ultraviolet high harmonics from crystals** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
Vampa, G., Lu, J., You, Y., Baykusheva, D. R., Wu, M., Liu, H., Schafer, K. J., Gaarde, M. B., Reis, D. A., Ghimire, S.
2020; 53 (14)
- **Disentangling interface and bulk contributions to high-harmonic emission from solids** *OPTICA*
Vampa, G., Liu, H., Heinz, T. F., Reis, D. A.
2019; 6 (5): 553–56
- **Anomalous behavior of nonequilibrium excitations in UO₂** *PHYSICAL REVIEW B*
Rittman, D. R., Teitelbaum, S. W., Reis, D. A., Mao, W. L., Ewing, R. C.
2019; 99 (13)
- **Time-dependent QED approach to x-ray nonlinear Compton scattering** *PHYSICAL REVIEW A*
Krebs, D., Reis, D. A., Santra, R.
2019; 99 (2)
- **Interferometry of dipole phase in high harmonics from solids** *NATURE PHOTONICS*
Lu, J., Cunningham, E. F., You, Y., Reis, D. A., Ghimire, S.
2019; 13 (2): 96–+
- **Characterization of high-harmonic emission from ZnO up to 11 eV pumped with a Cr:ZnS high-repetition-rate source** *OPTICS LETTERS*
Vampa, G., Vasilyev, S., Liu, H., Mirov, M., Bucksbaum, P. H., Reis, D. A.
2019; 44 (2): 259–62
- **Femtosecond x-ray diffraction reveals a liquid-liquid phase transition in phase-change materials.** *Science (New York, N.Y.)*
Zalden, P. n., Quirin, F. n., Schumacher, M. n., Siegel, J. n., Wei, S. n., Koc, A. n., Nicoul, M. n., Trigo, M. n., Andreasson, P. n., Enquist, H. n., Shu, M. J., Pardini, T. n., Chollet, et al
2019; 364 (6445): 1062–67

- **High-Harmonic Generation from Topological Insulators**
Baykushева, D., Lu, J., Sobota, J. A., Soifer, H., Rotundu, C. R., Kirchmann, P. S., Reis, D. A., Ghimire, S., IEEE
IEEE.2019
- **Mapping spin-correlations with hard X-ray free-electron laser**
Zhong, Y., Epp, S., Krasniqi, F., Foucar, L., Trigo, M., Jian, C., Reis, D., Wang, H., Zhao, J., Lemke, H., Zhu, D., Ullrich, J., Schlichting, et al
E D P SCIENCES.2019
- **High-harmonic generation from solids** *NATURE PHYSICS*
Ghimire, S., Reis, D. A.
2019; 15 (1): 10–16
- **Theory of x-ray scattering from laser-driven electronic systems** *PHYSICAL REVIEW B*
Popova-Gorelova, D., Reis, D. A., Santra, R.
2018; 98 (22)
- **Frequency-selective excitation of high-wavevector phonons** *APPLIED PHYSICS LETTERS*
Teitelbaum, S. W., Henighan, T., Liu, H., Jiang, M. P., Kozina, M., Zhu, D., Chollet, M., Sato, T., Glownia, J. M., Trigo, M., Reis, D. A.
2018; 113 (17)
- **Enhanced high-harmonic generation from an all-dielectric metasurface** *NATURE PHYSICS*
Liu, H., Guo, C., Vampa, G., Zhang, J., Sarmiento, T., Xiao, M., Bucksbaum, P. H., Vuckovic, J., Fan, S., Reis, D. A.
2018; 14 (10): 1006–+
- **Direct Measurement of Anharmonic Decay Channels of a Coherent Phonon.** *Physical review letters*
Teitelbaum, S. W., Henighan, T., Huang, Y., Liu, H., Jiang, M. P., Zhu, D., Chollet, M., Sato, T., Murray, É. D., Fahy, S., O'Mahony, S., Bailey, T. P., Uher, et al
2018; 121 (12): 125901
- **Direct Measurement of Anharmonic Decay Channels of a Coherent Phonon** *PHYSICAL REVIEW LETTERS*
Teitelbaum, S. W., Henighan, T., Huang, Y., Liu, H., Jiang, M. P., Zhu, D., Chollet, M., Sato, T., Murray, E. D., Fahy, S., O'Mahony, S., Bailey, T. P., Uher, et al
2018; 121 (12)
- **Probing periodic potential of crystals via strong-field re-scattering** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
You, Y., Cunningham, E., Reis, D. A., Ghimire, S.
2018; 51 (11)
- **Roadmap of ultrafast x-ray atomic and molecular physics** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
Young, L., Ueda, K., Guehr, M., Bucksbaum, P. H., Simon, M., Mukamel, S., Rohringer, N., Prince, K. C., Masciovecchio, C., Meyer, M., Rudenko, A., Rolles, D., Bostedt, et al
2018; 51 (3)
- **Ultrafast disordering of vanadium dimers in photoexcited VO₂.** *Science (New York, N.Y.)*
Wall, S., Yang, S., Vidas, L., Chollet, M., Glownia, J. M., Kozina, M., Katayama, T., Henighan, T., Jiang, M., Miller, T. A., Reis, D. A., Boatner, L. A., Delaire, et al
2018; 362 (6414): 572–76
- **Orientation dependence of temporal and spectral properties of high-order harmonics in solids** *PHYSICAL REVIEW A*
Wu, M., You, Y., Ghimire, S., Reis, D. A., Browne, D. A., Schafer, K. J., Gaarde, M. B.
2017; 96 (6)
- **Anisotropic high-harmonic generation in bulk crystals** *NATURE PHYSICS*
You, Y. S., Reis, D. A., Ghimire, S.
2017; 13 (4): 345-349
- **High-harmonic generation from an atomically thin semiconductor** *NATURE PHYSICS*
Liu, H., Li, Y., You, Y. S., Ghimire, S., Heinz, T. F., Reis, D. A.
2017; 13 (3): 262-?
- **High-order harmonics from bulk and 2D crystals**
You, Y., Ndabashimiye, G., Liu, H., Li, Y., Heinz, T. F., Reis, D. A., Ghimire, S., IEEE

IEEE.2017

- **Visualization of Atomic-Scale Motions in Materials via Femtosecond X-Ray Scattering Techniques** *ANNUAL REVIEW OF MATERIALS RESEARCH, VOL 47*
Lindenberg, A. M., Johnson, S. L., Reis, D. A., Clarke, D. R.
2017; 47: 425–49
- **Phase-coherence of high-order harmonics from bulk crystals using homodyne detection**
Cunningham, E., You, Y., Reis, D. A., Ghimire, S., IEEE
IEEE.2017
- **Nonsequential two-photon absorption from the K shell in solid zirconium** *PHYSICAL REVIEW A*
Ghimire, S., Fuchs, M., Hastings, J., Herrmann, S. C., Inubushi, Y., Pines, J., Shwartz, S., Yabashi, M., Reis, D. A.
2016; 94 (4)
- **Control of two-phonon correlations and the mechanism of high-wavevector phonon generation by ultrafast light pulses** *PHYSICAL REVIEW B*
Henighan, T., Trigo, M., Chollet, M., Clark, J. N., Fahy, S., Glowonia, J. M., Jiang, M. P., Kozina, M., Liu, H., Song, S., Zhu, D., Reis, D. A.
2016; 94 (2)
- **Solid-state harmonics beyond the atomic limit** *NATURE*
Ndabashimiye, G., Ghimire, S., Wu, M., Browne, D. A., Schafer, K. J., Gaarde, M. B., Reis, D. A.
2016; 534 (7608): 520-?
- **Generation mechanism of terahertz coherent acoustic phonons in Fe** *PHYSICAL REVIEW B*
Henighan, T., Trigo, M., Bonetti, S., Granitzka, P., Higley, D., Chen, Z., Jiang, M. P., Kukreja, R., Gray, A., Reid, A. H., JAL, E., Hoffmann, C., Kozina, et al
2016; 93 (22)
- **Resonant squeezing and the anharmonic decay of coherent phonons** *PHYSICAL REVIEW B*
Fahy, S., Murray, E. D., Reis, D. A.
2016; 93 (13)
- **Ultrafast electron diffraction from non-equilibrium phonons in femtosecond laser heated Au films** *APPLIED PHYSICS LETTERS*
Chase, T., Trigo, M., Reid, A. H., Li, R., Vecchione, T., Shen, X., Weathersby, S., Coffee, R., Hartmann, N., Reis, D. A., Wang, X. J., Duerr, H. A.
2016; 108 (4)
- **Ultrafast resonant soft x-ray diffraction dynamics of the charge density wave in TbTe₃** *PHYSICAL REVIEW B*
Moore, R. G., Lee, W. S., Kirchman, P. S., Chuang, Y. D., Kemper, A. F., Trigo, M., Patthey, L., Lu, D. H., Krupin, O., Yi, M., Reis, D. A., Doering, D., Denes, et al
2016; 93 (2)
- **The origin of incipient ferroelectricity in lead telluride.** *Nature communications*
Jiang, M. P., Trigo, M., Savic, I., Fahy, S., Murray, É. D., Bray, C., Clark, J., Henighan, T., Kozina, M., Chollet, M., Glowonia, J. M., Hoffmann, M. C., Zhu, et al
2016; 7: 12291-?
- **Anomalous nonlinear X-ray Compton scattering** *NATURE PHYSICS*
Fuchs, M., Trigo, M., Chen, J., Ghimire, S., Shwartz, S., Kozina, M., Jiang, M., Henighan, T., Bray, C., Ndabashimiye, G., Bucksbaum, P. H., Feng, Y., Herrmann, et al
2015; 11 (11): 964-970
- **Phonon spectroscopy with sub-meV resolution by femtosecond x-ray diffuse scattering** *PHYSICAL REVIEW B*
Zhu, D., Robert, A., Henighan, T., Lemke, H. T., Chollet, M., Glowonia, J. M., Reis, D. A., Trigo, M.
2015; 92 (5)
- **Imaging transient melting of a nanocrystal using an X-ray laser** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Clark, J. N., Beitra, L., Xiong, G., Fritz, D. M., Lemke, H. T., Zhu, D., Chollet, M., Williams, G. J., Messerschmidt, M. M., Abbey, B., Harder, R. J., Korsunsky, A. M., Wark, et al
2015; 112 (24): 7444-7448
- **High-harmonic generation from Bloch electrons in solids** *PHYSICAL REVIEW A*
Wu, M., Ghimire, S., Reis, D. A., Schafer, K. J., Gaarde, M. B.

2015; 91 (4)

- **Strong-field and attosecond physics in solids** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
Ghimire, S., Ndabashimiye, G., DiChiara, A. D., Sistrunk, E., Stockman, M. I., Agostini, P., DiMauro, L. F., Reis, D. A.
2014; 47 (20)
- **Below gap optical absorption in GaAs driven by intense, single-cycle coherent transition radiation** *OPTICS EXPRESS*
Goodfellow, J., Fuchs, M., Daranciang, D., Ghimire, S., Chen, F., Loos, H., Reis, D. A., Fisher, A. S., Lindenberg, A. M.
2014; 22 (14): 17423-17429
- **Measurement of transient atomic displacements in thin films with picosecond and femtometer resolution** *STRUCTURAL DYNAMICS-US*
Kozina, M., Hu, T., Wittenberg, J. S., Szilagy, E., Trigo, M., Miller, T. A., Uher, C., Damodaran, A., Martin, L., Mehta, A., Corbett, J., Safranek, J., Reis, et al
2014; 1 (3)
- **X-ray second harmonic generation.** *Physical review letters*
Shwartz, S., Fuchs, M., Hastings, J. B., Inubushi, Y., Ishikawa, T., Katayama, T., Reis, D. A., Sato, T., Tono, K., Yabashi, M., Yudovich, S., Harris, S. E.
2014; 112 (16): 163901-?
- **X-Ray Second Harmonic Generation** *PHYSICAL REVIEW LETTERS*
Shwartz, S., Fuchs, M., Hastings, J. B., Inubushi, Y., Ishikawa, T., Katayama, T., Reis, D. A., Sato, T., Tono, K., Yabashi, M., Yudovich, S., Harris, S. E.
2014; 112 (16)
- **Evidence for photo-induced monoclinic metallic VO₂ under high pressure** *APPLIED PHYSICS LETTERS*
Hsieh, W., Trigo, M., Reis, D. A., Artioli, G. A., Malavasi, L., Mao, W. L.
2014; 104 (2)
- **Fourier-transform inelastic X-ray scattering from time- and momentum-dependent phonon-phonon correlations** *NATURE PHYSICS*
Trigo, M., Fuchs, M., Chen, J., Jiang, M. P., Cammarata, M., Fahy, S., Fritz, D. M., Gaffney, K., Ghimire, S., Higginbotham, A., Johnson, S. L., Kozina, M. E., Larsson, et al
2013; 9 (12): 790-794
- **Time- and momentum-resolved probe of heat transport in photo-excited bismuth** *APPLIED PHYSICS LETTERS*
Chen, J., Trigo, M., Fahy, S., Murray, E. D., Sheu, Y. M., Graber, T., Henning, R., Chien, Y. J., Uher, C., Reis, D. A.
2013; 102 (18)
- **Real-Time Manifestation of Strongly Coupled Spin and Charge Order Parameters in Stripe-Ordered La_{1.75}Sr_{0.25}NiO₄ Nickelate Crystals Using Time-Resolved Resonant X-Ray Diffraction.** *Physical review letters*
Chuang, Y. D., Lee, W. S., Kung, Y. F., Sorini, A. P., Moritz, B., Moore, R. G., Patthey, L., Trigo, M., Lu, D. H., Kirchmann, P. S., Yi, M., Krupin, O., Langner, et al
2013; 110 (12): 127404-?
- **Real-Time Manifestation of Strongly Coupled Spin and Charge Order Parameters in Stripe-Ordered La_{1.75}Sr_{0.25}NiO₄ Nickelate Crystals Using Time-Resolved Resonant X-Ray Diffraction** *PHYSICAL REVIEW LETTERS*
Chuang, Y. D., Lee, W. S., Kung, Y. F., Sorini, A. P., Moritz, B., Moore, R. G., Patthey, L., Trigo, M., Lu, D. H., Kirchmann, P. S., Yi, M., Krupin, O., Langner, et al
2013; 110 (12)
- **Free-carrier relaxation and lattice heating in photoexcited bismuth** *PHYSICAL REVIEW B*
Sheu, Y. M., Chien, Y. J., Uher, C., Fahy, S., Reis, D. A.
2013; 87 (7)
- **Optical Probing of Ultrafast Electronic Decay in Bi and Sb with Slow Phonons** *PHYSICAL REVIEW LETTERS*
Li, J. J., Chen, J., Reis, D. A., Fahy, S., Merlin, R.
2013; 110 (4)
- **Photon-Counting Detectors for Pump-Probe Science** *60th IEEE Nuclear Science Symposium (NSS) / Medical Imaging Conference (MIC) / 20th International Workshop on Room-Temperature Semiconductor X-ray and Gamma-ray Detectors*
Kenney, C. J., Dragone, A. B., Segal, J. D., Hasi, J., Mehta, A., Reis, D. A., Markovic, B., Caraguilo, P., Carini, G., Herrmann, S. C., Lindenberg, A. M., Haller, G.
IEEE.2013
- **X-ray and optical wave mixing** *NATURE*

- Glover, T. E., Fritz, D. M., Cammarata, M., Allison, T. K., Coh, S., Feldkamp, J. M., Lemke, H., Zhu, D., Feng, Y., Coffee, R. N., Fuchs, M., Ghimire, S., Chen, et al
2012; 488 (7413): 603-?
- **Temporal cross-correlation of x-ray free electron and optical lasers using soft x-ray pulse induced transient reflectivity** *OPTICS EXPRESS*
Krupin, O., Trigo, M., Schlotter, W. F., Beye, M., Sorgenfrei, F., Turner, J. J., Reis, D. A., Gerken, N., Lee, S., Lee, W. S., Hays, G., Acremann, Y., Abbey, et al
2012; 20 (10): 11396-11406
 - **Phase fluctuations and the absence of topological defects in a photo-excited charge-ordered nickelate** *NATURE COMMUNICATIONS*
Lee, W. S., Chuang, Y. D., Moore, R. G., Zhu, Y., Patthey, L., Trigo, M., Lu, D. H., Kirchmann, P. S., Krupin, O., Yi, M., Langner, M., Huse, N., ROBINSON, et al
2012; 3
 - **Generation and propagation of high-order harmonics in crystals** *PHYSICAL REVIEW A*
Ghimire, S., DiChiara, A. D., Sistrunk, E., Ndabashimiye, G., Szafruga, U. B., Mohammad, A., Agostini, P., DiMauro, L. F., Reis, D. A.
2012; 85 (4)
 - **Molecular frame Auger electron energy spectrum from N-2** *JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS*
Cryan, J. P., Glowina, J. M., Andreasson, J., Belkacem, A., Berrah, N., Blaga, C. I., Bostedt, C., Bozek, J., Cherepkov, N. A., DiMauro, L. F., Fang, L., Gessner, O., Guehr, et al
2012; 45 (5)
 - **Ultrafast Photovoltaic Response in Ferroelectric Nanolayers** *PHYSICAL REVIEW LETTERS*
Daranciang, D., Highland, M. J., Wen, H., Young, S. M., Brandt, N. C., Hwang, H. Y., Vattilana, M., Nicoul, M., Quirin, F., Goodfellow, J., Qi, T., Grinberg, I., Fritz, et al
2012; 108 (8)
 - **Ultrafast pump-probe measurements of short small-polaron lifetimes in the mixed-valence perovskite Cs₂Au₂I₆ under high pressures** *PHYSICAL REVIEW B*
Trigo, M., Chen, J., Jiang, M. P., Mao, W. L., Riggs, S. C., SHAPIRO, M. C., Fisher, I. R., Reis, D. A.
2012; 85 (8)
 - **Strong-field Effects in Solids** *Conference on Lasers and Electro-Optics (CLEO)*
Ghimire, S., Ndabashimiye, G., DiChiara, A. D., Sistrunk, E., Szafruga, U., Agostini, P., DiMauro, L. F., Reis, D. A.
IEEE.2012
 - **High-order harmonic generation in solid argon** *Conference on Lasers and Electro-Optics (CLEO)*
Ghimire, S., Ndabashimiye, G., Reis, D. A.
IEEE.2012
 - **Scaling of High-Order Harmonic Generation in the Long Wavelength Limit of a Strong Laser Field** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*
DiChiara, A. D., Ghimire, S., Blaga, C. I., Sistrunk, E., Power, E. P., March, A. M., Miller, T. A., Reis, D. A., Agostini, P., DiMauro, L. F.
2012; 18 (1): 419-433
 - **Unveiling and Driving Hidden Resonances with High-Fluence, High-Intensity X-Ray Pulses** *PHYSICAL REVIEW LETTERS*
Kanter, E. P., Kraessig, B., Li, Y., March, A. M., Ho, P., Rohringer, N., Santra, R., Southworth, S. H., DiMauro, L. F., Doumy, G., Roedig, C. A., Berrah, N., Fang, et al
2011; 107 (23)
 - **Thermal transport in thin films measured by time-resolved, grazing incidence x-ray diffraction** *JOURNAL OF APPLIED PHYSICS*
Walko, D. A., Sheu, Y., Trigo, M., Reis, D. A.
2011; 110 (10)
 - **Redshift in the Optical Absorption of ZnO Single Crystals in the Presence of an Intense Midinfrared Laser Field** *PHYSICAL REVIEW LETTERS*
Ghimire, S., DiChiara, A. D., Sistrunk, E., Szafruga, U. B., Agostini, P., DiMauro, L. F., Reis, D. A.
2011; 107 (16)
 - **Single-cycle terahertz pulses with > 0.2 V/angstrom field amplitudes via coherent transition radiation** *APPLIED PHYSICS LETTERS*
Daranciang, D., Goodfellow, J., Fuchs, M., Wen, H., Ghimire, S., Reis, D. A., Loos, H., Fisher, A. S., Lindenber, A. M.
2011; 99 (14)

- **Kapitza conductance of Bi/sapphire interface studied by depth- and time-resolved X-ray diffraction** *SOLID STATE COMMUNICATIONS*
Sheu, Y. M., Trigo, M., Chien, Y. J., Uher, C., Arms, D. A., Peterson, E. R., Walko, D. A., Landahl, E. C., Chen, J., Ghimire, S., Reis, D. A.
2011; 151 (11): 826-829
- **Nonlinear Atomic Response to Intense Ultrashort X Rays** *PHYSICAL REVIEW LETTERS*
Doumy, G., Roedig, C., Son, S., Blaga, C. I., DiChiara, A. D., Santra, R., Berrah, N., Bostedt, C., Bozek, J. D., Bucksbaum, P. H., Cryan, J. P., Fang, L., Ghimire, et al
2011; 106 (8)
- **Observation of high-order harmonic generation in a bulk crystal** *NATURE PHYSICS*
Ghimire, S., DiChiara, A. D., Sistrunk, E., Agostini, P., DiMauro, L. F., Reis, D. A.
2011; 7 (2): 138-141
- **Strong-field Induced Optical Absorption in ZnO Crystal** *Conference on Lasers and Electro-Optics (CLEO)*
Ghimire, S., DiChiara, A. D., Sistrunk, E., DiMauro, L. F., Agostini, P., Reis, D. A.
IEEE.2011
- **Generation of > 100 mu J, Broadband THz Transients with > 10 MV/cm Fields via Coherent Transition Radiation at the Linac Coherent Light Source** *Conference on Lasers and Electro-Optics (CLEO)*
Daranciang, D., Goodfellow, J., Ghimire, S., Loos, H., Reis, D., Fisher, A. S., Lindenberg, A. M.
IEEE.2011
- **Imaging nonequilibrium atomic vibrations with x-ray diffuse scattering** *PHYSICAL REVIEW B*
Trigo, M., Chen, J., Vishwanath, V. H., Sheu, Y. M., Graber, T., Henning, R., Reis, D. A.
2010; 82 (23)
- **Auger Electron Angular Distribution of Double Core-Hole States in the Molecular Reference Frame** *PHYSICAL REVIEW LETTERS*
Cryan, J. P., Glownia, J. M., Andreasson, J., Belkacem, A., Berrah, N., Blaga, C. I., Bostedt, C., Bozek, J., Buth, C., DiMauro, L. F., Fang, L., Gessner, O., Guehr, et al
2010; 105 (8)
- **Time-resolved pump-probe experiments at the LCLS** *OPTICS EXPRESS*
Glownia, J. M., Cryan, J., Andreasson, J., Belkacem, A., Berrah, N., Blaga, C. I., Bostedt, C., Bozek, J., DiMauro, L. F., Fang, L., Frisch, J., Gessner, O., Guehr, et al
2010; 18 (17): 17620-17630
- **Femtosecond electronic response of atoms to ultra-intense X-rays** *NATURE*
Young, L., Kanter, E. P., Kraessig, B., Li, Y., March, A. M., Pratt, S. T., Santra, R., Southworth, S. H., Rohringer, N., DiMauro, L. F., Doumy, G., Roedig, C. A., Berrah, et al
2010; 466 (7302): 56-U66
- **High-Harmonic Generation in Strongly Driven Bulk Periodic Solid** *Conference on Lasers and Electro-Optics (CLEO)/Quantum Electronics and Laser Science Conference (QELS)*
Ghimire, S., DiChiara, A., Sistrunk, E., DiMauro, L. F., Agostini, P., Reis, D. A.
IEEE.2010
- **Probing unfolded acoustic phonons with X rays** *PHYSICAL REVIEW LETTERS*
Trigo, M., Sheu, Y. M., Arms, D. A., Chen, J., Ghimire, S., GOLDMAN, R. S., Landahl, E., Merlin, R., Peterson, E., Reason, M., Reis, D. A.
2008; 101 (2)
- **Thermal transport in a semiconductor heterostructure measured by time-resolved x-ray diffraction** *PHYSICAL REVIEW B*
Sheu, Y. M., Lee, S. H., Wahlstrand, J. K., Walko, D. A., Landahl, E. C., Arms, D. A., Reason, M., GOLDMAN, R. S., Reis, D. A.
2008; 78 (4)
- **Carrier-induced disordering dynamics in InSb studied with density functional perturbation theory** *PHYSICAL REVIEW B*
Hillyard, P. B., Reis, D. A., Gaffney, K. J.
2008; 77 (19)
- **X-ray diffuse scattering measurements of nucleation dynamics at femtosecond resolution** *PHYSICAL REVIEW LETTERS*
Lindenberg, A. M., Engemann, S., Gaffney, K. J., Sokolowski-Tinten, K., Larsson, J., Hillyard, P. B., Reis, D. A., Fritz, D. M., ARTHUR, J., Akre, R. A., George, M. J., Deb, A., Bucksbaum, et al

2008; 100 (13)

- **Wideband detection of transient solid-state dynamics using ultrafast fiber lasers and asynchronous optical sampling** *OPTICS EXPRESS*
Stoica, V. A., Sheu, Y., Reis, D. A., Clarke, R.
2008; 16 (4): 2322-2335
- **Femtosecond x-ray diffuse scattering measurements of semiconductor ablation dynamics** *Conference on High-Power Laser Ablation VII*
Lindenberg, A. M., Engemann, S., Gaffney, K. J., Sokolowski-Tinten, K., Larsson, J., Reis, D., Lorazo, P., Hastings, J. B.
SPIE-INT SOC OPTICAL ENGINEERING.2008
- **Asynchronous optical probing of coherent magnetic excitations from picoseconds to nanoseconds** *2008 CONFERENCE ON LASERS AND ELECTRO-OPTICS & QUANTUM ELECTRONICS AND LASER SCIENCE CONFERENCE, VOLS 1-9*
Stoica, V. A., Sheu, Y., Reis, D. A., Clarke, R.
2008: 3333-3334
- **Phonon dispersion relations and softening in photoexcited bismuth from first principles** *PHYSICAL REVIEW B*
Murray, E. D., Fahy, S., Prendergast, D., Ogitsu, T., Fritz, D. M., Reis, D. A.
2007; 75 (18)
- **Carrier-density-dependent lattice stability in InSb** *PHYSICAL REVIEW LETTERS*
Hillyard, P. B., Gaffney, K. J., Lindenberg, A. M., Engemann, S., Akre, R. A., ARTHUR, J., Blome, C., Bucksbaum, P. H., Cavalieri, A. L., Deb, A., Falcone, R. W., Fritz, D. M., Fuoss, et al
2007; 98 (12)
- **Ultrafast bond softening in bismuth: Mapping a solid's interatomic potential with X-rays** *SCIENCE*
Fritz, D. M., Reis, D. A., Adams, B., Akre, R. A., ARTHUR, J., Blome, C., Bucksbaum, P. H., Cavalieri, A. L., Engemann, S., Fahy, S., Falcone, R. W., Fuoss, P. H., Gaffney, et al
2007; 315 (5812): 633-636
- **Ultrafast X-ray scattering in solids** *LIGHT SCATTERING IN SOLIDS IX*
Reis, D. A., Lindenberg, A. M.
2007; 108: 371-422
- **Studies of ultrafast femtosecond-laser-generated strain fields with coherent X-rays** *SYNCHROTRON RADIATION INSTRUMENTATION, PTS 1 AND 2*
Dufresne, E. M., Adams, B., Landahl, E. C., Khounsary, A. M., Reis, D., Fritz, D. M., Lee, S.
2007; 879: 1210-?
- **Picosecond time resolved x-ray diffraction measurements of coherent phonons and carrier dynamics at a buried interface** *2007 PACIFIC RIM CONFERENCE ON LASERS AND ELECTRO-OPTICS, VOLS 1-4*
Lee, S. H., Fritz, D. M., Sheu, Y., GOLDMAN, R. S., Walko, D., Landhal, E., Reis, D. A.
2007: 304-?
- **Simulations of time-resolved x-ray diffraction in Laue geometry** *JOURNAL OF PHYSICS-CONDENSED MATTER*
Lings, B., Wark, J. S., DeCamp, M. F., Reis, D. A., Fahy, S.
2006; 18 (40): 9231-9244
- **Ultrafast dynamics of laser-excited solids** *MRS BULLETIN*
Reis, D. A., Gaffney, K. J., Gilmer, G. H., Torralva, B.
2006; 31 (8): 601-606
- **Generation and propagation of a picosecond acoustic pulse at a buried interface: Time-resolved X-ray diffraction measurements** *PHYSICAL REVIEW LETTERS*
Lee, S. H., Cavalieri, A. L., Fritz, D. M., Swan, M. C., Hegde, R. S., Reason, M., GOLDMAN, R. S., Reis, D. A.
2005; 95 (24)
- **Observation of structural anisotropy and the onset of liquidlike motion during the nonthermal melting of InSb** *PHYSICAL REVIEW LETTERS*
Gaffney, K. J., Lindenberg, A. M., Larsson, J., Sokolowski-Tinten, K., Blome, C., Synnergren, O., Sheppard, J., Caleman, C., MacPhee, A. G., Weinstein, D., Lowney, D. P., Allison, T., Matthews, et al
2005; 95 (12)
- **Effect of lattice anharmonicity on high-amplitude phonon dynamics in photoexcited bismuth** *PHYSICAL REVIEW B*

- Murray, E. D., Fritz, D. M., Wahlstrand, J. K., Fahy, S., Reis, D. A.
2005; 72 (6)
- **Atomic-scale visualization of inertial dynamics** *SCIENCE*
Lindenberg, A. M., Larsson, J., Sokolowski-Tinten, K., Gaffney, K. J., Blome, C., Synnnergren, O., Sheppard, J., Caleman, C., MacPhee, A. G., Weinstein, D., Lowney, D. P., Allison, T. K., Matthews, et al
2005; 308 (5720): 392-395
 - **Clocking femtosecond x rays** *PHYSICAL REVIEW LETTERS*
Cavalieri, A. L., Fritz, D. M., Lee, S. H., Bucksbaum, P. H., Reis, D. A., Rudati, J., Mills, D. M., Fuoss, P. H., Stephenson, G. B., Kao, C. C., Siddons, D. P., Lowney, D. P., MacPhee, et al
2005; 94 (11)
 - **X-ray synchrotron studies of ultrafast crystalline dynamics** *Symposium on Applications of Synchrotron Radiation to Materials*
DeCamp, M. F., Reis, D. A., Fritz, D. M., Bucksbaum, P. H., Dufresne, E. M., Clarke, R.
WILEY-BLACKWELL.2005: 177-192
 - **Adaptive dispersion compensation for remote fiber delivery of near-infrared femtosecond pulses** *OPTICS LETTERS*
Lee, S. H., Cavalieri, A. L., Fritz, D. M., Myaing, M., Reis, D. A.
2004; 29 (22): 2602-2604
 - **Ultrafast x-ray physics** *Indo/United States Workshop on Radiation Physics with Synchrotrons and Other New Sources*
Reis, D. A., Bucksbaum, P. H., DeCamp, M. F.
PERGAMON-ELSEVIER SCIENCE LTD.2004: 605-9
 - **Ultrafast coherent control in x-ray scattering** *227th National Meeting of the American-Chemical Society*
Bucksbaum, P. H., Reis, D. A.
AMER CHEMICAL SOC.2004: U270-U270
 - **Ultrafast hard x-rays from electron accelerators** *4th International Conference on Ultrafast Optics*
Bucksbaum, P. H., Reis, D. A., Hastings, J.
SPRINGER.2004: 333-340
 - **Transient strain driven by a dense electron-hole plasma** *PHYSICAL REVIEW LETTERS*
DeCamp, M. F., Reis, D. A., Cavalieri, A., Bucksbaum, P. H., Clarke, R., Merlin, R., Dufresne, E. M., Arms, D. A., Lindenberg, A. M., MacPhee, A. G., Chang, Z., Lings, B., Wark, et al
2003; 91 (16)
 - **Picosecond laser-pump, x-ray probe spectroscopy of GaAs** *REVIEW OF SCIENTIFIC INSTRUMENTS*
Adams, B. W., DeCamp, M. F., Dufresne, E. M., Reis, D. A.
2002; 73 (12): 4150-4156
 - **Picosecond X-ray diffraction studies of laser-excited acoustic phonons in InSb** *APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING*
Larsson, J., Allen, A., Bucksbaum, P. H., Falcone, R. W., Lindenberg, A., Naylor, G., Missalla, T., Reis, D. A., Scheidt, K., Sjogren, A., Sondhauss, P., WULFF, M., Wark, et al
2002; 75 (4): 467-478
 - **Picosecond time-resolved x-ray diffraction probe of coherent lattice dynamics (abstract) (invited)** *REVIEW OF SCIENTIFIC INSTRUMENTS*
Reis, D. A., DeCamp, M. F., Bucksbaum, P. H., Clarke, R., Dufresne, E., Merlin, R.
2002; 73 (3): 1361-?
 - **Coherent control of pulsed X-ray beams** *NATURE*
DeCamp, M. F., Reis, D. A., Bucksbaum, P. H., Adams, B., Caraher, J. M., Clarke, R., Conover, C. W., Dufresne, E. M., Merlin, R., Stoica, V., Wahlstrand, J. K.
2001; 413 (6858): 825-828
 - **Dynamics and coherent control of high-amplitude optical phonons in bismuth** *PHYSICAL REVIEW B*
DeCamp, M. F., Reis, D. A., Bucksbaum, P. H., Merlin, R.
2001; 64 (9)
 - **Probing impulsive strain propagation with x-ray pulses** *PHYSICAL REVIEW LETTERS*

- Reis, D. A., DeCamp, M. F., Bucksbaum, P. H., Clarke, R., Dufresne, E., Hertlein, M., Merlin, R., Falcone, R., Kapteyn, H., Murnane, M. M., Larsson, J., Missalla, T., Wark, et al
2001; 86 (14): 3072-3075
- **Femtosecond X-ray diffraction: Experiments and limits** *Conference on X-Ray FEL Optics and Instrumentation*
Wark, J. S., Allen, A. M., Ansbrosio, P. C., Bucksbaum, P. H., Chang, Z., DeCamp, M., Falcone, R. W., Heimann, P. A., Johnson, S. L., Kang, I., Kapteyn, H. C., Larsson, J., Lee, et al
SPIE-INT SOCIETY OPTICAL ENGINEERING.2001: 26–37
 - **Studies of nonlinear QED in collisions of 46.6 GeV electrons with intense laser pulses** *PHYSICAL REVIEW D*
Bamber, C., Boege, S. J., Koffas, T., Kotseroglou, T., Melissinos, A. C., Meyerhofer, D. D., Reis, D. A., Ragg, W., Bula, C., McDonald, K. T., Prebys, E. J., Burke, D. L., Field, et al
1999; 60 (9)
 - **Transverse emittance measurements from a photocathode RF gun with variable laser pulse length** *20th International Free Electron Laser Conference 5th FEL User Workshop*
Reis, D. A., HERNANDEZ, M., Schmerge, J. F., Winick, H., Hogan, M. J.
ELSEVIER SCIENCE BV.1999: 341–46
 - **Studies of nonlinear QED in high energy electron-laser collisions** *LASER PHYSICS*
Kotseroglou, T., Bamber, C., Berridge, S. C., Boege, S. J., Bugg, W. M., Bulal, C., Burke, D. L., Field, R. C., Horton-Smith, G., Koffas, T., McDonald, K. T., Melissinos, A. C., Meyerhofer, et al
1998; 8 (1): 142-149
 - **Emittance measurements for the SLAC gun test facility** *17th Particle Accelerator Conference*
HERNANDEZ, M., Fisher, A., MEYERHOFER, D., Miller, R., Palmer, D. T., Park, S., Reis, D., Schmerge, J., Weaver, J., Wiedemann, H., Winick, H., Yermian, D.
IEEE.1998: 2840–2842
 - **Positron production in multiphoton light-by-light scattering** *PHYSICAL REVIEW LETTERS*
Burke, D. L., Field, R. C., HORTONSMITH, G., Spencer, J. E., Walz, D., Berridge, S. C., Bugg, W. M., Shmakov, K., Weidemann, A. W., Bula, C., McDonald, K. T., Prebys, E. J., Bamber, et al
1997; 79 (9): 1626-1629
 - **0.5-Hz, phase-stabilized terawatt laser system with a Nd:glass slab amplifier for nonlinear QED experiments** *International Workshop on Laser Physics (LPHYS 96)*
Bamber, C., Blalock, T., Boege, S., Kotseroglou, T., Melissinos, A. C., Ragg, W., Reis, D., Meyerhofer, D. D., Kelly, J., Shoup, M.
INTERPERIODICA.1997: 135–40
 - **SLAC RF photocathode gun test facility** *Conference on Free-Electron Laser Challenges*
Schmerge, J. F., Reis, D. A., HERNANDEZ, M., Meyerhofer, D. D., Miller, R. H., Palmer, D. T., Weaver, J. N., Winick, H., Yermian, D.
SPIE - INT SOC OPTICAL ENGINEERING.1997: 90–96