Carlos A. Trallero

Contact Information

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Education

Stony Brook University, Stony Brook, New York, USA **2002 - 2007**

Ph.D. in Physics 2007

- Dissertation topic: "Strong Field Coherent Control."
- Advisor: Thomas C. Weinacht.

M.A. in Physics, August 2004

Higher Institute for Nuclear Sciences and Technology, Havana, Cuba **1993 - 1998**

M.Sc. in Nuclear Physics, July 2001

- Dissertation topic: "Quantum chaos in a cylindrical quantum lens."
- Advisor: Carlos L. Trallero-Giner.

Licentiature degree in Nuclear Physics, July 1998

- Dissertation topic: "Percolation models for nuclear fragmentation."
- Advisor: Fernando Guzman
- Graduated with honors

Honors and Awards

Stony Brook University, Stony Brook, New York, USA **2007**

Lee Wilcox Prize for Best Experimental Thesis.

Professional Experience

Full Professor **2022 - present**

Department of Physics, University of Connecticut, Storrs, CT, U.S.A.

Associate Professor **2017 - 2022**

Department of Physics, University of Connecticut, Storrs, CT, U.S.A.

Associate Professor **2016 - 2017**

Physics Department, Kansas State University, Manhattan, U.S.A.

Assistant Professor **2010 - 2016**

Physics Department, Kansas State University, Manhattan, U.S.A.

Postdoctoral Fellow **2007 - 2010**

Advisor: Paul Corkum,
Steacie Institute for Molecular Sciences,
National Research Council Canada, Ottawa, Canada.

Graduate Student Research Assistant **2004 - 2007**

Stony Brook University, Stony Brook, New York, USA.

Junior Professor **1998 - 2001**

Higher Institute for Nuclear Sciences and Technology, Havana, Cuba

Mentoring

Successfully mentored several students at the graduate and undergraduate level that received scholarships and fellowships:

- Dr. Derrek Wilson: NSF Graduate Research Fellowship

- Dr. Adam Summers: DoD NDSEG fellowship
- Dr. Adam Summers: SPIE Laser Technology, Engineering and Applications Scholarship
- Zhanna Rodnova, Directed Energy Professional Society Graduate Fellowship
- Brandin Davis, Directed Energy Professional Society Graduate Fellowship
- Roddy Taing: McNair Scholar Program, fellow
- Edward McManus: Holster Scholar
- Joshua Nelson: Goldwater scholarship

Graduate degrees awarded
- Michael Davino, Ph.D., 2024
- Zhanna Rodnova, Ph.D., 2024
- Brandin Davis, Ph.D., 2023
- Adam Summers, Ph.D., 2019
- Derrek Wilson, Ph.D., 2018
- Stefan Zigo, Ph.D., 2017
- Jan Troß, Ph.d., 2017
- Pratap Timilsina, M.Sc., 2016
- Wes Erbsen, M.Sc., 2013

Postdoctoral fellows:
- Tobias Saules, 2019-present
- Nora Kling, 2019-2020
- Jeffrey Powell, 2018-2020
- Georgios Kolliopoulus, 2016-2018
- Lianjie Xue, 2016-2018
- Gniraj Jnawali, 2015
- Ren xiaoming, 2014
- Sudipta Mondal, 2012-2013

Current graduate student advises:
- Geoffrey Harrison
- Kevin Watson
- Edward McManus (co-Advisor)
- Kevin Lindstrom (co-advisor)
- Christian McCoy (co-advisor)

Funding

Current
- AFOSR: A new regime in strong field science at the nanoscale, PI: $415,912 Infrared
- DOE: Heterodyne time resolved spectroscopy in the extreme ultraviolet, PI: $ 645,000
- NSF: Collaborative Research: ECCS-CCSS Core: Resonant-Beam based Optical Wireless Communication, co-PI:$299,971

Collaborative Research: ECCS-CCSS Core: Resonant-Beam based Optical Wireless Communication

Pending
- ONR: Optically generated complex networks in quantum materials, PI: $1,245,000
- ONR: DURIP: A time-of-flight momentum microscope for non-local time-dependent correlation studies, PI: $517,265
- DOE: Center for Advancing Quantum Architecture by Metal- Organic Synthesis (AQUAMOS), PI: $15,897,236

Selected Publications

1. "Extreme Pulse Duration Scaling of Strong Field Ionization of Nanoparticles", Michael Davino, Tobias Saule, Nora G Helming, Carlos A Trallero-Herrero, ***ACS Photonics***, (2025), https://doi.org/10.1021/acsphotonics.4c01962
2. "High-power femtosecond molecular broadening and the effects of ro-vibrational coupling", Kevin Watson, Tobias Saule, Maksym Ivanov, Bruno E Schmidt, Zhanna Rodnova, George Gibson, Nora Berrah, Carlos Trallero-Herrero, ***Optica***, (2025), https://doi.org/10.1364/OPTICA.529193

3. "Symmetries in 3D photoelectron momentum spectroscopy as precursory methods for dichroic and enantiosensitive measurements", Michael Davino, Edward McManus, Tobias Saule, Phi-Hung Tran, Andrés F Ordóñez, George Gibson, Anh-Thu Le, Carlos A Trallero-Herrero, ***P*hysical Review Applied**, (2025), https://doi.org/10.1103/PhysRevApplied.23.014022
4. "Advancing High-Power Hollow-Core Fiber Pulse Compression", Maksym Ivanov, Étienne Doiron, Marco Scaglia, Pedram Abdolghader, Gabriel Tempea, François Légaré, Carlos A Trallero-Herrero, Giulio Vampa, Bruno E Schmidt, ***I*EEE Journal of Selected Topics in Quantum Electronics**, **30**, 5100310, (2024) https://doi.org/10.1109/JSTQE.2024.3415421
5. "Extreme pulse duration scaling of strong field ionization of nanoparticles", Michael Davino, Tobias Saule, Nora G. Helming, and Carlos A.Trallero-Herrero, ***A*CS Photonics**, (2025), to appear
6. "Quantum sensing in Kerr parametric oscillators", Jorge Chávez-Carlos, Daniela Garrido-Ramírez, A. J. Vega Carmona, Victor S. Batista, Carlos A. Trallero-Herrero, Francisco Pérez-Bernal, M. A. Bastarrachea-Magnani, Lea F. Santos, ***s*ubmitted**, (2024), https://doi.org/10.48550/arXiv.2407.14590
7. "Generation and control of non-local quantum equivalent extreme ultraviolet photons", Geoffrey R. Harrison, Tobias Saule, R. Esteban Goetz, George N. Gibson, Anh-Thu Le, Carlos A. Trallero-Herrero, ***s*ubmitted**, (2023), https://arxiv.org/abs/2305.17263
8. "Molecular alignment-assisted spectral broadening and shifting in the near-infrared with a recycled depleted pump from an optical parametric amplifier", Zhanna Rodnova, Tobias Saule, George Gibson, Carlos A. Trallero-Herrero, ***O*ptics Express**, (2023), https://doi.org/10.1364/OE.502346
9. "Enhanced cutoff energies for direct and rescattered strong-field photoelectron emission of plasmonic nanoparticles", Erfan Saydanzad, Jeffrey Powell, Adam Summers, Seyyed Javad Robatjazi, Carlos Trallero-Herrero, Matthias F. Kling, Artem Rudenko and Uwe Thumm, ***N*anophotonics**, **12**, 1931, (2023), https://doi.org/10.1515/nanoph-2023-0120
10. "A plano-convex thick-lens velocity map imaging apparatus for direct, high resolution 3D momentum measurements of photoelectrons with ion time-of-flight coincidence", Michael Davino, Edward McManus, Nora G Helming, Chuan Cheng, Gonenc Mogol, Zhanna Rodnova, Geoffrey Harrison, Kevin Watson, Thomas Weinacht, George N Gibson, Tobias Saule, and Carlos Trallero-Herrero, ***R*eview of Scientific Instruments**, **94** , 013303, (2022), https://doi.org/10.1063/5.0129900
11. "Random quasi-phase-matching for pulse characterization from the near to the long wavelength infrared", Brandin Davis, Tobias Saule, Carlos A Trallero-Herrero, ***Optics Express***, **30**, 3515, (2022), https://arxiv.org/abs/2203.15775
12. "Strong-field control of plasmonic properties in core-shell nanoparticles", Jeffrey Powell, Jianxiong Li, Adam Summers, Seyyed Javad Robatjazi, Michael Davino, Philipp Rupp, Erfan Saydanzad, Christopher M. Sorensen, Daniel Rolles, Matthias F. Kling, Carlos Trallero-Herrero, Uwe Thumm, and Artem Rudenko, ***ACS Photonics***, **9**, 3515, (2022), https://arxiv.org/abs/2108.06872
13. "Characterization of an aerosolized nanoparticle beam beyond the diffraction limit through strong field ionization", Michael Davino, Tobias Saule, Nora G Helming, J. A. Powell, Carlos Trallero-Herrero, ***Scientific Reports***, **12**, 1, (2022), https://arxiv.org/abs/2203.15663
14. "Few-femtosecond resolved imaging of laser-driven nanoplasma expansion", C Peltz, J A Powell, P Rupp, A Summers, T Gorkhover, M Gallei, Ina Halfpap, Egill Antonsson, Burkhard Langer, C Trallero-Herrero, C Graf, D Ray, Qingcao Liu, T Osipov, M Bucher, K Ferguson, S Möller, S Zherebtsov, D Rolles, E R"uhl, G Coslovich, RN Coffee, C Bostedt, A Rudenko, Matthias F Kling, and T Fennel, **New Journal of Physics**, **24**, 043024 (2022)
15. "Increased phase precision of spatial light modulators using irrational slopes: application to attosecond metrology", Geoffrey Harrison, Brandin Davis, Tobias Saule, and Carlos A. Trallero-Herrero, ***Applied Optics***, **61**, 8873 (2022)

16. "3D velocity map imaging of electrons with TPX3CAM", Chuan Cheng, Gönenç Moğol, Thomas Weinacht, Andrei Nomerotski, and Carlos Trallero-Herrero, ***Review of Scientific Instruments***, **93**, 075108 (2022), https://doi.org/10.1063/5.0071804
17. "A simple approach for characterizing the spatially varying sensitivity of microchannel plate detectors", Denis Aglagul, Brian Kaufman, Chuan Cheng, Thomas Weinacht, Tobias Saule, Carlos A Trallero-Herrero, and Andrei Nomerotski, ***Review of Scientific Instruments***, **93**, 013003 (2022), https://doi.org/10.1063/5.0071804
18. "High harmonic generation in mixed XUV and NIR fields at a free-electron laser", Jan Troß, Shashank Pathak, Adam Summers, Dimitrios Rompotis, Benjamin Erk, Christopher Passow, Bastian Manschwetus, Rebecca Boll, Patrik Grychtol, Sadia Bari, Vinod Kumarappan, Anh-Thu Le, Cheng Jin, Carlos Trallero and Daniel Rolles, ***Journal of Optics***, **24** ,025502, (2022) https://doi.org/10.1088/2040-8986/ac4318
19. "Few-femtosecond resolved imaging of laser-driven nanoplasma expansion", Christian Peltz, et. al., ***New Journal of Physics***, (accepted) (2022) https://doi.org/10.1088/1367-2630/ac5e86
20. "Enhancing high-order harmonic generation by controlling the diffusion of the electron wavepacket", Travis Severt, Jan Troß, Georgios Kolliopoulos, Itzik Ben-Itzhak, Carlos A. Trallero-Herrero, ***Optica***, **8**, 1113, (2021), https://doi.org/10.1364/OPTICA.422711
21. "Higher order harmonic generation and strong field ionization with Bessel-Gauss beams in a thin jet geometry" Michael Davino, Adam Summers, Tobias Saule, Jan Tross, Edward McManus, Brandin Davis, Carlos A Trallero-Herrero, ***Journal of the Optical Society of America B***, **38**, 2194, (2021), https://doi.org/10.1364/JOSAB.420073
22. "Asymmetric high energy dual optical parametric amplifier for parametric processes and waveform synthesis", Brandin Davis, Tobias Saule, Carlos A Trallero-Herrero, ***Optics Express***,**29**,7379-7388, (2021) https://doi.org/10.1364/OE.417068
23. "Generation and control of phase-locked Bessel beams with a persistent noninterfering region", Zhanna Rodnova, Tobias Saule, Richard Sadlon, Edward McManus, Nicholas May, Xiaoming Yu, Sina Shahbazmohamadi, Carlos A Trallero-Herrero Carlos A, ***Journal of the Optical Society of America B***,**37**,3179-3183,(2020) https://doi.org/10.1364/JOSAB.400801
24. "Differentiating and Quantifying Gas-Phase Conformational Isomers Using Coulomb Explosion Imaging", Shashank Pathak, Razib Obaid, Surjendu Bhattacharyya, Johannes Bu¨rger, Xiang Li, Jan Tross, Travis Severt, Brandin Davis, René C Bilodeau, Carlos A Trallero-Herrero, Artem Rudenko, Nora Berrah, Daniel Rolles, ***The Journal of Physical Chemistry Letters***,**11**, 10205-10211,(2020)https://doi.org/10.1021/acs.jpclett.0c02959
25. "Interplay of pulse duration, peak intensity, and particle size in laser-driven electron emission from silica nanospheres", Jeffrey A. Powell, Adam M. Summers, Qingcao Liu, Seyyed Javad Robatjazi, Philipp Rupp, Johannes Stierle, Carlos Trallero-Herrero, Matthias F. Kling, and Artem Rudenko, ***Optics Express***, **27**, 27124 (2019) https://doi.org/10.1364/OE.27.027124
26. "High harmonic generation interferometry via orbital angular momentum", Jan Troßand Carlos Trallero-Herrero, ***Journal of Chemical Physics***, **XRAY2019**, 084308 (2019) https://doi.org/10.1063/1.5115152
27. "A self referencing attosecond interferometer with zeptosecond precision", Jan Troß, Georgios Kollipolous, Carlos Trallero-Herrero, ***Optics Express***, **27**, 22960, (2019) https://doi.org/10.1364/OE.27.022960
28. "An intense, few-cycle source in the long-wavelength infrared: Strong field physics in the semiclassical regime", Derrek J. Wilson, Adam M. Summers, Stefan Zigo, Brandin Davis, Seyyed-Javad Robatjazi, Jeff Powell, Artem Rudenko, Carlos A. Trallero-Herrero, ***Scientific Reports*** **9**, 6002, (2019) https://doi.org/10.1038/s41598-019-42433-1
29. "Simultaneous few-cycle pulse generation of the depleted pump and signal from an optical parametric amplifier", Derrek J. Wilson, Xiaoming Ren, Stefan Zigo, François Légaré, and Carlos Trallero-Herrero, ***Journal of the Optical Society of America B***, **35**, A45, (2018) https://doi.org/10.1364/josab.35.000a45

30. "Single-shot carrier-envelope-phase tagging using an f–2f interferometer and a phase meter: a comparison", Xiaoming Ren, A M Summers, Kanaka Raju P, Aram Vajdi, Varun Makhija, C W Fehrenbach, Nora G Kling, K J Betsch, Z Wang, M F Kling, K D Carnes, I Ben-Itzhak, Carlos Trallero-Herrero and Vinod Kumarappan, ***Journal of Optics***, **19**, 124017, (2017) https://doi.org/10.1088/2040-8986/aa9865

31. "Spatial characterization of Bessel-like beams for strong-field physics", Adam M. Summers, Xiaoming Yu, Xinya Wang, Maxime Raoul, Josh Nelson, Daniel Todd, Stefan Zigo, Shuting Lei, and Carlos A. Trallero-Herrero, ***Optics Express***, **25**, 1646, (2017) https://doi.org/10.1364/oe.25.001646

32. "Ionization Study of Isomeric Molecules in Strong-field Laser Pulses", Stefan Zigo, Anh-Thu Le, Pratap Timilsina, Carlos A. Trallero-Herrero, ***Scientific Reports***, **7**, 42149, (2017) https://doi.org/10.1038/srep42149

33. "Internal modification of intrinsic and doped silicon using infrared nanosecond laser", Xiaoming Yu, Xinya Wang, Margaux Chanal, Carlos A. Trallero-Herrero, David Grojo, and Shuting Lei, ***Applied Physics A***, **122**, 1001, (2016) https://doi.org/10.1007/s00339-016-0540-7

34. "High order harmonic generation from SF_6: Deconvolution of macroscopic effects", B.P. Wilson, K.D. Fulfer, S. Mondal, X. Ren, J. Tross, E.D. Poliakoff, J. Jose, Anh-Thu Le, R. R. Lucchese, C. Trallero-Herrero, ***Journal of Chemical Physics***, **145**, 224305 (2016) https://doi.org/10.1063/1.4971244

35. "The N_2 HOMO-1 orbital cross-section revealed through high harmonic generation", Jan Troß, Xiaoming Ren, Varun Makhija, Sudipta Mondal, Vinod Kumarappan, Carlos A. Trallero-Herrero, ***Physical Review A***, **95**, 033419, (2017) https://doi.org/10.1103/physreva.95.033419

36. "An Atomic Photoionization Experiment by Harmonic Generation Spectroscopy", M. V. Frolov, T. S. Sarantseva, N. L. Manakov, K. D. Fulfer, B. D. Wilson, J. Troß, X. Ren, E. D. Poliakoff, A. A. Silaev, N. V. Vvedenskii, A. F. Starace and C. A. Trallero-Herrero, ***Physical Review A: Rapid Communications***, **93**, 031403(R), (2016) https://doi.org/10.1103/physreva.93.031403

37. "Materials processing with superposed Bessel beams", Xiaoming Yu, Carlos A. Trallero-Herrero and Shuting Lei, ***Applied Surface Science***, **360**, 833, (2015) https://doi.org/10.1016/j.apsusc.2015.11.074

38. "A 260 MW light source at 7 μm center wavelength as a path to strong field science in the far infrared", Derrek J. Wilson, Adam M. Summers and Carlos A. Trallero-Herrero", ***Frontiers in Optics***, FTh4A, (2015) https://doi.org/10.1364/fio.2015.fth4a.2

39. "Long term carrier-envelope-phase stabilization of a terawatt-class Ti:Sapphire laser", Adam M. Summers, Benjamin Langdon, Jon Garlick, Xiaoming Ren, Derrek Wilson, Stefan Zigo, Matthias Kling, Shuting Lei, Christopher Elles, Eric Wells, Erwin Poliakoff, Kevin Carnes, Vinod Kumarappan, Itzik Ben-Itzhak and Carlos Trallero-Herrero, ***Frontiers in Optics***, FTu3F.2, (2015) https://doi.org/10.1364/fio.2015.ftu3f.2

40. "Carrier-envelope-phase stabilized terawatt class laser at 1 kHz with a wavelength tunable option", Benjamin Langdon, Jonathan Garlick, Xiaoming Ren, Derrek J. Wilson, Adam M. Summers, Stefan Zigo, Matthias F. Kling, Shuting Lei, Christopher G. Elles, Eric Wells, Erwin D. Poliakoff, Kevin D. Carnes, Vinod Kumarappan, Itzik Ben-Itzhak and Carlos A. Trallero-Herrero, ***Optics Express***, **23** 4563 (2015) https://doi.org/10.1364/oe.23.004563

41. "Strong field processes inside gallium arsenide", Sarah M. Golin, Sean Kirkwood, Denis D. Klug, Paul B. Corkum, and Carlos A. Trallero-Herrero, ***Journal of Physics B: Atomic, Molecular and Optical Physics***, **47**, 204025, (2014) https://doi.org/10.1088/0953-4075/47/20/204025

42. "Intense Few-Cycle Infrared Laser Pulses at the Advanced Laser Light Source", B. E. Schmidt, A. D. Shiner, M. Giguère, C. Trallero-Herrero, P. Lassonde, N. Thiré, D. M. Villeneuve, J-C. Kieffer, P. B. Corkum, and F. Légaré, ***Chinese Journal of Physics (Invited article)***, **52**, 537, (2014) https://www.ps-taiwan.org/cjp/download.php?type=paper&vol=52&num=1-II&page=537

43. "Optical damage threshold of Au nanowires in strong femtosecond laser fields", A.M. Summers, A.S. Ramm, Govind Paneru, M.F. Kling, B.N. Flanders and C.A. Trallero-Herrero, ***Optics Express***, **22**, 4235, (2014) https://doi.org/10.1364/oe.22.004235

44. "Measuring angle-dependent photoionization cross section from aligned nitrogen using high harmonic generation", Xiaoming Ren, Varun Makhija, Anh-Thu Le, Jan Tross, Sudipta Mondal, Cheng Jin, Vinod Kumarappan, and Carlos Trallero-Herrero, ***Physical Review A***, **88**, 043421, (2013) https://doi.org/10.1103/physreva.88.043421

45. "High harmonic cutoff energy scaling and laser intensity measurement with a 1.8 μm laser source", A.D. Shiner, C. A. Trallero-Herrero, N. Kajumba, B.E. Schmidt, J.B. Bertrand, K. T. Kim, H.-C. Bandulet, D. Comtois, J.-C. Kieffer, D.M. Rayner, P.B. Corkum, F. Légaré and D.M. Villeneuve, ***Journal of Modern Optics***, **60**, 1458, (2013) https://doi.org/10.1080/09500340.2013.765067

46. "Generation of broad XUV continuous high harmonic spectra and isolated attosecond pulses with intense mid-infrared lasers", C. Trallero-Herrero, C. Jin, B. Schmidt, A. Shiner, D. M. Villeneuve, P. B. Corkum, C. D. Lin, F. Légaré, A. -T. Le, ***Journal of Physics B: Atomic, Molecular and Optical Physics, Fast Track***, **45**, 011001, (2012) https://doi.org/10.1088/0953-4075/45/1/011001

47. "Observation of Cooper Minimum in Krypton Using High Harmonic Spectroscopy", A. D. Shiner, B. E. Schmidt, C. Trallero-Herrero, P. B. Corkum, J.-C. Kiefer, F. Légaré, and D. M. Villeneuve, ***Journal of Physics B: Atomic, Molecular and Optical Physics***, **45**, 074010, (2012) https://doi.org/10.1088/0953-4075/45/7/074010

48. "High harmonic generation with long wavelength few-cycle laser pulses", B. E. Schmidt, A. D. Shiner, M. Giguère, P. Lassonde, C. A. Trallero-Herrero, J.-C. Kieffer, P. B. Corkum, D. M. Villeneuve, F. Légaré, ***Journal of Physics B: Atomic, Molecular and Optical Physics***, **45**, 074008, (2012) https://doi.org/10.1088/0953-4075/45/7/074008

49. "Generation of isolated attosecond pulses in the far field by spatial filtering with an intense few-cycle mid-infrared laser", C. Jin, A.-T. Le, C. A. Trallero-Herrero, and C. D. Lin, ***Physical Review A***, **84**, 043411, (2011) https://doi.org/10.1103/physreva.84.043411

50. "Probing collective multi-electron dynamics with high harmonic spectroscopy: The giant resonance in xenon", A. D. Shiner, B. E. Schmidt, C. Trallero-Herrero, H. J. Worner, S. Patchkovskii, P. B. Corkum, J.-C. Kieffer, F. Légaré and D. M. Villeneuve, ***Nature Physics***, **7**, 464, (2011) https://doi.org/10.1038/nphys1940

51. "Compression of 1.8 μm laser pulses to sub two optical cycles with bulk material", B. E. Schmidt, C. Trallero-Herrero, A. D. Shiner, P. Lassonde, É. Bisson, J.-C. Kieffer, P. B. Corkum, D. M. Villeneuve and F. Légaré, ***Applied Physics Letters***, **96** 121109, (2010) https://doi.org/10.1063/1.3359458

52. "Direct Test of Laser Tunneling with Electron Momentum Imaging", L. Arissian, C.Smeenk, F. Turner, C. Trallero-Herrero, A. V. Sokolov, D. M. Villeneuve, A. Staudte, and P. B. Corkum, ***Physical Review Letters***, **105**, 133002, (2010) https://doi.org/10.1103/physrevlett.105.133002

53. "High harmonic generation in ethylene with infrared pulses", C. Trallero-Herrero, B. E. Schmidt, A. D. Shiner, P. Lassonde, É. Bisson, J-C. Kieffer, P. B. Corkum, D. M. Villeneuve and F. Légaré, ***Chemical Physics***, **366**, 33, (2009) https://doi.org/10.1016/j.chemphys.2009.10.014

54. "Wavelength Scaling of High Harmonic Generation Efficiency", A. D. Shiner, C. Trallero-Herrero, N. Kajumba, H.-C. Bandulet, D. Comtois, F. Légar'e, J-C. Kieffer, P. B. Corkum, and D. M. Villeneuve, ***Physical Review Letters***, **103** 07390 (2009) https://doi.org/10.1103/physrevlett.103.073902

55. "High harmonic generation with a spatially-filtered optical parametric amplifier", H.-C. Bandulet, D. Comtois, A. Shiner, C. Trallero-Herrero, N. Kajumba, T. Ozaki, P. B. Corkum, D. M. Villeneuve, J.-C. Kieffer and F. Legar'e, ***Journal of Physics B: Atomic, Molecular and Optical Physics***, **41**, 245602, (2008) https://doi.org/10.1088/0953-4075/41/24/245602

56. "Strong Field Multiphoton Inversion of a Three-Level System using Shaped Ultrafast Laser Pulses ", Steve D. Clow, Carlos Trallero-Herrero, Thomas Bergeman and Thomas Weinacht, ***Physical Review Letters*** **100**, 233603, (2008) https://doi.org/10.1103/physrevlett.100.233603
57. "Interpreting ultrafast molecular fragmentation dynamics with *ab initio* structure calculations", Carlos Trallero-Herrero, Brett J. Pearson, Thomas Weinacht, Kandis Gilliard, and Spiridoula Matsika, ***Journal of Chemical Physics*** **128**, 124107, (2008) https://doi.org/10.1063/1.2850524
58. "Strong Field Coherent Control of Atomic Population Transfer", Carlos Trallero-Herrero, Steve D. Clow, Thomas Bergeman and Thomas Weinacht, ***Journal of Physics B: Atomic, Molecular and Optical Physics***, **41**, 074014, (2008) https://doi.org/10.1063/1.2850524
59. "Transition from Weak to Strong Field Coherent Control", Carlos Trallero-Herrero and Thomas Weinacht, ***Physical Review A***, **75**, 063401, (2007) https://doi.org/10.1103/physreva.75.063401
60. "Understanding Strong Field Coherent Control: Single Atom vs Collective Dynamics", Carlos Trallero-Herrero, Michael Spanner, and Thomas Weinacht, ***Physical Review A: Rapid Communications***, **74**, 051403, (2006) https://doi.org/10.1103/physreva.74.051403
61. "Bose-Einstein condensates: Analytical methods for the Gross-Pitaevskii equation", Carlos Trallero-Giner, J. Drake, V. Lopez-Richard, C. Trallero-Herrero and Joseph L. Birman, ***Physics Letters A***, **354**, 115, (2006) https://doi.org/10.1016/j.physleta.2006.01.032
62. "Strong Field Atomic Phase Matching", C. Trallero-Herrero, J. L. Cohen and T. C. Weinacht, ***Physical Review Letters***, **96**, 063603, (2006) https://doi.org/10.1103/physrevlett.96.063603
63. "Gross-Pitaevskii equation: Variational approach", J. C. Drake Perez, C. Trallero-Giner, V. Lopez Richard, C. Trallero-Herrero, Joseph L. Birman, ***physica status solidi (c)***, **2**, 3665, (2005) https://doi.org/10.1002/pssc.200461762
64. "Transformations to Diagonal Bases in Closed Loop Learning Control Experiments", D. Cardoza, F. Langhojer, C. Trallero-Herrero, H. Rabitz and T. C. Weinacht, ***Journal of Chemical Physics***, **122**, 124306, (2005) https://doi.org/10.1063/1.1867334
65. "Coherent Control of Strong Field Multiphoton Absorption in the Presence of Dynamic Stark Shifts", C. Trallero-Herrero, D. Cardoza, J. L. Cohen and T. C. Weinacht, ***Physical Review A***, **71**, 013423, (2005) https://doi.org/10.1103/physreva.71.013423
66. "Changing Pulse Shape Basis for Molecular Learning Control", D. Cardoza, F. Langhojer, C. Trallero-Herrero, O. L. A. Monti and T. C. Weinacht, ***Physical Review A***, **70**, 053406, (2004) https://doi.org/10.1103/physreva.70.053406
67. "Electronic states in a cylindrical quantum lens: Quantum chaos for decreasing system symmetry", C. Trallero-Herrero, C. Trallero-Giner, S. E. Ulloa, and R. Perez-Alvarez, ***Physical Review E***, **64**, 056237, (2001) https://doi.org/10.1103/physreve.64.056237
68. "1D Transfer Matrices", R. Perez Alvarez, C. Trallero-Herrero and F. García Moliner, ***European Journal of Physics***, **4**, 275, (2001) https://doi.org/10.1088/0143-0807/22/4/302

Selected Presentations

Invited Colloquia and Seminars

- " Quantum Times", Colloquium, Physics Department, Wesleyan University, Middletown, CT (2024)
- " Quantum Times", Colloquium, Physics Department, Williams College, Williamstown, MA (2024)
- "New regimes in ultrafast and strong field science", Colloquium, Physics Department, Universidad de Salamanca, Salamanca, Spain, (2023)
- "New regimes in ultrafast and strong field science", Colloquium, Chemistry Department, Physics Department, Universidad Autónoma de Madrid, Madrid, Spain, (2023)
- "Generation and control of non-local quantum equivalent photons: Towards new regimes in strong field science", Technion Institute, Haifa, Israel, (2023)
- "New Regimes in Strong Laser Matter Interaction", Colloquium, Department of Physics, University of Nebraska, Lincoln, Nebraska, (2023)

- "XUV interferometry with Bessel-Gauss beams", Seminar, Joint Attosecond Laboratory, National Research Council of Canada and University of Ottawa, (virtual), 2021
- "Time resolved measurements from the long wavelength infrared to the extreme ultraviolet",Colloquium, Coherence East, Connecticut, (virtual), 2021
- "New time and energy scales for attosecond science" Colloquium, Department of Physics, Missouri Science and Technology,2020
- "Controlling light at extreme time and energy scales", Seminar, Electrical and Computer Engineering Department, University of Connecticut, Storrs, CT, 2020
- "New Time and Energy Scales for Coherent XUV Radiation", Colloquium, Department of Physics, Temple University, Philadelphia, PA, 2019
- "An attosecond self-referencing interferometer for phase measurement and control of electronic wavepackets", AMO Seminar, Physics and Astronomy Department, Stony Brook University, Stony Brook, NY, 2018
- "Strong field physics from isolated atoms to solids", Invited Lecture Series, Physics Department, Voronezh State University, Voronezh, Russia, 2017
- "Towards attosecond optoelectronics", Colloquium, Electrical Engineering Department, City College of New York, New York, NY, 2016
- "Towards the control of electronic motion in solids at very fast time scales", Colloquium, Chemical Engineering Department, Kansas State University, Manhattan, KS, 2015
- "Strong field physics: From isolated atoms to solids", AMO Seminar, Physics and Astronomy Department, Stony Brook University, Stony Brook, NY, 2015
- "Waves: from sound to the quantum world", Colloquium, Art Department, Leonardo Workshop, Kansas State University, Manhattan, KS, 2015
- "Probing molecular structure with a molecule's own electrons", AMO Seminar, Physics Department, University of Nebraska-Lincoln, Lincoln, NE, April 2015
- "Ultrafast Laser Physics: My computer will be faster than yours", Colloquium, Physics Department, Wichita State University, Wichita, KS, January, 2014
- "Light and Quantum Physics A prequel to Strong Field Physics", Lecture series, Research Experience for Undergraduates, Kansas State University, Manhattan, KS, 2014
- "HHG Interferometry", Seminar, James R. Macdonald Laboratory, Kansas State University, Manhattan, KS, 2014
- "Strong Field Physics in Soft Matter", Soft Matter Group Seminar, Physics Department, Kansas State University, Manhattan, KS, December 2013
- "Strong Field Molecular Spectroscopy", Colloquium, Physics Department, University of Nebraska-Lincoln, Lincoln, NE, November 2013
- "Learning about molecules with extreme nonlinear optics", Colloquium, Physics Department, Kansas State University, Manhattan, KS, March 2013
- "Learning about molecules with extreme non-linear optics", Indian Institute of Education and Research, Colloquium, Mohali, India, February 2013
- "Strong Field Coherent Spectroscopy", TATA Institute of Fundamental Research, Seminar, Mumbai, India, February 2013
- "Strong Field Coherent Spectroscopy", Physical Research Laboratory, Seminar, Ahmedabad, India, February 2013
- "Cameras, Light, Action: The making of a molecular movie", Colloquium, Physics Department, Benedictine College, Atchison, KS, September 2012
- "Strong Field Spectroscopy and Control", Seminar, Chemistry Department, University of Kansas, Lawrence, KS, January 2012
- "Time reversing high harmonic generation: Table top XUV spectroscopy", AMO Seminar, Physics Department, University of Nebraska Lincoln, Lincoln, NE, November 2010
- "Strong field ultrafast spectroscopy" Colloquium, Physics Department, Kansas State University, Manhattan, KS, April 2010
- "Spectroscopy and ultrafast physics", Seminar, Kapteyn-Murnane Group, JILA-University of Colorado, Boulder, CO, 2010
- "A deep look at the three steps in high harmonic generation", Seminar, Appleton Rutherford National Laboratories, Chilton, UK, 2009
- "Wavelength dependency of high harmonic generation", AMO Seminar, Physics and Astronomy Department, Stony Brook University, Stony Brook, NY, 2008
- "Control de sistemas quánticos: del femto al atto segundo", Colloquium, Departamento de Física, La Habana, Cuba, 2008

- "From femto to attosecond strong field coherent control", Colloquium, Physics Department, University of Maryland, MD, 2007
- "Coherent Control of Atoms Under Strong Fields", Colloquium, Physics Department, Colby College, Waterville, ME, November 2006
- "Nuclear Fragmentation and Percolation", Colloquium, Sciences Faculty, Universidad Nacional de Educación a Distancia, Madrid, Spain, 1998

Invited Conference and Workshops

- "Generation of few-cycle pulses in the long-wavelength-infrared", Office of Naval Research, Directed Energy Weapons: Ultra-Short Pulse Laser and Atmospheric Characterization, Program Review, (virtual), 2021
- "Strong field physics with few-cycle pulses in the long-wavelength-infrared", Office of Naval Research, Directed Energy Weapons: Ultra-Short Pulse Laser and Atmospheric Characterization, Program Review, (virtual), 2021
- "Complete spectroscopy in the attosecond regime", Atomic, Molecular and Optical Sciences PI meeting, Department of Energy, Office of Science, (virtual), 2020
- "Strong field physics with few-cycle pulses in the long-wavelength-infrared", Office of Naval Research, Directed Energy Weapons: Ultra-Short Pulse Laser and Atmospheric Characterization, Program Review, (virtual), 2020
- "Recollision physics at the nanoscale", Air Force Office for Scientific Research, Ultrashort Pulse Laser-Matter Interactions Program Review, Arlington, Virginia, 2019
- "Strong field physics with few-cycle pulses in the long-wavelength-infrared", Office of Naval Research, Directed Energy Weapons: Ultra-Short Pulse Laser and Atmospheric Characterization, Program Review, Arlington, Virginia, 2019
- "Dirac materials and Dynamics",Dirac Dynamic Quantum Matter, Jancksonville, FL, 2019
- "Tunneling under strong time-dependent fields: From bulk materials to nanoparticles", Dynamic Dirac Quantum Matter, Newport, RI, 2018
- "Recollision physics at the nanoscale", Air Force Office for Scientific Research, Ultrashort Pulse Laser-Matter Interactions Program Review, Arlington, Virginia, 2018
- "Attosecond Control and Measurement of Electronic Phases", Gordon Research Conference on Multiphoton Processes, Smithfiled, RI, 2018
- "Strong field excitation of solids by ultrafast fields", Low dimensional systems and devices, Mayan Riviera, Mexico, 2016
- "Wavelength Scaling and Directionality in the Ultrafast Excitation of GaAs", International Congress on Applications of Lasers & Electro-Optics, San Diego, 2016
- "Strong field spectroscopy with higher order harmonic generation", Department of Energy, Atomic Molecular and Optical Sciences PI meeting, Washington DC, 2013
- "A self referencing attosecond interferometer with zeptosecond precission", American Physical Society Division of the Atomic Molecular and Optical Physics, Sacramento, 2017
- "Time-dependent spectroscopy with higher-order harmonic generation", Lecture series of the 41st International Nathiagali Summer College, Islamabad, Pakistan, 2016
- "Strong Field Molecular Spectroscopy", Department of Energy, Atomic Molecular and Optical Sciences PI meeting, Washington DC, 2013
- "High intensity ultrabroadband pulses for attosecond science", Ultrafast atomic and molecular physics with cutting-edge light sources: New opportunities and challenges, Manhattan, KS, November 2013
- "Strong Field Coherent Spectroscopy", National Laser Symposium, Invited Speaker, Bahba Research Center, Mumbai, India, February 2013

Outreach and Community Service

- Associate Department head for Graduate Student Affairs, Department of Physics, University
- Faculty founder and mentor of the Student Chapter of Optica at the University of Connecticut
- Faculty founder and mentor of the University of Connecticut Squash Club
- Founder of the Student Chapter of the OSA at Kansas State University
- Several outreach events through the OSA Student Chapter at Kansas State University
- Engagement with Latin American countries for graduate student research through CLAF
- Organizer and keynote speaker at Hispanic science engagement events for middle-school students: Si Se Puede Hacer Ciencias y Mátematicas at Emporia, KS
- Fund raiser and member of Capitol Squash Hartford https://capitolsquash.org/
- Participant in The Pickle Jar Capitol Cup, Trinity College, Hartford CT, raising $257,669 for low

income and at risk youth https://capitolsquash.myetap.org/fundraiser/CapitolCup2021/

Other professional service

Referee services

- Nature Photonics
- Physical Review A
- Journal of the Optical Society of America B
- Optics Letters
- Optica
- Scientific Reports
- Optics Express
- Journal of Physcs B: Atomic, Molecular and Optical Physics

Reviewer services

- Department of Energy, Basic Energy Sciences, Atomic, Molecular and Optical Sciences, Individual grant proposals, 2015-present
- Air Force Office of Scientific Research, Individual grant proposals, 2020-present
- Office of Naval Research, Individual grant proposals, 2013-present
- National Science Foundation, Individual and instrumentation proposals, 2015-present
- University of Nebraska, Department of Physics and Astronomy, Departmental review, 2021

Conferences

- Optical Society, Frontier in Optics and American Physical Society Laser Science Conferences, Organizer, 2020
- American Physical Society, Division of Atomic, Molecular and Optical Physics, Chairman and vice-chairman of ultrafast laser division, 2015-2018
- Wild-Corn, Kansas-Nebraska, AMO physics conference organizer, 2012-2014

Editor of Scientific Reports, Nature Publishing Group

Other Interests

Enjoy biking, squash, swimming, audiophile equipment, and BBQ. Father of two.