Thomas K. Allison

Professor
Stony Brook University
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Education and Training

National Research Council Postdoctoral Fellow, JILA NIST/Univ. of Colorado 2010-2012.
Advisor: Jun Ye
Research Topic: Cavity-Enhanced High Harmonic Generation and Extreme Ultraviolet Frequency Combs.

Ph.D. Physics, University of California at Berkeley, 2010.
Thesis Advisors: Roger Falcone and Ali Belkacem
Dissertation: "Femtosecond Molecular Dynamics Studied with Vacuum Ultraviolet Pulse Pairs"

M.S. Physics, University of California at Berkeley, 2006.

B.S. Engineering Physics, Cornell University, 2003.
Summa Cum Laude with honors
Thesis Advisor: Charles Sinclair
Dissertation: "A New Pressure Gauge for UHV and XHV"

Employment

Professor, Stony Brook University, 2026-Present
Associate Professor, Stony Brook University, 2020-2026
Assistant Professor, Stony Brook University, 2013-2019
National Research Council Postdoctoral Fellow, 2010 to 2012.
Graduate Student Researcher, University of California at Berkeley, 2004-2010.
Graduate Student Instructor, University of California at Berkeley, 2003-2004.

Honors and Awards

Stony Brook University Discovery Prize, 2017.
Dept. of Energy Early Career Award, 2016.
Air Force Office of Scientific Research Young Investigator, 2013.
JILA Scientific Achievement Award, 2012.
National Research Council/NIST Postdoctoral Research Associate Awardee, 2009.
Marie Curie Fellowship Awardee, 2009.
Hertz Foundation Fellowship Finalist, 2005.
Outstanding Graduate Student Instructor Award. University of California at Berkeley, 2004.
Paul Hartman Prize in Experimental Physics. Cornell University, 2003.
Merrill Presidential Scholar. Cornell University, 2003.

Students and Postdocs Mentored

Yuning Chen, 2013-2018, Melanie A. Roberts Reber 2013-2016, Donald Willcox 2013, Kevin Keleher 2013-2014, Peng Zhao 2014-2019. Xinlong Li 2014-2018, Austin Polanco 2014-2015, Kegan Orlowski 2015, Christopher Corder 2015-2019, Fangqiong Yuan 2016-2017, Zihan Zhang 2016, Myles Silfies 2016-2023, Elena Pavlenko 2016-2017, Jin Bakalis 2017-2025, Neomi Lewis, 2017-2021, Jose Miguel Batista 2018-2019, Anthony Catanese 2018-2020, Jay Rutledge 2018-2022, Grzegorz Kowzan 2018-2022, Sergii Chernov 2019-2023, Alice Kunin 2019-2023, Zachary Withers 2021-present, Alex Adler 2022-present, Rudy Popper 2022-2024, Yuanchi Qing 2022-present, Steven Carnevale 2023-2024, Nai-Yu Tsai 2023-2026, Prabesh Bista 2026-present, Nicholas Teoh 2026-present.

Publications

1. J. Wu, Z. H. Withers, T. K. Allison, and D. Y. Qiu. "Signature of a Trion in Photoemission." *Phys. Rev. Lett.* **137**, 096401 (2026).
2. J. Guo, Z. H. Withers, Z. Li, B. Hou, A. Adler, J. Ding, V. Chang Lee, R. K. Kawakami, G. Schönhense, A. Kunin, T. K. Allison, and D. Y. Qiu. "Moiré-Tunable Localization of Simultaneous Type I and Type II Band Alignment in a $MoSe_2/WS_2$ Heterobilayer." *Nat. Comm.* **16**, 11257 (2025).
3. L. R. Baker, L. F. DiMauro, C. Turro, J. A. Gupta, R. K. Kawakami, T. K. Allison, T. J. Ronningen, T. D. Scarborough, V. Leshchenko, S. S. Shields, J. E. Beetar. "NSF NeXUS: A New Model for Accessing the Frontiers of Ultrafast Science." *ACS Central Science* **11**, 12 (2025).
4. T. K. Allison, A. Kunin, and G. Schönhense. "Cavity-Enhanced High-Order Harmonic Generation for High-Performance Time-Resolved Photoemission Experiments." *APL Photonics* **10**, 010906 (2025)
5. A. Mehmood, M. C. Silfies, A. S. Durden, T. K. Allison, and B. G. Levine. "Simulating Ultrafast Transient Absorption Spectra from First Principles using a Time-Dependent Configuration Interaction Probe." *J. Chem. Phys.* 161, 044107 (2024).
6. J. Bakalis, S. Chernov, Z. Li, A. Kunin, Z. H. Withers, S. Cheng, A. Adler, C. Corder, M. G. White, G. Schönhense, X. Du, R. K. Kawakami, and T. K. Allison. "Momentum-space Observation of Optically Excited Non-Thermal Electrons in Graphene with Persistent Pseudospin Polarization." *Nano Lett.* 24, 9353 (2024).
7. T. K. Allison, Z. H. Withers, Z. Li, J. Bakalis, S. Chernov, S. Cheng, G. Schönhense, X. Du, R. Kawakami, A. Kunin. "Ultrafast dynamics in 2D materials and heterostructures visualized with time- and angle-resolved photoemission." Proceedings of SPIE Volume 12884, Ultrafast Phenomena and Nanophotonics XXVIII, 128840A (2024).
8. M. C. Silfies, A. Mehmood, G. Kowzan, E. G. Hohenstein, B. G. Levine, and T. K. Allison. "Ultrafast internal conversion and photochromism in gas-phase salicylideneaniline." *J. Chem. Phys.* **159**, 104304 (2023).
9. A. Kunin, S. Chernov, J. Bakalis, Z. Li, S. Cheng, Z. H. Withers, M. G. White, G. Schönhense, X. Du, R. K. Kawakami, T. K. Allison. "Momentum-resolved Exciton Coupling and Valley Polarization Dynamics in Monolayer WS_2." *Phys. Rev. Lett.* **130**, 046202 (2023).
10. G. Kowzan and T. K. Allison. "Controlling rotationally-resolved two-dimensional infrared spectra with polarization." *J. Phys. Chem. Lett.* **13**, 11650 (2022).
11. G. Kowzan and T. K. Allison. "Theory of rotationally resolved two-dimensional infrared spectroscopy including polarization dependence and rotational coherence dynamics." *Phys. Rev. A.* **106**, 042819 (2022).

12. G. Schönhense et al. "Suppression of the vacuum space-charge effect in fs-photoemission by a retarding electrostatic front lens." *Rev. Sci. Inst.* **92**, 053703 (2021).

13. M. C. Silfies, G. Kowzan, N. Lewis, and T. K. Allison. "Broadband cavity-enhanced ultrafast spectroscopy." *Phys. Chem. Chem. Phys.* **23**, 9743 (2021)

14. J. Rutledge, A. Catanese, D. Hickstein, S. A. Diddams, T. K. Allison, A. S. Kowligy. "Broadband ultraviolet-visible frequency combs from cascaded high-harmonic generation in quasi-phase matched waveguides." *J. Opt. Soc. B.* **38**, 2252 (2021)

15. M. C. Silfies, G. Kowzan, Y. Chen, N. Lewis, R. Huo, R. Baehre, T. Gross, and T. K. Allison. "Widely tunable cavity-enhanced frequency combs." *Opt. Lett.* **45**, 2123 (2020).

16. A. J. Lind, A. Kowligy, H. Timmers, F. C. Cruz, N. Nader, M. C. Silfies, T. K. Allison, S. A. Diddams. "$\chi^{(2)}$ mid-infrared frequency comb generation and stabilization with few-cycle pulses." *Phys. Rev. Lett.* **124**, 133904 (2020).

17. A. Catanese, J. Rutledge, A. Catanese, J. Rutledge, M. C. Silfies, X. L. Li, H. Timmers, A. Kowligy, A. Lind, S. A. Diddams, and T. K. Allison. "Mid-infrared frequency comb with 6.7 W of average power based on difference frequency generation." *Opt. Lett.* **45**, 1248 (2020).

18. Y. Chen, M. C. Silfies, G. Kowzan, J. Bautista, and T. K. Allison. "Tunable visible frequency combs from a Yb-fiber-laser-pumped optical parametric oscillator." *Applied Physics B* **125**, 81 (2019).

19. B. Adams et al. "Scientific Opportunities with an X-ray Free Electron Laser Oscillator.:" arXiv:1903.09317 (2019).

20. C. Corder, P. Zhao, J. Bakalis, X. L. Li, M. D. Kershis, A. R. Muraca, M. G. White, and T. K. Allison. "Ultrafast extreme ultraviolet photoemission without space charge." *Structural Dynamics* **5**, 054301 (2018).

21. C. Corder, P. Zhao, J. Bakalis, X. L. Li, M. D. Kershis, A. R. Muraca, M. G. White, and T. K. Allison. "Development of a tunable high repetition rate XUV source for time-resolved photoemission studies of ultrafast dynamics at surfaces." Proceedings SPIE 10519, LAMOM XXIII, 105190B (2018). DOI:10.1117/12.2295232.

22. H. Timmers, A. Kowligy, A. Lind, F. C. Cruz, N. Nader, M. Silfies, G. Ycas, T. K. Allison, P. G. Schunemann, S. B. Papp, and S. A. Diddams. "Molecular fingerprinting with bright, broadband infrared frequency combs." *Optica* **5**, 727 (2018).

23. T. K. Allison. "Cavity-enhanced ultrafast two-dimensional spectroscopy using higher-order modes". *J. Phys. B.* **50**, 044004 (2017).

24. X. L. Li, M. A. R. Reber, C. Corder, Y. Chen, P. Zhao, and T. K. Allison. "High-power ultrafast Yb:fiber laser frequency combs using commercially available components and basic fiber tools". *Rev. Sci. Inst.* **87**, 093114 (2016).

25. M. A. R. Reber, Y. Chen, and T. K. Allison, "Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive". *Optica* **3**, 311 (2016).

26. C. Benko, L. Hua, T. K. Allison, F. Labaye, and J. Ye. "Cavity-Enhanced Field-Free Molecular Alignment at a High Repetition Rate". *Phys. Rev. Lett.* **114**, 153001 (2015).

27. C. Benko, T. K. Allison, A. Cingöz, L. Hua, F. Labaye, D. C. Yost, and J. Ye. "Extreme Ultraviolet Radiation with Coherence Time Beyond 1 s". *Nature Photonics* **8**, 530 (2014).

28. T. E. Glover, D. M. Fritz, M. Cammarata, J. Feldkamp, T. K. Allison, H. Lemke, D. Zhu, R. N. Coffee, Sinisa Coh, S. Schwartz, D. A. Reis, S. E. Harris, and J. B. Hastings. "Microprobing Light-Matter Interactions with X-ray plus Optical Wavemixing". *Nature* **498**, 603 (2012).

29. T. K. Allison, H. Tao, W. Glover, T. W. Wright, A. M. Stooke, C. Khurmi, J. van Tilborg, Y. Liu, R. W. Falcone, T. J. Martinez, and A. Belkacem. "Ultrafast Internal Conversion in Ethylene. II. Mechanisms and Pathways for Quenching and Hydrogen Elimination". *J. Chem. Phys.* **136**, 124317 (2012).

30. A. Cingöz, D. C. Yost, T. K. Allison, A. Ruehl, M. E. Fermann, I. Hartl, and J. Ye. "Direct Frequency Comb Spectroscopy in The Extreme Ultraviolet". *Nature* **482**, 68 (2012).

31. T. K. Allison, A. Cingöz, D. C. Yost, and J. Ye. "Extreme Nonlinear Optics in a Femtosecond Enhancement Cavity", *Phys. Rev. Lett.* **107**, 183903 (2011).

32. D. C. Yost, A. Cingöz, T. K. Allison, A. Ruehl, M. E. Fermann, I. Hartl, and J. Ye. "Power Optimization of XUV Frequency Combs for Spectroscopy Applications", *Opt. Exp.* **19**, 23483 (2011).

33. H. Tao, T. K. Allison, T. W. Wright, A. M. Stooke, C. Khurmi, J. van Tilborg, Y. Liu, R. W. Falcone, A. Belkacem, and T. J. Martinez. "Ultrafast Internal Conversion in Ethylene. I. The Excited State Lifetime", *J. Chem. Phys.* **134**, 244306 (2011).

34. A. Cingöz, D. C. Yost, T. K. Allison, A. Ruehl, M. E. Fermann, I. Hartl, and J. Ye, "Broadband Phase Noise Suppression in a Yb-fiber Frequency Comb", *Opt. Lett.* **36**, 743 (2011)

35. T. K. Allison, T. W. Wright, A. M. Stooke, C. Khurmi, J. van Tilborg, Y. Liu, R. W. Falcone, and A. Belkacem. "Femtosecond Spectroscopy with Vacuum Ultraviolet Pulse Pairs", *Opt. Lett.* **35**, 3664 (2010).

36. T. E. Glover, M. P. Hertlein, S. H. Southworth, T. K. Allison, J. van Tilborg, E. P. Kanter, B. Krassig, H. R. Varma, B. Rude, R. Santra, A. Belkacem, L. Young. "Controlling X-rays with Light", *Nature Physics* **6**, 69 (2010).

37. T. K. Allison, J. van Tilborg, T. W. Wright, M. P. Hertlein, R. W. Falcone, and A. Belkacem. "Separation of High-Order Harmonics with Fluoride Windows", *Opt. Exp.* **17**, 8941 (2009).

38. J. van Tilborg, T. K. Allison, T. W. Wright, M. P. Hertlein, R. W. Falcone, Y. Liu, H. Merdji, and A. Belkacem. "Femtosecond Isomerization Dynamics in the Ethylene Cation Measured in an EUV-pump NIR-probe configuration". *J. Phys. B.* **42**, 081002 (2009).

39. K.J. Gaffney et. al. "Observation of Structural Anisotropy and the Onset of Liquid-like Motion During the Nonthermal Melting of InSb", *Phys. Rev. Lett.* **95**, 125701 (2005).

40. A. M. Lindenberg, Y. Acremann, D. P. Lowney, P. A. Heimann, T. K. Allison, T. Matthews, and R. W. Falcone. "Time Resolved Measurements of the Structure of Water at Constant Density", *J. Chem. Phys.* **122** 204507 (2005).

41. A.M. Lindenberg et. al. "Atomic Scale Visualization of Inertial Dynamics", *Science* **308**, 392 (2005).

Patents

1. Apparatus and method for cavity-enhanced ultrafast two-dimensional spectroscopy. T. K. Allison. U.S. patent number 10,620,048.

2. Polarization Modulation Scheme for Nonlinear Fiber Amplifiers. Michael J. Wahl, Thomas K. Allison, Myles Silfies, Yuanchi Qing. Provisional U.S. patent number 63/800,031.

Research Grants

1. “Precision Characterization of High Harmonic Spectroscopy and Strong Field Attosecond Physics." 2013-2016. $360,264. Air Force Office of Scientific Research. Sole PI.
2. “Cavity Enhanced Ultrafast Transient Absorption Spectroscopy." 2014-2017. $458,311. National Science Foundation. Sole PI.
3. “Fellowships in the Optical Sciences for Ph. D. Students in Physics." 2015-2019. $1,181,112. Dept. of Education. Co-PI in team of 5.
4. “Cavity-Enhanced High Harmonic Generation for Attosecond Dynamics at Surfaces.” 2016-2020. $763,499. Air Force Office of Scientific Research. Sole PI.
5. “Ultrafast Dynamics of Molecules on Surfaces Studied with Time-resolved XUV Photoelectron Spectroscopy." 2016-2021. $750,00. U.S. Dept. of Energy. Sole PI.
6. “Flat-field XUV Spectrograph for Attosecond Science." 2017-2019. $112,638. Air Force Office of Scientific Research. Sole PI.
7. “Recording movies of molecular orbitals with angstrom and attosecond resolution." 2017-2019. $200,000. Stony Brook Foundation Discovery Prize. Sole PI.
8. “Widely tunable cavity-enhanced ultrafast spectroscopy and the dynamics of hydrogen bond networks." $501,910. 2017-2020. National Science Foundation. Sole PI.
9. “Supplemental Equipment for Ultrafast Dynamics of Molecules on Surfaces Studied with Time-Resolved XUV Photoelectron Spectroscopy." 2018-2019. $89,500. U.S. Dept. of Energy. Sole PI.
10. “National EXtreme Ultrafast Science (NeXUS) Facility." $185,510. 2019-2022. Subcontract with the Ohio State University. Sole PI of the Subcontract. Work with 5 Co-PIs at OSU to develop the NeXUS user facility.
11. “High Repetition-rate Ultrafast VUV Light Source Development for Attosecond Dynamics at Surfaces." $799,776. 2020-2025. Air Force Office of Scientific Research. Sole PI.
12. “Ultrafast dynamics and elementary reactions of organic photocatalysts." $110,000. 2021-2022. American Chemical Society Petroleum Research Fund. Sole PI.
13. “Collaborative Research: Understanding Ultrafast Observables." $909,000 (including Temple Univ. Component). 2021-2025. National Science Foundation. Lead PI with three Co-PIs.
14. “Imaging Singlet Fission with Angle-Resolved Photoemission." $474,214. 2021-2025. U.S. Dept. of Energy. Sole PI.
15. “Supplement for Imaging Singlet Fission with Angle-Resolved Photoemission." $155,273. 2022-2025. U.S. Dept. of Energy. Sole PI.
16. “MRI: Development of Ultra-Broadband High-Power Frequency Comb Light Source for Advanced Spectroscopy and Imaging." $999,995 from NSF. ($1.4M with SBU cost share). National Science Foundation. 2022-2027. Lead PI with Mengkun Liu as Co-PI.
17. “DURIP-22: Optical Fiber Equipment for AMO Physics." $65,277. 2022. Air Force Office of Scientific Research. Lead PI with Harold Metcalf as Co-PI.
18. “DURIP-22: Fiber Laser System." $129,066. 2022. U.S. Navy Office of Naval Research. Co-PI. Harold Metcalf is Lead PI.
19. “Momentum-Space Imaging of Excited-State Dynamics in Molecular Materials.” U.S. Dept. of Energy. Sole PI. $716,493. 2025-2028.

Invited Talks and Lectures

1. T.K. Allison. "Imaging Excitona and Charge-Transfer Dynamics at Surfaces with Time-resolved Momentum Microscopy." JILA Physical Chemistry Seminar. Boulder, CO. October 2026.
2. T.K. Allison. "Imaging Exciton and Charge-Transfer Dynamics at Surfaces with Time-resolved Momentum Microscopy." 25th European Conference on the Dynamics of Molecular Systems (MOLEC2026). Freiburg im Breisgau, Germany. September 2026.
3. T.K. Allison. "Frequency Combs for Ultrafast and Nonlinear Spectroscopy." JILA Science Seminar. Boulder, CO. May 2026.
4. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." Energy and Photon Science Directorate Colloquium at Brookhaven National Laboratory. Upton, NY. April 2026.
5. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." Joint Physics/Chemistry Colloquium at University of Vermont, Burlington, VT. February 2026.
6. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." Physics Colloquium at Colorado State University, Fort Collins. November 2025.
7. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." Physics Colloquium at SUNY Binghamton. October 2025.
8. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." Washington University Condensed-Matter/Materials and Biological Physics Seminar, St. Louis MO, April 2025.
9. T.K. Allison. "Cavity-enhanced HHG and its application to time-resolved photoemission and precision measurement." Erice Attosecond Summer School. April 2025.
10. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." University of Kansas Physics Colloquium, Lawrence KS. April 2025.
11. T.K. Allison. "Momentum-Space Imaging of Electron and Exciton Dynamics in 2D Materials." University of Notre Dame Physics Colloquium, Notre Dame IN. February 2025.
12. T. K. Allison. "Ultrafast dynamics in 2D materials and heterostructures visualized with time- and angle-resolved photoemission." Ultrafast Surface Dynamics Conference. Göttingen, Germany. May 2024.
13. T. K. Allison. "Ultrafast dynamics in 2D materials and heterostructures visualized with time- and angle-resolved photoemission." Research seminar in the Institute of Condensed Matter Physics. Friedrich-Alexander-Universität, Erlangen, Germany. May 2024.
14. T. K. Allison. "Ultrafast dynamics in 2D materials and heterostructures visualized with time- and angle-resolved photoemission," Purdue University Physical Chemistry Seminar. West Lafayette, IN. February 2024.
15. T. K. Allison. "Cavity-enhanced ultrafast spectroscopy of gas-phase molecules and clusters." Lawrence Berkeley National Laboratory. Berkeley, CA. February 2024.
16. T. K. Allison. "Ultrafast dynamics in 2D materials and heterostructures visualized with time- and angle-resolved photoemission." SPIE Photonics West. January 2024.

17. T. K. Allison. “Broadband Cavity-enhanced Ultrafast Spectroscopy for Ultrafast Dynamics and Trace-gas Analysis.” University of Michigan Physical Chemistry Seminar. January 2024.
18. T. K. Allison. “Broadband Cavity-Enhanced Ultrafast Spectroscopy for Chemical Dynamics and Trace-gas Analysis." Sandia National Laboratory. (virtual). March 2023.
19. T. K. Allison. “Cavity-enhanced High-Harmonic Generation for Ultrafast Time-Resolved Momentum Microscopy at 60 MHz Repetition Rate." DESY Photon Science Users’ Meeting. Jan. 2023.
20. T. K. Allison. “Broadband Cavity-Enhanced Ultrafast Spectroscopy." 14th International Meeting on Cavity-Enhanced Spectroscopy. Politecnico Milano. Lecco, Italy. June 2022.
21. T. K. Allison. “Ultrafast Imaging of Electron and Exciton Dynamics in 2D Materials." University of Arizona, Wyant College of Optical Sciences Colloquium. March 31, 2022.
22. T. K. Allison. “Direct Time- and Momentum-Resolved Imaging of Exciton Dynamics in Monolayer WS_2." APS March Meeting. March 2022.
23. T. K. Allison. "Cavity-Enhanced Ultrafast Spectroscopy." International Knowledge Coffee House (virtual). Univ. of Pittsburg. March 8, 2021
24. T. K. Allison. "Cavity-Enhanced Ultrafast/Nonlinear Spectroscopy Using Frequency Combs: Hardware and Concepts." NIST Boulder (virtual). Feb. 12, 2021.
25. T. K. Allison. “Time-resolved ARPES with 88 MHz Repetition Rate and Full 2π Collection Efficiency." Physical Chemistry Seminar. Fritz Haber Institute. Berlin, Germany. March 12, 2020.
26. T. K. Allison. “All-optical ultrafast spectroscopy in the physical chemist’s playground of molecular beams." Physical Chemistry Kolloquien (Student-selected speaker). ETH Zürich. March 10, 2020.
27. T. K. Allison. “Time-resolved ARPES with 88 MHz Repetition Rate and Full 2π Collection Efficiency." Spin+X Kolloquium. Mainz, Germany. March 5, 2020.
28. T. K. Allison “Time-resolved ARPES with 80 MHz Repetition Rate and Full 2π Collection Efficiency." Current and Future Opportunities in Time-resolved x-ray science: Materials and Interfaces. Sept. 27, 2019. SLAC National Laboratory, Stanford, CA.
29. T. K. Allison “Widely tunable cavity-enhanced spectroscopy and the dynamics of hydrogen bond networks." American Physical Society March Meeting, March 4-8, 2019. Boston, MA.
30. T. K. Allison “Ultrafast extreme ultraviolet photoemission without space charge." University of Connecticut Condensed Matter Physics Seminar. Dec. 4, 2018. Storrs, CT.
31. T. K. Allison “Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive." University of Connecticut Atomic, Molecular, and Optical Physics Seminar. Dec. 3, 2018. Storrs, CT.
32. T. K. Allison “HHG Sources - Novel Developments." VUV Workshop 2018. Paul Scherrer Institut. Villigen, Switzerland. Nov. 15, 2018.
33. T. K. Allison “Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive." Wayne State University Physical Chemistry Seminar. Oct. 10, 2018. Detroit, MI.
34. T. K. Allison “Ultrafast extreme ultraviolet photoemission without space charge." ETH Zürich Laser Seminar, July 23, 2018. Zürich, Switzerland.
35. T. K. Allison “Cavity-enhanced ultrafast spectroscopy." IRTG Seminar. University at Freiburg, July 20. Freiburg, Germany.

36. T. K. Allison “Cavity-Enhanced Ultrafast Spectroscopy." Telluride Science Research Center workshop on Advances of Multidimensional Vibrational Spectroscopy in Water, Biology and Materials Science, July 8-11. Telluride, CO.

37. T. K. Allison “Ultrafast extreme ultraviolet photoemission without space charge." Ohio State University AMO Physics seminar, March 16, 2018. Columbus, OH.

38. T. K. Allison “New Directions in Ultrafast Spectroscopy Enabled by Frequency Combs." Gordon Research Conference on Photoionization and Photodetachment, Feb. 18-23, 2018. Galveston, TX.

39. Corder, C., P. Zhao, X. Li, M. D. Kershis, M. G. White, and T. K. Allison. "Development of a tunable high repetition rate XUV source for time-resolved photoemission studies of ultrafast dynamics at surfaces." Photonics West, February 2018.

40. T. K. Allison “Cavity-Enhanced Ultrafast Spectroscopy." Pacific Conference for Spectroscopy and Dynamics, Jan. 25-28, 2018. San Diego, CA

41. T. K. Allison “Cavity-Enhanced Ultrafast Spectroscopy: Ultrafast Meets Ultrasensitive." Queens College Chemistry and Biochemistry Seminar, Sept. 11, 2017. New York, NY.

42. T. K. Allison “Ultrafast dynamics of charge transfer at molecule/surface interfaces." Gordon Research Conference on Dynamics at Surfaces, July 30-Aug 4, 2017. Newport, RI.

43. T. K. Allison “Cavity-Enhanced Ultrafast Spectroscopy." 8th International Meeting on Atomic and Molecular Physics and Chemistry, June 19-22, 2017 Toruń, Poland.

44. T. K. Allison “Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive." National Institute of Standards and Technology (NIST), Boulder, CO. May 25, 2017.

45. T. K. Allison “A High Brightness Laser-based Light Source for Time-resolved Extreme Ultraviolet Photoemission Studies." Workshop on Spectro-microscopy at the Nanoscale: Exploring Chemical, Electronic, and Magnetic Properties of Novel Materials, NSLS II User’s Meeting, May 15, 2017. Upton, NY.

46. T. K. Allison “Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive." Cornell University LASSP seminar. Ithaca, NY. May 9, 2017

47. T. K. Allison “Ultrafast dynamics of cold gas-phase molecular complexes." New York University Chemistry Seminar, April 18, 2017. New York, NY.

48. T. K. Allison “Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive." Yale University Physical Chemistry Seminar, Dec. 6, 2016. New Haven, CT.

49. T. K. Allison “Cavity-enhanced ultrafast spectroscopy: ultrafast meets ultrasensitive." Sandia National Laboratory Combustion Research Facility, Nov. 21, 2016. Livermore, CA.

50. C. Corder and T. K. Allison “Some ideas for determining the f_0 of an x-ray frequency comb produced via XFELO." XFELO Science Workshop, June 29-July 1, 2016. SLAC National Accelerator Laboratory.

51. T. K. Allison, “Cavity-Enhanced Ultrafast Spectroscopy." 47th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics (DAMOP), American Physical Society. Providence, Rhode Island, May 23-27, 2016.

52. T. K. Allison, “Extreme Ultraviolet Frequency Combs: Principles and Applications." Winter College on Optics. Abdus Salam International Centre for Theoretical Physics", Trieste, Italy. Feb. 18, 2016.

53. T. K. Allison, “Cavity-Enhanced Ultrafast Spectroscopy: Ultrafast meets Ultrasensitive." Seminar at the Max Planck Institute for Quantum Optics, Garching, Germany. Feb. 15, 2016.
54. T. K. Allison, “Cavity-Enhanced Transient Absorption Spectroscopy." 70th International Symposium on Molecular Spectroscopy. June 2015.
55. T. K. Allison “High Brightness XUV Frequency Combs and Applications." Stanford Photonics Research Center 2014 Annual Symposium. September 15-18, 2015.
56. Y. Chen, M. A. R. Reber, K. Keleher, and T. K. Allison “Cavity-Enhanced Ultrafast Transient Absorption Spectroscopy." 69^{th} International Symposium on Molecular Spectroscopy. June 16-20, University of Illinois at Urbana-Champaign.
57. T. K. Allison “Overview of High Harmonic Spectroscopy." Gordon Research Conference on Multiphoton Processes. Bentley University, Waltham, MA. June 15-20, 2014.
58. T. K. Allison “Chemical physics with synchrotrons and laser based VUV sources." Advanced Light Source User’s Meeting, Berkeley, CA. Oct. 8 2013.
59. T. K. Allison, “High Brightness XUV Frequency Combs and Applications." Ultrafast X-ray Science Laboratory Seminar, Berkeley, CA. July 29, 2013.
60. T. K. Allison, A. Cingöz, D. C. Yost, A. Ruehl, M. E. Fermann, I. Hartl, and J. Ye, “High Brightness XUV Frequency Combs via Intracavity High Harmonic Generation." Williams College Physics Colloquium, Feb., 2013.
61. T. K. Allison, A. Cingöz, C. Benko, D. C. Yost, A. Ruehl, M. E. Fermann, I. Hartl, and J. Ye, “High Brightness XUV Frequency Combs via Intracavity High Harmonic Generation." University of British Columbia AMO Physics seminar, Nov 27, 2012.

Courses Taught

Stony Brook CHE 521: Graduate Quantum Chemistry

Stony Brook PHY 515/445: Advanced Laboratory

Stony Brook PHY 308: Undergraduate Quantum Mechanics

Stony Brook PHY 300: Undergraduate Optics and Waves

Stony Brook CHE 525: Quantum Chemistry II: Electronic Structure Methods

Stony Brook CHE 528: Graduate Statistical Mechanics

Stony Brook PHY 540: Graduate Statistical Mechanics

Synergistic Activities

Organizer of Stony Brook’s “World of Physics" Public Outreach Lecture Series. 2018-2022.

Member of the 2021 European Optical Society Meeting Program Committee.

Member of LCLS proposal review panel (PRP). 2016-2019.

Member of SLAC Ultrafast Electron Diffraction facility proposal review panel (PRP). 2019-2021.

Member of the CLEO conference technical program committee, 2024-present

Member of 2026 Cavity-Enhanced Spectroscopy Conference Organizing Committee.

Member of 2026 Ultrafast Surface Dynamics Conference Organizing Committee.

Nominee for APS Division of Chemical Physics Member at Large (election in progress).

Regular reviewer for Optical Society of America (OSA), American Physical Society (APS), American Institute of Physics (AIP), Institute of Physics (IOP), American Chemical Society (ACS), National Science Foundation (NSF), Air Force Office of Scientific Research (AFOSR), Department of Energy (DOE).

Served on various department committees including Physics Colloquium committee (2014-2016), Chemistry admission committee (2012-2017). Chemistry instrumentation committee (2014-2019). Chemistry chair search committee (2014). Chemistry director of laboratories search committee (2015). Accelerator Physics faculty search committee (2015). Chemistry Graduate affairs committee (2018-present). Chemistry safety committee (2019-present), University-wide promotion and tenure committee (2017-2018). Chemistry advising/awards committee (2022-present). Physics Admissions committee (2022). Chair of Physics Admissions Committee (2023-present). Chair of Assistant Prof. Tenure Committee (2024). Chair of Senior Hire search in Chemistry (2024).

Served on several University committees including Promotion and Tenure Committee (2017-2018). Graduate Awards Committee (2023-2024). Research Laser Safety Committee (2025-Present).

Lectures for the Public

1. T. K. Allison. “Attosecond Optics and Attosecond Physics: The Good, the Bad, and the Maybe.” Stony Brook University Lecture on the 2023 Nobel Prize in Physics. Oct. 19, 2023.
2. T. K. Allison. “Imaging the Dynamics of Electrons in Quantum Materials." Stony Brook University Worlds of Physics, March 10, 2023. Stony Brook, NY.
3. T. K. Allison. “Mastering the Electromagnetic Spectrum." Stony Brook University Libraries STEM speaker series, Oct. 16, 2018. Stony Brook, NY.
4. T. K. Allison. “Recording movies of molecular orbitals with ångstrom and attosecond resolution." Stony Brook University Discovery Prize, April 18, 2017. Stony Brook, NY.
5. T. K. Allison. “Mastering the Electromagnetic Spectrum." Stony Brook University Worlds of Physics, Sept. 9, 2016. Stony Brook, NY.
6. T. K. Allison, “Using frequency comb lasers for recording movies of molecules in action." Bronx High School of Science, Sept. 13, 2016. New York, NY.
7. T. K. Allison. “Frontiers of Coherent Light Sources and Time-Resolved Molecular Imaging." Stony Brook University Worlds of Physics, Nov. 8, 2013. Stony Brook, NY.