J. Steven Dodge

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Simon Fraser University
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ACADEMIC POSITIONS

Simon Fraser University, Department of Physics

Professor, 2025–present.

Associate Professor, 2007–2025.

Assistant Professor, 2000–2007.

E. O. Lawrence Berkeley National Laboratory, Materials Sciences Division

Postdoctoral Researcher, 1997–2000. Time-resolved spectroscopy of correlated electron systems, with Daniel S. Chemla and Joe Orenstein.

EDUCATION

Ph.D. in Applied Physics, Stanford University, 1997.

Dissertation: "Magneto-optics of transition metal oxides and Sagnac magneto-optic interferometry." Advisor: Aharon Kapitulnik.

A.B. with Honours in Physics, Harvard College, 1989.

RESEARCH INTERESTS

Condensed matter physics; Optical spectroscopy; Time-resolved spectroscopy; Terahertz spectroscopy.

HONOURS, FELLOWSHIPS AND AWARDS

SFU Faculty of Science Excellence in Teaching Award, 2023

Member, Quantum Materials Program, Canadian Institute for Advanced Research, 2000–2019. (a.k.a. Quantum Matter Program, Superconductivity Program)

SFU Dean of Graduate Studies Awards for Leadership, 2013.

Cottrell Scholar Award, Research Corporation, 2003–6.

A. P. Sloan Research Fellowship, 2001–2.

ARCS Foundation Scholar, 1995.

John and Fannie Hertz Foundation Scholar, 1985–1989.

PUBLICATIONS

Trainees in my research group are underlined.

Peer-reviewed

Jonathan Posada Loaiza, Santiago Higuera-Quintero, Alireza Noori, Laleh Mohtashemi, R. P. Hall, Naod Ayalew Yimam, and J. Steven Dodge, THzTools: data analysis software for terahertz time-domain spectroscopy, JOSS **9**, 7542 (2024). DOI GitHub

Isaiah Gray, Qinwen Deng, Qi Tian, Michael Chilcote, J. Steven Dodge, Mattew Brahlek, and Liang Wu, Time-Resolved Magneto-Optical Effects in the Altermagnet Candidate MnTe, Appl. Phys. Lett. **125**, 212404 (2024). DOI

J. S. Dodge, L. Lopez, D. G. Sahota, Optical Saturation Produces Spurious Evidence for Photoinduced Superconductivity in K_3C_{60}, Phys. Rev. Lett. **130**, 146002 (2023). DOI

L. Mohtashemi, P. Westlund, D. G. Sahota, G. B. Lea, I. Bushfield, P. Mousavi, J. S. Dodge, Maximum-likelihood parameter estimation in terahertz time-domain spectroscopy, Opt. Express, **29**, 4912 (2021). (Included in OSA *Spotlight on Optics*) DOI

D. G. Sahota, R. Liang, M. Dion, P. Fournier, H. A. Dąbkowska, G. M. Luke, J. S. Dodge, Many-body recombination in photoexcited insulating cuprates, Phys. Rev. Research **1**, 033214 (2019). DOI

J. C. Petersen, A. D. Farahani, D. G. Sahota, R. Liang, J. S. Dodge, Transient terahertz photoconductivity of insulating cuprates, Phys. Rev. B **96**, 115133 (2017). DOI

N. R. Lee-Hone, J. S. Dodge, and D. M. Broun, Disorder and superfluid density in overdoped cuprate superconductors, Phys. Rev. B **96**, 024501 (2017). (Physical Review Editor's Suggestion) DOI

S. Patankar, J. P. Hinton, J. Griesmar, J. Orenstein, J. S. Dodge, X. Kou, L. Pan, K. L. Wang, A. J. Bestwick, E. J. Fox, D. Goldhaber-Gordon, J. Wang, and S.-C. Zhang, Resonant magneto-optic Kerr effect in the magnetic topological insulator Cr:$(Sb_xBi_{1-x})_2Te_3$, Phys. Rev. B **92**, 214440 (2015). DOI

J. Orenstein and J. S. Dodge, Terahertz time-domain spectroscopy of transient metallic and superconducting states, Phys. Rev. B **92**, 134507 (2015). (Physical Review Editor's Suggestion) DOI

G. Koster, L. Klein, W. Siemons, G. Rijnders, J. S. Dodge, C.-B. Eom, D. H. A. Blank, and M. R. Beasley, Structure, physical properties, and applications of $SrRuO_3$ thin films, Rev. Mod. Phys. **84**, 253 (2012). DOI

S. Savard, J.-F. Allard, M. Bernier, J. C. Petersen, J. S. Dodge, P. Fournier, and D. Morris, Photoexcited carrier relaxation dynamics and terahertz response of photoconductive antennas made on proton bombarded GaAs materials, J. Appl. Phys. **108**, 124507 (2010). DOI

P. Mousavi, F. Haran, D. Jez, F. Santosa, and J. S. Dodge, Simultaneous composition and thickness measurement of paper using terahertz time-domain spectroscopy, Appl. Opt. **48**, 6541 (2009). DOI

S. Kamal, D. M. Kim, C. B. Eom and J. S. Dodge, Terahertz-frequency carrier dynamics and spectral weight redistribution in the nearly magnetic metal $CaRuO_3$, Phys. Rev. B **74**, 165115 (2006). DOI

J. C. Petersen, M. D. Caswell, I. A. Sergienko, J. He, R. Jin, D. Mandrus, and J. S. Dodge, Nonlinear optical signatures of the tensor order in $Cd_2Re_2O_7$, Nat. Phys. **2**, 605 (2006). DOI

M. A. Gilmore, S. Kamal, D. M. Broun, and J. S. Dodge, Determination of electron-phonon interaction parameters from time-domain terahertz spectroscopy, Appl. Phys. Lett. **88**, 141910 (2006). DOI

A. B. Schumacher, J. S. Dodge, M. A. Carnahan, R. A. Kaindl, D. S. Chemla, and L. L. Miller, Parity-Forbidden Excitations of $Sr_2CuO_2Cl_2$ Revealed by Optical Third-Harmonic Spectroscopy, Phys. Rev. Lett. **87**, 127006 (2001). DOI

R. Lövenich, A. B. Schumacher, J. S. Dodge, D. S. Chemla, and L. L. Miller, Evidence of phonon mediated coupling between charge transfer and ligand field excitons in $Sr_2CuO_2Cl_2$, Phys. Rev. B **63**, 235104 (2001). DOI

J. S. Dodge, C. P. Weber, J. Corson, J. Orenstein, Z. Schlesinger, J. Reiner, and M. R. Beasley, Low-Frequency Crossover of the Fractional Power-Law Conductivity in $SrRuO_3$, Phys. Rev. Lett. **85**, 4392 (2000). DOI

L. Klein, J. S. Dodge, T. H. Geballe, M. R. Beasley, and A. Kapitulnik, Reply to: 'Resistive anomalies at ferromagnetic transitions revisited: the case of $SrRuO_3$', Phys. Rev. Lett. **84**, 2280 (2000). DOI

J. S. Dodge, A. B. Schumacher, J.-Y. Bigot, D. S. Chemla, N. Ingle, and M. R. Beasley, Time-Resolved Optical Observation of Spin-Wave Dynamics, Phys. Rev. Lett. **83**, 4650 (1999). DOI

J. S. Dodge, E. Kulatov, L. Klein, C. H. Ahn, J. W. Reiner, T. H. Geballe, M. R. Beasley, A. Kapitulnik, H. Ohta, Yu. Uspenskii, and S. Halilov, Temperature-dependent local exchange splitting in $SrRuO_3$, Phys. Rev. B **60**, R6987 (1999). DOI

A. F. Marshall, L. Klein, J. S. Dodge, C. H. Ahn, J. W. Reiner, L. Mieville, L. Antognazza, A. Kapitulnik, T. H. Geballe, and M. R. Beasley, Lorentz transmission electron microscope study of ferromagnetic domain walls in $SrRuO_3$: Statics, dynamics, and crystal structure correlation, J. Appl. Phys. **85**, 4131 (1999). DOI

L. Klein, J. S. Dodge, C. H Ahn, J. W. Reiner, L. Mieville, T. H. Geballe, M. R. Beasley, and A. Kapitulnik, Transport and magnetization in the badly metallic itinerant ferromagnet $SrRuO_3$, J. Phys.: Condens. Matter **8**, 10111 (1996). DOI

L. Klein, J. S. Dodge, C. H. Ahn, G. J. Snyder, T. H. Geballe, M. R. Beasley, and A. Kapitulnik, Anomalous spin scattering effects in the badly metallic itinerant ferromagnet $SrRuO_3$, Phys. Rev. Lett. **77**, 2774 (1996). DOI

J. S. Dodge, L. Klein, Paul. R. Johnson, M. M. Fejer and A. Kapitulnik, Symmetry and the magneto-optic response of the Sagnac interferometer, J. Appl. Phys. **79**, 6186 (1996). DOI

L. Klein, J. S. Dodge, T. H. Geballe, A. Kapitulnik, A. F. Marshall, L. Antognazza, and K. Char. Perpendicular magnetic anisotropy and strong magneto-optic properties of $SrRuO_3$ epitaxial films, Appl. Phys. Lett. **66**, 2427 (1995). DOI

J. S. Dodge, M. M. Fejer and A. Kapitulnik, Magneto-optic measurements with a Sagnac interferometer, Ferroelectrics **162**, 735 (1994). DOI

S. Spielman, J. S. Dodge, L. W. Lombardo, C. B. Eom, M. M. Fejer, T. H. Geballe, and A. Kapitulnik, Measurement of the spontaneous polar Kerr effect in $YBa_2Cu_3O_7$ and $Bi_2Sr_2CaCu_2O_8$, Phys. Rev. Lett. **68**, 3472 (1992). DOI

S. Spielman, J. S. Dodge, K. Fesler, L. W. Lombardo, M. M. Fejer, T. H. Geballe, and A. Kapitulnik, Test for non-reciprocal circular birefringence in $Bi_2Sr_2CaCu_2O_8$, Phys. Rev. B **45**, 3149 (1992). DOI

Preprints submitted for peer review

Leya Lopez, Derek G. Sahota, and J. Steven Dodge, Nonlinear photoconductivity in pump-probe spectroscopy. I. Optical coefficients, arXiv:2410.21496, submitted to Phys. Rev. B. DOI

D. M. Broun, Vivek Mishra, J. S. Dodge, and P. J. Hirschfeld, Beyond Homes scaling: disorder, the Planckian bound and a new universality, arXiv:2502.13351, submitted to Phys. Rev. X. DOI

Refereed conference proceedings

A. Noori, L. Mohtashemi, and J. Steven Dodge, Terahertz Spectroscopy of the Superconducting State of Titanium Nitride, in *2024 Photonics North (PN)*, Vancouver, Canada. DOI

J. Steven Dodge, Leya Lopez, and Derek G. Sahota, How Nonlinearity Distorts the Evidence for Photoinduced Superconductivity, in *2024 Photonics North (PN)*, Vancouver, Canada. DOI

J. Steven Dodge, Leya Lopez, and Derek G. Sahota, Status of the Spurious Evidence for Photoinduced Superconductivity, in *2023 48th International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz)*, Montreal, Canada. DOI

Leya Lopez, Derek G. Sahota, and J. Steven Dodge, Accounting for Nonlinear Photoconductivity in Time-Resolved Terahertz Spectroscopy, in *2023 48th International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz)*, Montreal, Canada. DOI

J. S. Dodge, L. Mohtashemi, P. Westlund, P. Mousavi, and D. G. Sahota, A maximum-likelihood analysis framework for terahertz time-domain spectroscopy, in *2020 45th International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz)*, Buffalo, USA. DOI

J. S. Dodge, L. Mohtashemi, F. Michael Bartram, Amir Farahani, Eric Karhu, and Theodore L. Monchesky, Test of Fermi-liquid theory in MnSi with terahertz conductivity measurements, in *2017 42nd International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz)*, Cancun, Mexico. DOI

J. S. Dodge, Payam Mousavi, Ian Bushfield, Stéphane Savard, David Jez, and Frank Haran, Paper Parameter Estimation Using Time-Domain Terahertz Spectroscopy, in *2014 International Symposium on Optomechatronic Technologies*, Seattle, USA. DOI

P. Mousavi, I. R. Bushfield, S. Savard, F. Haran, and J. S. Dodge, Paper Parameter Estimation Using Time-Domain Terahertz Spectroscopy, in *Conference on Lasers and Electro-Optics 2012*, OSA Technical Digest (online) (Optical Society of America, 2012), paper AW1H.6. DOI

J. S. Dodge, A. B. Schumacher, L. L. Miller, and D. S. Chemla, Time-resolved spectroscopy of the charge-transfer gap in $Sr_2CuO_2Cl_2$, in *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies*, OSA Technical Digest (CD) (Optical Society of America, 2008), paper QThC4.

J. S. Dodge, A. B. Schumacher, L. L. Miller, and D. S. Chemla, Time-resolved spectroscopy of the charge-transfer gap in $Sr_2CuO_2Cl_2$, in *Frontiers in Optics 2007/Laser Science XXIII/Organic Materials and Devices for Displays and Energy Conversion*, OSA Technical Digest (CD) (Optical Society of America, 2007), paper LThE5.

J. S. Dodge, S. Kamal, D. Sahota, and M. A. Gilmore, Metallic Electron-Boson Interaction Parameters Determined with Time-Domain Terahertz Spectroscopy, in *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies*, Technical Digest (CD) (Optical Society of America, 2006), paper CMCC4.

S. Kamal, J. S. Dodge, D. Kim, and C. B. Eom, Low Frequency Conductivity Scaling in $CaRuO_3$, in *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science and Photonic Applications Systems Technologies*, Technical Digest (CD) (Optical Society of America, 2005), paper QWC2.

J. S. Dodge, A. B. Schumacher, R. Lovenich, M. A. Carnahan, R. A. Kaindl, L. L. Miller, and D. S. Chemla, Linear and nonlinear optics of $Sr_2CuO_2Cl_2$, Physica B **312-313**, 909 (2002). International Conference on Strongly Correlated Electron Systems (SCES 2001), Invited. DOI

M. A. Carnahan, A. B. Schumacher, J. S. Dodge, R. A. Kaindl, D. S. Chemla, and L. L. Miller, Third harmonic generation at the charge transfer gap in $Sr_2CuO_2Cl_2$, in *Quantum Electronics and Laser Science Conference*, G. Agrawal, Y. Yamamoto, T. Norris, and J. Thomas, eds., OSA Technical Digest (Optical Society of America, 2001), paper QME3.

J. S. Dodge, A. B. Schumacher, J.-Y. Bigot, D. S. Chemla, N. Ingle, and M. R. Beasley, Time-resolved observation of magnon renormalization effects in Cr_2O_3, in *Quantum Electronics and Laser Science Conference*, P. Bucksbaum, R. Falcone, G. Agrawal, and Y. Yamamoto, eds., OSA Technical Digest (Optical Society of America, 1999), paper QThH1.

J. S. Dodge, J. Corson, R. Mallozzi, J. Orenstein, J. Reiner, and M. R. Beasley, Electron-magnon renormalization effects in $SrRuO_3$, in *Quantum Electronics and Laser Science Conference*, P. Bucksbaum, R. Falcone, G. Agrawal, and Y. Yamamoto, eds., OSA Technical Digest (Optical Society of America, 1999), paper QThG14.

J. S. Dodge, J. Corson, J. W. Reiner, M. R. Beasley, and J. Orenstein, Terahertz time-domain observation of scattering rate renormalization in $SrRuO_3$, Magnetoresistive Oxides and Related Materials, Proceedings of Symposium JJ, 1999 Fall Materials Research Society Meeting, M. Rzchowski, M. Kawasaki, A. J. Millis, M. Rajeswari, and S. von Molnár, ed.

H. Ohta, E. Kulatov, J. S. Dodge, Yu. Uspenskii, and S. Halilov, Optics and magneto-optics of $SrRuO_3$, Proceedings of Magneto-Optical Recording International Symposium '97, J. Magn. Soc. Jpn. **22**, Supplement S2, pp. 185–188 (1998). DOI

A. Kapitulnik, M. M. Fejer and J. S. Dodge, High-resolution magneto-optic measurements with a Sagnac interferometer, J. Appl. Phys. **75**, 6872 (1994). 38th Annual Conference on Magnetism and Magnetic Materials (MMM 93), Invited. DOI

S. Doniach, A. Kapitulnik, P. Frank, M. M. Fejer, S. Spielman, and J. S. Dodge, Time reversal symmetry breaking in biological molecules, in *Physical Phenomena at High Magnetic Fields: Proceedings*, E. Manousakis, et al., ed. (Addison-Wesley, Redwood City, 1992), pp. 452–7.

Other publications

W. Scott Hopkins et al., Establishing a Canadian free-electron laser research program, Can. J. Phys. **97**, vii–x (2019). (Editorial) DOI

J. S. Dodge, Lasers expose hidden electronic order, Science **356**, 246 (2017). (Invited Perspective) DOI

SOFTWARE AND CODE

Trainees in my research group are underlined.

J. Steven Dodge, Data analysis with Python (Version 0.2.2), Zenodo (2023). DOI GitHub

J. Steven Dodge, Laleh Mohtashemi, Paul Westlund, Derek G. Sahota, Graham B. Lea, Ian Bushfield and Payam Mousavi, MATLAB functions for maximum-likelihood parameter estimation in terahertz time-domain spectroscopy (Version 1.0.2), Zenodo (2021). DOI GitHub

PATENTS

Trainees in my research group are underlined.

Payam Mousavi, Steven Dodge, Frank Martin Haran, Stephane Savard, David Jez, and Stuart James Heath, Continuous Referencing for Increasing Measurement Precision in Time-Domain Spectroscopy, US Patent 8,378,304, filed August 24, 2010, and issued February 19, 2013. USPTO

Frank Martin Haran, Payam Mousavi, David Jez and J. Steven Dodge, Time domain spectroscopy (TDS)-based method and system for obtaining coincident sheet material parameters, US Patent 8,187,424, filed August 1, 2008, and issued May 29 2012. USPTO

INVITED RESEARCH PRESENTATIONS

International conferences

Gordon Research Conference on Superconductivity. Les Diablerets, Switzerland, May 2025.

XII Ultrafast Dynamics, Metastability and Ultrafast Bandgap Photonics Conference. Tucson, AZ, September 2024.

Workshop on Dynamic Quantum Matter. Beijing, China, August 2024.

Conference of Condensed Matter Physics 2024. Liyiang, China, August 2024.

March Meeting of the American Physical Society. Minneapolis, MN, March 2023.

Institute for Complex Adaptive Matter (ICAM) Workshop on Non-Equilibrium Phenomena in Superconductors and Related Materials, held as part of the 13th International Conference on Materials and Mechanisms of Superconductivity & High Temperature Superconductors (M^2S). Vancouver, BC, July 2022.

Quantum Materials Program, Canadian Institute for Advanced Research (CIFAR), Spring Meeting. Vancouver, BC, April 2019.

Stanford & SLAC Ultrafast Materials Science Workshop. Stanford, CA, May 2017. (Session chair overview)

Quantum Materials Program, Canadian Institute for Advanced Research (CIFAR), 2017 Summer School. Vancouver, BC, May 2017.

Oxide-based Materials and Devices VIII (SPIE). San Francisco, CA, January 2017.

International Symposium on Optomechatronic Technologies. Seattle, WA, November 2014.

Applied Industrial Optics: Spectroscopy, Imaging, and Metrology (AIO). Seattle, WA, July 2014.

Quantum Materials Program, Canadian Institute for Advanced Research (CIFAR), 2011 Summer School. Vancouver, BC, May 2011.

Quantum Materials Program, Canadian Institute for Advanced Research (CIFAR), Fall Meeting. Carling Lake, QC, November 2007.

March Meeting of the American Physical Society. Denver, CO, March 2007.

Optical Society of America Laser Science Conference. Orlando, FL, September 2002.

KITP Program on Realistic Theories of Correlated Electron Materials. Santa Barbara, CA, August 2002.

Strongly Correlated Electron Systems 2001. Ann Arbor, MI, August 2001.

Aspen Center for Physics, Summer Workshop on Emergent Phenomena in Correlated Electron Systems. Aspen, CO, July 2001.

Superconductivity Program, Canadian Institute for Advanced Research (CIAR). QC, May 2001.

Materials Research Society, Fall Meeting. Boston, MA, November 2000.

Gordon Conference on Correlated Electron Systems. Plymouth, NH, June 2000.

March Meeting of the American Physical Society. Minneapolis, MN, March 2000.

American Chemical Society Fall National Meeting. New Orleans, LA, August 1999.

Quantum Electronics and Laser Science Conference. Baltimore, MD, May 1999.

International Conference on Magnetoelectric Phenomena in Crystals. Ascona, Switzerland, September 1993.

National conferences

Advanced Laser Light Source (ALLS) Infrastructure Workshop. Montreal, QC, October 2024.

Quantum Days, Online, January 2023.

Advanced Laser Light Source Workshop. Online, March 2021.

Quantum Materials Canada, Virtual Seminar Series. Online, December 2020.

TRIUMF Accelerator Science Workshop. Vancouver, BC, July 2017.

Canadian Association of Physicists (CAP) Congress. Sudbury, ON, June 2014.

Canadian Association of Physicists (CAP) Congress. Calgary, AB, June 2012.

Canadian Association of Physicists (CAP) Congress. Saskatoon, SK, June 2007.

Regional conferences

Spin and Charge at the Nanoscale. Burnaby, BC, July 2007.

Northwest Section Conference of the American Physical Society. Tacoma, WA, May 2006.

Pacific Centre for Materials and Microstructures (PCAMM), Annual Meeting. Vancouver, BC, December 2005.

Northwest Section Conference of the American Physical Society. Banff, AB, May 2002.

Colloquia and seminars

Stanford University, Condensed Matter Seminar. Stanford, CA, June 2025 (scheduled).

Université Paris Cité, Condensed Matter Seminar. Paris, France, May 2025.

Simon Fraser University, Colloquium. Burnaby, BC, February 2025.

University of British Columbia, Condensed Matter Seminar. Vancouver, BC, January 2025.

University of California, Berkeley, Condensed Matter Seminar. Berkeley, CA, November 2023.

Misty West, Special Seminar. Vancouver, BC, July 2019.

Stanford University, Condensed Matter Seminar. Stanford, CA, April 2014.

Université de Montréal, Condensed Matter Seminar. Montreal, QC, January 2013.

Université de Sherbrooke, Condensed Matter Seminar. Sherbrooke, QC, January 2013.

McGill University, Condensed Matter Seminar. Montreal, QC, October 2012.

University of Alberta, Condensed Matter Seminar. Alberta, AB, July 2012.

Oak Ridge National Laboratory Seminar. Oak Ridge, TN, May 2007.

University of British Columbia, Condensed Matter Seminar. Vancouver, BC, March 2007.

Honeywell Automation & Control Solutions Industry Solutions, Pulp, Paper and Printing, Special Seminar. North Vancouver, BC, November 2006.

Stanford University, Condensed Matter Seminar. Stanford, CA, May 2006.

University of Washington Condensed Matter and Atomic Physics Seminar. Seattle, WA, April 2006.

University of British Columbia, Physical Chemistry Seminar. Vancouver, BC, March 2006.

University of Texas at Austin, Condensed Matter Seminar. Austin, TX, February 2000.

University of Florida, Condensed Matter Seminar. Gainesville, FL, February 2000.

Georgetown University, Physics Seminar. Washington, DC, February 2000.

University of Cincinnati, Condensed Matter Seminar. Cincinnati, OH, February 2000.

Rice University, Condensed Matter Seminar. Houston, TX, February 2000.

Simon Fraser University, Physics Colloquium. Burnaby, BC, January 2000.

Williams College, Physics Seminar. Williamstown, MA, January 2000.

University of California, Santa Cruz, Condensed Matter Seminar. Santa Cruz, CA, May 1999.

John Hopkins University, Condensed Matter Seminar. Baltimore, MD, December 1998.

University of California, San Diego, Condensed Matter Seminar. San Diego, MD, September 1998.

Group presentations

Invited panel member, Social Justice in STEM, Canadian Association of Physicists Congress, Fredericton, NB, June 2023.

Invited participant, NSERC workshop on highly qualified personnel, Vancouver, BC, July 2002.

Media interviews

Emily Conover, "Can Light Spark Superconductivity? A New Study Reignites Debate," ScienceNews, July 19, 2024. URL

Public outreach presentations

SFU Art Gallery, Fabricating Meaning, a discussion with Eldon Yellowhorn on the work of Ann Beam and Carl Beam, April 2019.

SFU Art Gallery, Unpacking Art, a presentation of scientific ideas related to Evan Lee's *Stain II*, December 2017.

SFU Art Gallery, Geometry of Knowing, panel discussion on the physics, chemistry and politics of CO_2 with Kika Thorne, Am Johal, and Vance Williams, March 2015.

Centre for Sustainable Food Systems, UBC Farm, Clean Energy from Fusion, panel discussion with Meeru Dhalwala, Howard Trottier, and Michel Laberge, December 2014

An Exploration of Light, appearance in a short documentary film by Rami Katz, 2013.

RESEARCH SUPERVISION

Postdoctoral researchers

Yongki Kim, 2012–2016.
Subsequent position: Advanced Product Developer at Christie Digital Systems, Inc..

Stéphane Savard, 2009–2010.
Subsequent position: Research Scientist at Honeywell Process Solutions.

Saeid Kamal, 2002–2006.
Subsequent position: LASIR Laboratory Manager, University of British Columbia, Department of Chemistry.

PhD students

Alireza Noori (NSERC CREATE Program in Quantum Computing), 2024–present.

Leya Lopez, 2021–present.

Laleh Mohtashemi, 2014–2020. Thesis: "Test of Fermi liquid theory with terahertz conductivity measurements of MnSi." URL
Subsequent position: Optical engineer, Meta Corporation.

Derek Sahota (NSERC Canada Graduate Scholarship), 2011–2019. Thesis: "Photoexcitation spectroscopy of insulating cuprates." URL
Subsequent position: Advocate, Teaching Support Staff Union, Simon Fraser University.

Payam Mousavi (NSERC Industrial Graduate Scholarship), 2008–2014. Thesis: "Material composition analysis using time-domain terahertz spectroscopy." URL
Subsequent position: Research and Technology Advisor, Canada Revenue Agency.

Amir Farahani, 2005–2011. Thesis: "Terahertz conductivity measurements on chromium-vanadium alloys and photoexcited insulating cuprates." URL
Subsequent position: Lecturer, University of Saskatchewan, Department of Physics and Engineering Physics.

Jesse Petersen, 2003–2008. Thesis: "Nonlinear-optical and terahertz investigations of complex oxides." URL
Subsequent position: postdoctoral researcher with Andrea Cavalleri, Oxford University.

MSc students

Alireza Noori (NSERC CREATE Program in Quantum Computing), 2023–2024 (transferred to PhD).
Subsequent position: PhD student with JSD, Simon Fraser University.

Leya Lopez, 2017–2020. Thesis: "Optical Second Harmonic Generation in WTe_2." URL
Subsequent position: PhD student with JSD, Simon Fraser University.

Rohan Abraham, 2012–2014. Thesis: "Terahertz spectroscopy of semiconductor nanostructures." URL
Subsequent position: PhD student with Stephanie Simmons, Simon Fraser University.

Laleh Mohtashemi, 2012–2013. Thesis: "Terahertz conductivity measurements of MnSi." URL
Subsequent position: PhD student with JSD, Simon Fraser University.

Ian Bushfield, 2010–2011 (NSERC Industrial Graduate Scholarship). Thesis: "A method for determining paper processing parameters using terahertz spectroscopy." URL
Subsequent position: Executive director, BC Humanist Association.

Graham Lea, 2007–2010. Thesis: "Metallic scattering lifetime measurements with terahertz time-domain spectroscopy." URL
Subsequent position: Medical student, University of British Columbia.

Tony Gilmore, 2002–2004. Thesis: "Terahertz measurement of the quasiparticle mass renormalization in lead and chromium." URL
Subsequent position: Yield engineer, Intel.

Carl Kübler, 2001–2002. Thesis: "Creation and characterization of a terahertz time domain spectrometer."
Subsequent position: PhD student with Alfred Leitenstorfer, University of Konstanz.

Visiting graduate students

David Dawson, PhD student at the Max Planck Institute for Solid State Research, Stuttgart, November 2019.

Gideok Kim, PhD student at the Max Planck Institute for Solid State Research, Stuttgart, November 2019.

Mehmet Neblioglu, PhD student at the University of Stuttgart, October–November 2018.

Honours BSc thesis students

Paul Westlund, 2017–2018. Thesis: "A Maximum-Likelihood Approach to Terahertz Time-Domain Spectroscopy Analysis."

Michael Bartrum, 2015–2016. Thesis: "Experimental Tests of Fermi Liquid Theory with Terahertz Conductivity Measurements of MnSi."

Derek Sahota, 2007. Thesis: "Statistical data analysis techniques for time-domain terahertz spectroscopy."

David Yang, 2006. Thesis: "Design and characterization of low-noise detectors for time-domain terahertz spectroscopy."

Greg MacDougall, 2001–2002. Thesis: "Relaxation time and conductivity in thin metallic films."

Undergraduate research students

Ewan Thomas (MITACS Globalink), University of Durham, Summer 2024.

Alireza Noori (SFU VP USRA), SFU, Summer 2023.

Jonathan Posada (MITACS Globalink), Universidad de Antioquia, Summer 2022.

Santiago Higuera Quintero (MITACS Globalink), Universidad de los Andes, Summer 2022.

Florian Baer (SFU VP USRA), SFU, Summer 2020.

Paul Westlund (NSERC USRA), SFU, Summer 2017.

Michael Bartram (NSERC USRA), SFU, Summer 2015.

Calvin Lobo (co-op), McMaster University, Summer/Fall 2012.

Kayla McLean (NSERC USRA), University of British Columbia, Summer 2012.

Anthony Steigvilas, University of the Fraser Valley, Summer 2011.

Keelan Watkins (NSERC USRA), SFU, Summer 2009.

Dana Nielsen (NSERC USRA), University of British Columbia, Summer 2007.

Alex Chen (NSERC USRA), University of British Columbia, Summer 2007.

Michael Caswell (NSERC USRA), SFU, Summer 2005.

Philip Johnson, SFU, Summer 2004.

Alexander deSouza (co-op), University of Waterloo, Summer 2004.

Alexander van Engelen, SFU, Summer 2003.

Alex Kwan (NSERC USRA in Summer 2003), SFU, Fall 2002–Summer 2003.

Erin Chapple (NSERC USRA in Summer 2001), SFU, Summer 2001–Spring 2002.

Jeff Stollery (NSERC USRA), SFU, Summer 2001.

SERVICE ACTIVITIES

Scientific leadership

Member, Research Advisory Committee, Canadian Free Electron Laser, March 2024–present.

Faculty mentor, Canadian Institute for Advanced Research (CIFAR) Azrieli Global Scholar Program, 2016–2018.

Seminar and conference organization

Member, Program Committee, Conference on Strongly Correlated Electron Systems 2025 (SCES 2025), June 2024–July 2025.

Symposium organizer, "Nonequilibrium phenomena in superconductors," APS March Meeting, 2024 (Minneapolis), August 2023–October 2023.

Member, Program Committee, Ultrafast from Coast to Coast, Seminars of the Canadian Ultrafast Community, April 2021–October 2022.

Member, Organizing Committee, Institute for Complex Adaptive Matter (ICAM) Workshop on Non-Equilibrium Phenomena in Superconductors and Related Materials, December 2021–July 2022.

Member, Program Committee, Quantum Materials Canada 2022, July 2021–May 2022.

Member, Program Committee, Quantum Materials Canada 2021 (online due to COVID; originally scheduled for 2020), July 2019–June 2021.

Organizer, Photonics Symposium for the 2019 CAP Congress, Canadian Association of Physicists, November 2018–June 2019.

Organizer, presentation by visiting author Lawrence Weschler on "Art and Science As Parallel and Divergent Ways of Knowing," followed by a panel discussion with Vance Williams (Chemistry) and Emily O'Brien (History, Institute for the Humanities), and Mark Winston (Biology, Centre for Dialogue). Sponsored by the Faculty of Science with additional support from the Faculty of Arts and Social Sciences; the Faculty of Communication, Art, and Technology; the Institute for the Humanities; and the Morris J. Wosk Centre for Dialogue. May 2019–October 2019.

Member, Technical Program Committee, International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz), May 2016–August 2017.

Member, Program Committee, Low Energy Electrodynamics in Solids, 2008 (Vancouver), April 2007–July 2008.

Symposium organizer, "Phonons and magnetic frustration in pyrochlores," APS March Meeting, 2007 (Denver), August 2006 - October 2006.

University service

Member, SFU Faculty of Science EDI Advisory Circle, December 2023–present.

Facilitator, SFU Faculty of Science faculty-wide discussion of gender bias and discrimination in science, May 2021.

Member, Steering Committee for the Laboratory for Advanced Spectroscopy and Imaging Research (LASIR), April 2004–December 2016.

Member, SFU Chemistry Tenure and Promotion Committee, May 2019–April 2020.

Member, SFU Faculty of Science Graduate Program Committee, January 2009–August 2013.

Member, Board of Directors of the SFU Childcare Society, July 2008–August 2010.

Co-Chair, SFU Childcare Society Executive Director Performance Review Committee, November 2007–July 2008.

Member, SFU Laser Safety Committee, November 2000–December 2005.

Member, SFU Faculty of Science Safety Committee, October 2001–July 2002.

Departmental service

Leadership roles

Faculty Coordinator, SFU Physics Inclusion, Diversity, and Equity Alliance (IDEA), September 2021–Summer 2024.

Organizer, SFU Physics Climate Assessment, August 2021–November 2022. DOI

Chair, Graduate Program Committee, January 2009–August 2013.

PROFESSIONAL AFFILIATIONS

Canadian Association of Physicists

American Physical Society

Digital Research Alliance of Canada
Quantum BC
National Society of Black Physicists
Member of the LGBT+ Physicists Ally List
Individual Signatory to the Declaration on Research Assessment (DORA)