

Jason N. Hancock

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POSITIONS HELD

Associate Professor, University of Connecticut, August 2018-present
Visiting Scholar, Los Alamos National Laboratory, July-August 2015
Assistant Professor, University of Connecticut, August 2012-August 2018
Maître assistant, Université de Genève, December 2008-April 2012
Postdoctoral Fellow, Stanford University, May 2005-September 2008
Graduate Research Assistant, University of California Santa Cruz, 2000-2005
Graduate Teaching Assistant, University of California Santa Cruz, 1999-2000
Undergraduate Teaching Assistant, Georgia Institute of Technology, 1996-1998

EDUCATION

University of California Santa Cruz: Ph.D., Physics, 2005 — M.S. Physics, 2000
Georgia Institute of Technology — B.S. 1998, with Highest Honors

GRADUATE SPONSORS AND MENTORS

PhD advisor:

Zack Schlesinger, Professor, University of California Santa Cruz

Postdoctoral advisors:

Martin Greven, Professor, Stanford University (now University of Minnesota),
Dirk van der Marel, Professor, Université de Genève, Geneva, Switzerland

HONORS AND DISTINCTIONS

National Academies Education Mentor in the Sciences 2016-2017
Los Alamos Institute for Materials Science Visiting Scholar 2015
National Academies Education Fellow in the Sciences 2015-2016
Keynote speaker, Amity High School Science Research Program Annual Symposium, Amity, Connecticut, May 16, 2014
Member, National User's Facility Organization, 2013-present
Life Member, American Physical Society, 2000-present
Physics Department Service Award, UC Santa Cruz, June 2005
Founder, UC Santa Cruz Physics Journal Club (w/Trieu Mai) Spring 2004
University of California Regents PhD Fellowship, 1998-1999
Passed qualifying examinations upon arrival, UC Santa Cruz, August 1998
Graduated with Highest Honors (i.e. *summa cum laude*), Georgia Tech, 1998
Member, Golden Key National Honor Society, 1997-1998

Dean's List, Georgia Tech, 1995-1998

Dean's List, Georgia Southern University, 1995

SCIENCE AND PUBLIC SERVICE

Research-related service

Local organizing committee, International Conference on Low Energy

Electrodynamics of Solids (LEES2020) July 16-21, 2020, Miami, Florida

International program committee, 11th International Conference on Inelastic

X-ray Scattering (IXS2019), June 23-28, 2019

Funding proposal reviewer, Department of Energy, Basic Energy Sciences,

1-4 proposals/year, 2016-present

Co-organizer, Dynamic Quantum Matter Workshop, Newport, Rhode Island,

June 18-19, 2018

Panelist, National Synchrotron Light Source-II Proposal Review Panel, Soft X-ray

and Photoelectrons, Brookhaven National Laboratory, May 2018-present

Member at Large (elected), Executive Committee of the American Physical

Society New England Section, January 2018-December 2020 term

Chair, Advanced Photon Source Beamtime Proposal Review Panel, Inelastic

X-ray Scattering, Argonne National Laboratory, January 2017-present

Site Reviewer, Basic Energy Science Advisory Committee Review of Inelastic

X-ray & Nuclear Resonant Scattering beam lines, Advanced Photon

Source, Argonne National Laboratory, November 7-8 2016

Panelist, Advanced Photon Source Beamtime Proposal Review Panel, Inelastic

X-ray Scattering, Argonne National Laboratory, January 2015-2017 (chair)

Member, beamline advisory team for soft inelastic X-ray (SIX) beamline at the

National Synchrotron Light Source-II at Brookhaven National Laboratory

Beamtime proposal reviewer, *Advanced Photon Source, Stanford Synchrotron*

Radiation Laboratory and Canadian Light Source

Science Advisory Committee for Inelastic X-ray and Nuclear Resonant Scatter-

ing, Advanced Photon Source, Argonne National Laboratory, 2009-present

Search committee for 2nd scientist position at the SIX beam line, NSLS-II,

Brookhaven National Laboratory, Spring 2014

Funding panel reviewer, MIT-Skoltech Initiative, Skolkovo, Russia, April 2013

Co-organizer, *Electronic and magnetic structure of ferro/nictide high-Tc supercon-*

ductors and related compounds, European Materials Research Society sympo-

sium, Warsaw, Poland, September 19-21, 2011

Co-author of scientific case for inelastic X-ray scattering upgrade at the

Advanced Photon Source, Argonne National Laboratory, December 2010

Presenter, Department of Energy Review, Advanced Photon Source, 2007

Referee for *Physical Review Letters*, *Physical Review B*, *Europhysics Letters*,

Advanced Materials, *Journal of Physics: Condensed Matter*, *Superconductor Sci-*

ence and Technology, *Journal of the American Ceramics Society*, *The Physics*

Teacher

Educational service activities

Research Advisor to Connor Occhialini, 2018 Finalist for the LeRoy Apker Award for best undergraduate research by the American Physical Society (4/yr)

Flinn Scientific Research Council, aids in innovation and development for science educational products, April 2018- present

Facilitator, National Academies Summer Institute on Science Education, June 2016

Judge, UConn Physics Graduate Student Association Poster Competition 2015, 2016, 2017

Judge, Connecticut State Science Fair, Quinnipiac University, 2013, 2014

PhD defense committee, Turgut Yilmaz, UConn, August 2016

Presenter, Dean's Conference on *New Ideas in Science Education* at UConn, April 24, 2015

Keynote speaker, Amity High School Science Research Program Annual Symposium, Amity, Connecticut, May 16, 2014

Mentor to high school student recipient of Connecticut Board of Directors Award, Connecticut State Science Fair, January-March 2014

Comité (PhD defense committee), Seyed Iman Mirzaei, University of Geneva, August 2013

Established UCSC Physics Journal Club (with Trieu T. Mai), Spring 2004

Tutor in the MESA program Cabrillo College, Aptos, CA, 1998-99

Recommendation letter writer for students from *University of Connecticut*, *University of Geneva*, and *Stanford University*

University of Connecticut

Member, Teaching and Active Learning Space Committee, June 2018-present

Chair, search committee for Research Scientist Position for aberration-corrected transmission electron microscopy, TechPark, UConn 2018

Member, search committee for Research Scientist Position for X-ray characterization, TechPark, UConn 2018

Facilitator, Charles Reynolds Distinguished Lecture Series, 2015 cycle-present

Member, UConn Physics Advisory Committee, May 2017-present

Chair, UConn Physics External Relations Committee, May 2017-present

Member, UConn Office of Undergraduate Research SURF Award Review Panel, 2017 cycle

Member, UConn Physics Course and Curriculum Committee, Oct. 2016-present

Member, UConn Physics Teaching Laboratory Manager Search Committee, AY 2016-2017

Member, UConn Physics Teaching Laboratory Technician Search Committee, AY 2016-2017

Member, UConn Physics Space Committee, February 2016-present
Reviewer, IDEA Grant Program, University of Connecticut, 2015
Member, UConn Physics Shop and Safety Committee, Fall 2013-present
Facilitator, UConn Physics Condensed Matter Seminar Committee,
Fall 2012-present
Member, UConn Physics AMO/CMP Faculty Search Committee, AY 2014-2015

National Service

Volunteer, United States Presidential Inaugural Ball, Washington D. C.
January 20, 2009
Volunteer, Democratic National Convention, Denver, Colorado,
August 23-29, 2008

COURSES TAUGHT (as instructor of record)

University of Connecticut

Physics 1501Q Physics for Engineers I - Fall 2012, Fall 2013, Fall 2014
Physics 1601Q Fundamentals of Physics I - Spring 2014, Spring 2015, Spring 2016,
Spring 2018
Physics 2501W Advanced Laboratory - Fall 2015, Fall 2016, Fall 2017
Physics 4210/6201 Fundamentals of Solid State Physics I, Fall 2018

University of Geneva

Travaux Pratiques Intermédiaires, 2^{ème} année, Section de Physique,
Faculté des Sciences, University of Geneva, Fall 2009-Fall 2011

RESEARCH SUPPORT

Funding, 2012-present

PI: **Jason Hancock**, *Exploring Light/Sound Energy Conversion Using Negative Thermal Expansion Materials*, UConn Scholarship Facilitation Award, \$2000 from 7/1/2016 to 6/30/2017
PI: **Jason Hancock**, co-PI: Maxim Dzero, *RIXS investigations of correlated and topological phases in f-electron materials*, Department of Energy-Basic Energy Sciences, \$430,195 from 8/15/2016 to 8/14/2019
PI: Pamir Alpay, co-PIs: Rainer Hebert, **Jason Hancock**, *Computational Resources for Materials Genomics and Advanced Manufacturing Modeling*, UConn Provost Academic Plan Funds, \$100,000 from 6/7/2016 to 6/6/2017
PI: **Jason N. Hancock**, *Travel award for graduate and undergraduate research at Los Alamos*, Los Alamos Institute for Materials Science, \$5000 from 6/4/2016 to 6/11/2017
PI: **Jason Hancock**, *Lattice dynamics of strong negative thermal expansion systems*, National Science Foundation, DMR-1506825, \$381,979, from 5/1/2015 to 10/30/2018

PI: Diego Valente, Co-PIs: **Jason Hancock**, Amit Savkar, Heather Osborne, *Integrating targeted assessment efforts across Physics and Mathematics*, UConn College of Liberal Arts and Sciences, \$81,446, from 1/1/2016 to 8/31/2017

PI: Rainer Hebert, co-PIs: **Jason N. Hancock** and Pamir Alpay, *Computational and Experimental Studies of Laser-Powder interactions for Additive Manufacturing*, renewed, \$67,000, 1/1/18-12/31/2018

PI: Rainer Hebert, co-PIs: **Jason N. Hancock** and Pamir Alpay, *Computational and Experimental Studies of Laser-Powder interactions for Additive Manufacturing*, renewed, \$81,100, 1/1/17-12/31/2017

PI: Rainer Hebert, co-PIs: **Jason N. Hancock**, Leila Ladani and Pamir Alpay, *Computational and Experimental Studies of Laser-Powder interactions for Additive Manufacturing*, renewed, \$126,000, 1/1/16-12/31/2016

PI: Rainer Hebert, co-PIs: **Jason N. Hancock**, Avinash Dongare, Leila Ladani, Jafir Razmi, and Pamir Alpay, *Computational and Experimental Studies of Laser-Powder interactions for Additive Manufacturing*, funded, \$283,311, 8/23/14-12/31/2015

Four-year total: >\$1.4M (>\$1.2M external sources)

PUBLICITY

Kim Krieger, *Thermal funkiness: explaining the unexpected*, UConn Today, August 9, 2017

UConn Institute for Materials Science Newsletter, January 2016

Nonresonant inelastic X-ray research featured in Spectroscopy Now, October 15, 2015

Kim Krieger, *Caution, shrinks when warm*, UConn Today, October 6, 2015

Faculty Spotlight, University of Connecticut OVPR May 15, 2015 (grant news)

Resonant inelastic X-ray research featured in UConn Today with Brookhaven and Argonne National Laboratory Science highlights, March 2015

Tim Miller, *Physicists solve low-temperature magnetic mystery*, UConn Today, March 26, 2015

Cordelia Sealy, *Secret of heat contraction* Materials Today, January 2005

David Lindley, *Physical Review Focus, Bake, Shake, and Shrink*, 14, 21, November 22, 2004

Tim Stephens, *Unusual material that contracts when heated is giving up its secrets to physicists*, Science Daily, November 19, 2004

PUBLICATIONS (click for hyperlink)

Peer-reviewed journal articles

- Erin B. Curry, Sanjubala Sahoo, Rainer Hebert, Pamir Alpay, Jason N. Hancock, *Optical properties of additively manufactured superalloys* (in preparation, 2018)

- Sahan U. Handunkanda, Erin B. Curry, Vladimir Voronov, Jason N. Hancock, *Infrared charge dynamics and phonon spectra of single-crystal negative thermal expansion material ScF₃* (in preparation, 2018)
- Donal Sheets, Vincent Flynn, Jungho Kim, Mary Upton, Diego Casa, Thomas Gog, Zach Fisk, Priscilla Rosa, Maxim Dzero, Jian-Xin Zhu, Ignace Jarrige, and Jason Hancock, *Exploring itinerant states in the divalent hexaborides using rare-earth L edge resonant inelastic X-ray scattering* (in preparation, 2018)
- Connor A. Occhialini, Sahan Handunkanda, Gian Guzmán-Verri, and Jason N. Hancock, *Negative thermal expansion near the precipice of structural stability in open perovskites*, *Frontiers in Chemistry: Physical Chemistry and Chemical Physics* (invited, in review 2018)
- Jason N. Hancock, Maxim Dzero, Marco Guarise, Marco Grioni, John Sarrao, Thorsten Schmitt, *Kondo lattice excitation observed using resonant inelastic X-ray scattering at the Yb M₅ edge*, [Phys. Rev. B **98**, 075158 \(2018\)](#)
- Connor A. Occhialini, Sahan U. Handunkanda, Ayman Said, Sudhir Trivedi, Gian G. Guzman-Verri, Jason N. Hancock, *Negative thermal expansion near two structural quantum phase transitions*, [Physical Review Materials **1**, 070603R \(2017\)](#)
- Connor A. Occhialini, Sahan U. Handunkanda, Erin B. Curry, Jason N. Hancock, *Classical, quantum, and thermodynamics of a model exhibiting structural negative thermal expansion*, [Physical Review B, **95**, 094106 \(2017\)](#)
- Sahan U. Handunkanda, Connor A. Occhialini, Ayman H. Said, and Jason N. Hancock, *Two-dimensional nanoscale correlations in the strong negative thermal expansion material ScF₃*, [Physical Review B, **94**, 214102 \(2016\)](#)
- Jason N. Hancock and Ignace Jarrige, *The promise of resonant inelastic X-ray scattering for modern Kondo physics*, [Journal of Magnetism and Magnetic Materials, **400**, 41-46 \(2016\)](#)
- Sahan Handunkanda, Erin Curry, Vladimir Voronov, Ayman Said, Gian Guzman-Verri, Richard Brierley, Peter Littlewood, Jason N. Hancock, *Large isotropic negative thermal expansion above a quantum phase transition*, [Physical Review B **92**, 134101 \(2015\)](#)
- I. Jarrige, A. Kotani, H. Yamaoka, N. Tsujii, K. Ishii, M. Upton, D. Casa, J. Kim, T. Gog, and Jason N. Hancock, *Kondo interactions from band reconstruction in YbInCu₄*, [Physical Review Letters, **114**, 126401 \(2015\)](#)
- B. Barbiellini, J. N. Hancock, C. Monney, Y. Joly, G. Ghiringhelli, L. Braicovich, T. Schmitt, *Inelastic X-ray scattering from valence electrons*

- near absorption edges of FeTe and TiSe₂, [Physical Review B, 89, 235138 \(2014\)](#)
- Julien Levallois, Piotr Chudziński, Jason N. Hancock, Alexey B. Kuzmenko, and Dirk van der Marel, *Magnetoplasmon resonances in polycrystalline bismuth as seen via time-domain terahertz spectroscopy*, [Phys. Rev. B 89, 155123 \(2014\)](#)
 - S. I. Mirzaei, D. Stricker, J. N. Hancock, C. Berthod, A. Georges, E. van Heumen, M. K. Chan, X. Zhao, Y. Li, M. Greven, N. Barišić, D. van der Marel, *Evidence for a Fermi liquid in the pseudogap phase of high-T_c cuprates*, [Proc. Nat. Acad. Sci. 110, 5774 \(2013\)](#)
 - R. Comin, G. Levy, B. Ludbrook, Z.-H. Zhu, C.N. Veenstra, J.A. Rosen, Yogesh Singh, P. Gegenwart, D. Stricker, J. N. Hancock, D. van der Marel, I.S. Elfimov, A. Damascelli, *Na₂IrO₃ as a Novel Relativistic Mott insulator with a 350 meV gap*, [Physical Review Letters, 109, 266406 \(2012\)](#)
 - Dirk van der Marel and Jason N. Hancock, *Prone to pair*, [Physics, 4, 89 \(2011\)](#)
 - Jason N. Hancock, J. L. M. van Mechelen, Alexey B. Kuzmenko, Dirk van der Marel, C. Brüne, E. G. Novik, G. V. Astakhov, H. Buhmann, Laurens Molenkamp, *Surface state charge dynamics of a high-mobility three dimensional topological insulator*, [Physical Review Letters, 107, 136803 \(2011\)](#)
 - Marco Guarise, B. Dalla Piazza, Marco Moretti Sala, Giacomo Ghiringhelli, Lucio Braicovich, Helmuth Berger, Jason N. Hancock, Dirk van der Marel, Thorsten Schmitt, Victor N. Strocov, Luuk J. P. Ament, Joroen van den Brink, P.-H. Lin, P. Xu, Henrik M. Rønnow, Marco Grioni. *Measurement of Magnetic Excitations in the Two-Dimensional Antiferromagnetic Sr₂CuO₂Cl₂ Insulator Using Resonant X-Ray Scattering: Evidence for Extended Interactions*, [Physical Review Letters 105, 157006 \(2010\)](#)
 - Cheng-chien Chen, Brian Moritz, François Vernay, Jason N. Hancock, Steven Johnston, Guillaume Chabot-Couture, Martin Greven, Ilya Elfimov, George Sawatzky, Tom Devereaux. *Unraveling the Nature of Charge Excitations in La₂CuO₄ with Momentum-Resolved Cu K-edge Resonant Inelastic X-ray Scattering*, [Physical Review Letters, 105, 177401 \(2010\)](#)
 - Jason N. Hancock, Romain Viennois, Dirk van der Marel, Henrik Rønnow, Marco Guarise, P.- H. Lin, Marco Grioni, Marco Moretti Sala, Giacomo Ghiringhelli, Justina Schlappa, Thorsten Schmitt, *Evidence for core-hole mediated inelastic x-ray scattering from metallic Fe_{1.087}Te*, [Physical Review B 82, 020513\(R\) \(2010\)](#)

- Guillaume Chabot-Couture, Jason N. Hancock, Patrick K. Mang, Diego Casa, Thomas Gog, Martin Greven.
Polarization dependence and symmetry analysis in indirect K-edge RIXS, [Physical Review B 82, 035113 \(2010\)](#)
- Jason N. Hancock, Seyed Mirzaei, Jack Gillett, Suchitra Sebastian, Romain Viennois, Enrico Gianinni, Dirk van der Marel.
Strong coupling to magnetic fluctuations in the charge dynamics of Fe-based superconductors, [Physical Review B 82, 014523 \(2010\)](#)
- Jason N. Hancock, Guillaume Chabot-Couture, Martin Greven.
Lattice coupling and Franck-Condon effects in Cu K-edge resonant inelastic X-ray scattering, [New Journal of Physics, 12, 033001 \(2010\)](#)
- Jason N. Hancock, Guillaume Chabot-Couture, Guerman Petrakovskii, Kenji Ishii, Jun'ichiro Mizuki, Martin Greven, Thomas P. Devereaux.
Resonant inelastic x-ray scattering in electronically quasi-zero-dimensional CuB_2O_4 , [Physical Review B 80, 092509 \(2009\)](#)
- Zack Schlesinger, Jonathan R. Rosen, Jason N. Hancock, Art P. Ramirez, *Soft Manifold Dynamics behind Negative Thermal Expansion*, [Physical Review Letters 101, 015501 \(2008\)](#)
- Li Lu, Jason N. Hancock, Guillaume Chabot-Couture, Owen P. Vajk, Kenji Ishii, Jun'ichiro Mizuki, Diego Casa, Thomas Gog, Martin Greven.
Incident energy and polarization-dependent RIXS study of La_2CuO_4 , [Physical Review B 74, 224509 \(2006\)](#)
- Jason N. Hancock, Tim McKnew, Zack Schlesinger, John L. Sarrao, and Zachary Fisk. *Infrared dynamics of $\text{YbIn}_{1-x}\text{Ag}_x\text{Cu}_4$: Kondo scaling, sum rules, and temperature dependence*, [Physical Review B 73, 125119 \(2006\)](#)
- Li Lu, Guillaume Chabot-Couture, Xudong Zhao, Jason N. Hancock, Nobu Kaneko, Owen P. Vajk, Guichuan Yu, Stephane Grenier, Young-June Kim, Diego Casa, Thomas Gog, Martin Greven.
Charge-Transfer Excitations in the Model Superconductor $\text{HgBa}_2\text{CuO}_{4+\delta}$, [Physical Review Letters 95, 217003 \(2005\)](#)
- Jason N. Hancock, Chandra A. Turpen, Zack Schlesinger, Glen Kowach, Art P. Ramirez. *Unusual Low Frequency Phonons in the Negative Thermal Expansion System ZrW_2O_8* , [Physical Review Letters 93, 225501 \(2004\)](#)
- Jason N. Hancock, Tim McKnew, Zack Schlesinger, John L. Sarrao, and Zachary Fisk. *Kondo Scaling in the Optical Response of $\text{YbIn}_{1-x}\text{Ag}_x\text{Cu}_4$* , [Physical Review Letters 92, 186405 \(2004\)](#)
- Sean R. Garner, Jason N. Hancock, Yvonne W. Rodriguez, Zack Schlesinger, Benno Bucher, Zachary Fisk, John L. Sarrao.

Optical Study of the Electronic Phase Transition of Strongly Correlated YbInCu₄, [Physical Review B 62, R4778 \(2000\)](#)

Other manuscripts

- Donal Sheets, Sahan Handunkanda, Erin Curry, Vincent Flynn, Diego Casa, Mary Upton, Jungho Kim, Thomas Gog, Zachary Fisk, Priscilla Rosa, Maxim Dzero, Jian-xin Zhu, Jason Hancock, *L edge resonant inelastic X-ray scattering investigations of rare earth intermetallic materials*. Experiments completed April 2017
- Sahan Handunkanda, Erin Curry, Vladimir Voronov, Jason Hancock, *Phonon structure in strong negative thermal expansion incipient ferroelastic ScF₃*. Experiments completed May 2017
- Ignace Jarrige, Sahan Handunkanda, Erin Curry, Diego Casa, Mary Upton, Jungho Kim, Thomas Gog, Jason Hancock, *L edge resonant inelastic X-ray scattering study of the gold/black transition in samarium sulfide*. Experiments completed December 2016
- Jason N. Hancock, Tim McKnew, Zack Schlesinger, John L. Sarrao, and Zachary Fisk. *Optically Probing the Kondo Resonance in YbIn_{1-x}Ag_xCu₄*. Proceedings of the International Conference on Strongly Correlated Electron Systems, [Physica B 359, 239 \(2005\)](#)
- Jason N. Hancock, *Infrared charge dynamics of complex systems*, Ph.D. Thesis, University of California Santa Cruz, (2005)
- Jason N. Hancock, Trieu T. Mai, *Spectroscopy and Non-Cartesian Harmonic Motion*, (in public domain) [arXiv:physics/04091054](#)
- R. Cannara, T. Dubbs, J. N. Hancock, W. Kroeger, T. Nissen, M. Onodera, W. A. Rowe, H. F.-W. Sadrozinski, B. Dezillie, Z. Li, Q. S. Wang, L. J. Zhao. *Depletion Voltage and Charge Collection for Irradiated Silicon Strip Detectors with Various Initial Resistivities*, [IEEE Nuclear Science Symposium Conference Record N21-43, 852 \(1999\)](#)

INVITED PRESENTATIONS

- *RIXS: a primer*, Neutron and X-ray scattering school, Argonne National Laboratory, July 20, 2018
- *Electronic structure of f and d character using resonant inelastic X-ray scattering*, National Synchrotron Light Source II User Meeting, May 21, 2018
- *Negative thermal expansion in two incipient ferroelastics*, Symposium on Advanced Materials Science and Nanotechnology, Universidad de Costa Rica, December 11, 2017
- *Negative thermal expansion in two incipient ferroelastics*, 2017 User Meeting of the Advanced Photon Source and Center for Nanoscale Materials, Argonne National Laboratory, USA, May 9, 2017
- *Hard and soft RIXS investigations of correlated and topological phases in f-electron materials*, Workshop on experiment and theory of the electronic structure of corre-

lated and *f*-electron materials, Temple University, Philadelphia, Pennsylvania, August 15-17, 2016

- *Gigantic negative thermal expansion above a quantum phase transition in open perovskite ScF₃*, University of California Santa Cruz Condensed Matter Physics Seminar, Santa Cruz, California, USA, May 27, 2016
- *Soft mode branches, quantum central peak, and strong isotropic negative thermal expansion above perovskite quantum phase transition*, New York University Condensed Matter Physics Seminar, New York, NY, USA, May 10, 2016
- *Soft mode branches, quantum central peak, and strong isotropic negative thermal expansion above perovskite quantum phase transition*, Boston College Physics Colloquium, Boston College, Cambridge, Massachusetts, March 30, 2016
- *Soft mode branches, quantum central peak, and strong isotropic negative thermal expansion above perovskite quantum phase transition*, Condensed Matter Physics/Materials Science and Engineering Seminar, Brookhaven National Laboratory, Upton, NY, USA, December 14, 2015
- *Soft Branches, Central Peak, and Strong Isotropic Negative Thermal Expansion in a Perovskite*, International Conference on Inelastic X-ray Scattering, Hsinchu, Taiwan, November 24, 2015
- *Soft modes behind giant negative thermal expansion*, Los Alamos National Laboratory Institute for Materials Science Seminar, Los Alamos, New Mexico, August 10, 2015
- *Resonant inelastic X-ray scattering in condensed matter physics*, Los Alamos National Laboratory Condensed Matter Science Colloquium, Los Alamos, New Mexico, USA, August 5, 2015
- *RIXS investigations of strongly correlated *f*-electron materials*, Advanced Photon Source Users Science Seminar, Argonne National Laboratory, USA, July 17, 2015.
- *Inelastic X-ray studies of interacting fermions and soft bosons*, University of Illinois Urbana-Champaign Condensed Matter Physics Seminar, Urbana, Illinois, USA, May 13, 2015
- *Critical soft modes behind thermal expansion*, Argonne National Laboratory's 2015 User Meeting of the Advanced Photon Source and Center for Nanoscale Materials, Argonne National Laboratory, USA, May 12, 2015
- *Methods to measure learning gains in introductory science courses*, Conference and Discussion on New Ideas in Science Education at UConn, Storrs, Connecticut, USA, April 24, 2015
- *Is there a B in RIXS?*, Brookhaven National Lab Workshop for CSX-2 End Station Instrumentation for Condensed Matter Physics, Brookhaven National Laboratory, New York, USA, September 29, 2014
- *Charge dynamics in advanced materials with spatial sensitivity*, 2014 NSLS/NSLS-II & CFN Joint User's Meeting, Brookhaven National Laboratory, New York, USA, May 19, 2014

- *Big science: the role of international facilities in research*, Amity High School's Science Research Symposium, Amity, Connecticut, USA, May 16, 2014
- *Lighting up metallic and correlated states of matter using X-rays*, Johns Hopkins University Condensed Matter Physics Seminar, Baltimore, Maryland, USA, April 9, 2014
- *The Landau-Fermi liquid in modern condensed matter physics*, University of Connecticut Physics Colloquium, Storrs, Connecticut, USA, March 7, 2014
- *Electronic structure of novel materials observed through light absorption and X-ray scattering*, IMS Associates Program Annual Meeting, Storrs, Connecticut, USA, May 22, 2013
- *Research and interests of Hancock Lab at UConn*, IMS External Advisory Board Meeting, Storrs, Connecticut, USA, November 7, 2012
- *Research and interests of the Hancock Lab at UConn*. Institute for Materials Science External Advisory Board Meeting, University of Connecticut, Storrs, Connecticut, USA, November 7, 2012.
- *Terahertz probing of topological surface states and new frontiers in X-ray scattering*. Rutgers University Condensed Matter Physics Seminar, Piscataway, New Jersey, September 25, 2012.
- *Surface state charge dynamics of a high mobility, three-dimensional topological insulator*. Topological Materials Symposium EMRS Fall Meeting, Warsaw, Poland, September 19-21, 2011.
- *Magneto-optical spectroscopy of topological insulators and surface states*. "Topological Insulators and Superconductors", satellite meeting of LT26 conference, Tsinghua University, Beijing, China, August 18-21, 2011.
- *Surface state charge dynamics of a high mobility, three-dimensional topological insulator*. LT26 conference, Beijing, China, August 10-17, 2011 ("invited poster").
- *Terahertz probing of topological surface states and new frontiers in X-ray scattering*. Stony Brook University, Stony Brook, New York, USA, June 24, 2011.
- *Terahertz probing of topological surface states and new frontiers in X-ray scattering*. University of Connecticut Condensed Matter Physics Seminar, University of Connecticut, Storrs, Connecticut, Storrs, Connecticut, USA, June 22, 2011.
- *Surface state charge dynamics of strained HgTe*. Universität Würzburg "Topological Insulators Seminar", Würzburg, Germany, May 25, 2011.
- *Terahertz probing of topological surface states and new frontiers in X-ray scattering*. University of Oklahoma Physics Colloquium, University Of Oklahoma, Oklahoma City, Oklahoma, USA, March 28, 2011.
- *Photon-based evidence for strong magnetic fluctuations in Fe-based superconductors*. Suisse Romande meetings on Strongly Correlated Systems, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, November 5, 2010.
- *Photon-based evidence for strong magnetic fluctuations in Fe-based superconductors*. Emergent Quantum States in Complex Correlated Matter, Dresden, Germany, August 23-27, 2010.

- *Photon-based evidence for strong magnetic fluctuations in Fe-based superconductors.* Workshop on Principles and Design of Strongly Correlated Electronic Systems, Abdus Salam ICTP, Trieste, Italy, August 2-13, 2010.
- *Evidence for a new universal response function of metallic systems.* Séminaire Institut de la Physique Matière Condensée, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, June 24, 2009.
- *Optical spectroscopy in Fe-based high temperature superconductivity research.* Workshop on Iron Pnictide Superconductors, Cavendish Laboratory, University of Cambridge, Cambridge, England, January 29, 2009.
- *Light-matter interactions in some complex materials.* Joint Institute for Laboratory Astrophysics and the University of Colorado, Boulder, Colorado, USA, June 27, 2008.
- *Quasi-zero-dimensional copper metaborate as a test case for resonant inelastic X-ray scattering.* Inelastic X-ray Scattering Workshop at the Advanced Photon Source Users Meeting, Argonne National Laboratory, USA, May 6, 2008.
- *Aspects of resonant inelastic X-ray scattering.* Physics Colloquium, University of California Santa Cruz, Santa Cruz, California, USA, February 26, 2008.
- *Recent results in correlated electron research obtained at the APS.* Department of Energy Science Review of the Advanced Photon Source, Argonne National Laboratory, USA, December 12, 2007.
- *Incident energy and polarization-dependent RIXS study of La_2CuO_4 .* University of Chicago Science Review Committee Meeting for the Advanced Photon Source, Argonne National Laboratory, USA, September 17, 2007.
- *Using resonant inelastic X-ray scattering to constrain the symmetry of charge-transfer excitations.* Advanced Photon Source Users Science Seminar, Argonne National Laboratory, USA, June 15, 2007.
- *Intermediate energy structure of cuprates using Resonant Inelastic X-ray Scattering.* University of Minnesota Condensed Matter Physics Seminar, St. Paul, Minnesota, USA, February 15, 2007.
- *Intermediate energy structure of cuprates using Resonant Inelastic X-ray Scattering.* Fifth International Conference on Stripes, Università di Roma "La Sapienza", Rome, Italy, December 19, 2006.
- *Intermediate energy structure of cuprates using Resonant Inelastic X-ray Scattering.* Laboratoire Leon Brillouin, Saclay, France, December 15, 2006.
- *Intermediate energy structure of cuprates using Resonant Inelastic X-ray Scattering.* Ecole Supérieure de Physique et Chimie Industrielles de la Ville de Paris, Paris, France, December 14, 2006.
- *Intermediate energy structure of cuprates using Resonant Inelastic X-ray Scattering.* Université Pierre et Marie Curie, Paris, France, December 14, 2006.
- *Modern diffraction techniques in correlated electron systems,* Mini-workshop on end-station equipment development at Stanford Synchrotron Radiation Laboratory, Stanford University, Stanford, California, USA, December 6, 2006.

- *Intermediate Energy charge-transfer Excitations in the Cuprate Superconductors and the Incident Photon Dependence of the RIXS process*. American Physical Society March Meeting, Baltimore, Maryland, USA, March 17, 2006.
- *Diffuse X-ray scattering studies of the simplest high-Tc superconductor*. Advanced Photon Source Users Science Seminar, Argonne National Laboratory, USA, October 21, 2005.
- *Infrared Spectroscopy of Heavy Metals and Shrinking Insulators*. Stanford University Condensed Matter Physics Seminar, Stanford, California, USA, May 12, 2005.
- *Infrared Charge Dynamics of a Kondo Singlet*. Stanford University Condensed Matter Physics Seminar, Stanford, California, USA, January 5, 2005.
- *Infrared Spectroscopy and the Kondo Resonance*. Condensed Matter Physics Seminar, University of California Santa Cruz, Santa Cruz, California, USA, October 1, 2004.
- *Moments in Solids: Spectroscopic Results on a Kondo Lattice*. Condensed Matter Physics Seminar, University of California Santa Cruz, Santa Cruz, California, USA, November 15, 2002.

CONTRIBUTED PRESENTATIONS (*=presenter)

- Jason Hancock, *Incipient structural transitions in two negative thermal expansion materials*, Dynamic Quantum Matter Workshop, Newport, Rhode Island, USA, June 18, 2018
- Jason Hancock, *Resonant inelastic X-ray scattering studies of correlated rare-earth systems* (talk), International Conference on Magnetism, San Francisco, California, USA, July 20, 2018
- Daniel G. Mazzone*, J. N. Hancock, K. Imura, J.-P. Rueff, J. Ablett, H. Yamaoka, N. Hiraoka, K. Tsuei and I. Jarrige, *Abnormal mixed-valent behavior in $Sm_{1-x}Y_xS$* (poster), International Conference on Magnetism, San Francisco, California, USA, July 18, 2018
- Erin Curry, Sanjubala Sahoo, Pamir Alpay, Rainer Hebert, Brian Willis, Jie Qi, Jason Hancock, *Optical Properties of Intermetallic Superalloys: An Investigation from Experiment and Theory*, (talk) American Physical Society March Meeting, Los Angeles, California, USA, March 9, 2018
- Donal Sheets*, Sahan Handunkanda, Erin Curry, Vincent Flynn, Jian-Xin Zhu, Maxim Dzero, Diego Casa, Mary Upton, Jung Ho Kim, Thomas Gog, Priscilla Rosa, Zachary Fisk, Ignace Jarrige, Jason Hancock, *Resonant Inelastic X-ray Scattering studies of Rare Earth Hexaborides* (talk), American Physical Society March Meeting, Los Angeles, California, USA, March 8, 2018
- Sahan Handunkanda*, Erin Curry, Vladimir V. Voronov, Jason Hancock, *Infrared study of strong negative thermal expansion material Scandium trifluoride (ScF_3)*, American Physical Society March Meeting, Los Angeles, California, USA, March 5, 2018

- Boris Maiorov*, Yongkang Luo, Marcel Remillieux, Jonathan Betts, Gian Guzman-Verri, Vladimir Voronov, Sahan Handunkanda, Connor Occhialini, Jason Hancock, Peter Littlewood, Albert Migliori, *Temperature dependence of the elastic moduli of ScF₃*, American Physical Society March Meeting, Los Angeles, California, USA, March 9, 2018
- Jason Hancock*, Connor Occhialini, Sahan Handunkanda, Erin Curry, *Rigidity and mechanisms in negative thermal expansion materials*, American Physical Society March Meeting, Los Angeles, California, USA, March 5, 2018
- Connor Occhialini*, Sahan Handunkanda, Ayman Said, Sudhir Trivedi, Gian Guzman-Verri, Jason Hancock, *Negative thermal expansion near two structural quantum phase transitions*, American Physical Society March Meeting, Los Angeles, California, USA, March 5, 2018
- Amani Jayakody*, Zhiwei Zhang, Z. H. Zhu, Hope Whitelock, Joseph I. Budnick, Jason N. Hancock, B. O. Wells, *Preparation of epitaxial ScF₃ thin films*, American Physical Society March Meeting, Baltimore, Maryland, USA, March 16, 2017
- Connor A. Occhialini*, Ayman Said, Ahmet Alatas, Sudhir Trivedi, Jason N. Hancock, *Inelastic X-ray scattering study of incipient and realized structural transitions in mercurous halides*, American Physical Society March Meeting, Baltimore, Maryland, USA, March 16, 2017
- Sahan U. Handunkanda*, Erin B. Curry, Jason N. Hancock, *Negative thermal expansion above a quantum phase transition*, American Physical Society March Meeting, Baltimore, Maryland, USA, March 17, 2016
- Jason N. Hancock*, I. Jarrige, A. Kotani, H. Yamaoka, N. Tsuijii, K. Ishii, M. Upton, D. Casa, J. Kim, T. Gog, *Kondo interactions through band reconstruction in YbInCu₄*, American Physical Society March Meeting, Baltimore, Maryland, USA, March 14, 2016
- Jason N. Hancock*, Ignace Jarrige, Akio Kotani, *RIXS investigations of charge excitations in Kondo-switching YbInCu₄* International Conference on Magnetism, Barcelona, Spain, July 8, 2015 (talk)
- Sahan Handunkanda, Vladimir Voronov, Ayman Said, Bogdan Leu, Jason N. Hancock*, *Lattice dynamics of negative thermal expansion in ScF₃* (talk). American Physical Society March Meeting, San Antonio, Texas, USA, March 6, 2015.
- Jason N. Hancock*, *Surface state charge dynamics of strained HgTe* (poster). International Conference on Low Energy Electrodynamics of Solids, Napa, California, USA, July 22-27, 2012.
- Jason N. Hancock*, *Surface state charge dynamics of strained HgTe* (talk). American Physical Society March Meeting, Boston, Mass, USA, February 22, 2012.
- Jason N. Hancock*, *Surface state charge dynamics of strained HgTe* (poster) LT26 conference, Beijing, China, August 18-21, 2011.

- Jason N. Hancock*, *Surface state charge dynamics of strained HgTe* (talk). 2011 Swiss workshop on Materials with Novel Electronic Properties (MaNEP), Les Diablerets, Switzerland, June 29-July 1, 2011.
- Jason N. Hancock*, *Terahertz and magneto-optical studies of HgTe films* (talk). American Physical Society March Meeting, Dallas, Texas, USA, March 22, 2011.
- Marco Guarise, Jason N. Hancock*, John Sarrao, Thorsten Schmitt, Marco Gri-
oni, *Quasiparticle duality in the Kondo-screened state of YbInCu₄* (talk). American
Physical Society March Meeting, Dallas, Texas, USA, March 22, 2011.
- Jason N. Hancock*, *Interpretation of lineshapes in resonant inelastic X-ray scattering*
(poster). Inelastic X- ray Scattering 2010, European Synchrotron Radiation Facil-
ity, Grenoble, France, October 11-14, 2010.
- Jason N. Hancock*, Seyed Mirzaie, Suchitra Sebastian, Jack Gillett, Jérémie
Teyssier, Romain Viennois, Enrico Gianinni, Dirk van der Marel. *Strong coupling
to magnetic fluctuations in the charge dynamics of Fe-based superconductors* (poster).
International Conference on Low Energy Electrodynamics of Solids, Les Dia-
blerets, Switzerland, July 5-10, 2010.
- Jason N. Hancock*, Seyed Mirzaie, Suchitra Sebastian, Jack Gillett, Jérémie
Teyssier, Romain Viennois, Enrico Gianinni, Dirk van der Marel. *Strong coupling
to magnetic fluctuations in the charge dynamics of Fe-based superconductors* (talk).
American Physical Society March Meeting, Portland, Oregon, USA, March 19,
2010.
- Seyed Mirzaie*, Jason N. Hancock, Alexey Kuzmenko, Suchitra Sebastian, Ro-
main Viennois, Enrico Gianinni, Florence Lévy, Dirk van der Marel. *Optical in-
vestigations of Fe-based parent and superconducting materials* (poster). Swiss Work-
shop on Materials with Novel Electronic Properties (MaNEP), Les Diablerets,
Vaud, Switzerland, August 26-28, 2009.
- Jason N. Hancock*, Guillaume Chabot Couture, Li Lu, Martin Greven, Kenji Ishii,
Jun'ichiro Mizuki. *RIXS phenomenology in quasi-zero dimensional CuB₂O₄* (poster).
Resonant Inelastic X- ray Scattering Workshop, European Synchrotron Radia-
tion Facility, Grenoble, France, June 29-July 1, 2009.
- Jason N. Hancock*. *Quasi-zero dimensional CuB₂O₄ as an archetype for resonant in-
elastic X-ray scattering* (talk). American Physical Society March Meeting, Pitts-
burg, Pennsylvania, USA, March 17, 2009.
- Jason N. Hancock*. *Resonant inelastic X-ray scattering study of quasi-zero-dimen-
sional copper metaborate*. (talk) American Physical Society March Meeting, Den-
ver, Colorado, USA, March 13, 2008.
- Jason N. Hancock*. *Resonant inelastic X-ray scattering and the symmetry of charge-
transfer excitations*. (poster) International Conference on Strongly Correlated
Electron Systems (SCES 2007), Houston, Texas, USA, May 13-18, 2007.
- Jason N. Hancock*, Guillaume Chabot' Couture, Li Lu, Martin Greven, Kenji Ishii,
Jun'ichiro Mizuki, Thomas Gog, Diego Casa. *Intermediate energy structure of*

cuprates using Resonant Inelastic X-ray Scattering. (talk) American Physical Society March Meeting, Denver, Colorado, USA, March 6, 2007.

- Guillaume Chabot-Couture*, Jason N. Hancock, Li Lu, Antonio Bianconi, Frank Bridges, Zahirul Islam, Hiroshi Oyanagi, Yong-Chan Cho, Yuan Li, Guichuan Yu, Xudong Zhao, Martin Greven. *X-ray Structural Studies of HgBa₂CuO_{4+δ}* (talk) American Physical Society March Meeting, Denver, Colorado, USA, March 2007.
- Jason N. Hancock*. *Symmetry analysis using the RIXS technique* (talk). Fifth International Conference on Synchrotron Radiation in Materials Science, Drake Hotel, Chicago, IL, USA, August 1, 2006.
- Jason N. Hancock*, Guillaume Chabot-Couture, Li Lu, Xudong Zhao, Owen P. Vajk, Guichuan Yu, Martin Greven, Kenji Ishii, Jun'ichiro Mizuki, Diego Casa, Thomas Gog. *Intermediate energy charge-transfer excitations and the phenomenology of the resonant inelastic scattering cross section* (poster). Gordon Research Conference, Buellton, California, USA, January 21-28, 2006.
- Li Lu*, Guillaume Chabot-Couture, Jason Hancock, Owen Vajk, Guichuan Yu, Kenji Ishii, Jun'ichiro Mizuki, Diego Casa, Thomas Gog, Martin Greven, *Polarization dependence of charge-transfer excitations in La₂CuO₄* (talk). American Physical Society March Meeting, Baltimore, MD, USA March 15, 2006.
- Guillaume Chabot-Couture*, Jason N. Hancock, Li Lu, Zahirul Islam, Martin Greven, *Hard X-ray Structural Studies of HgBa₂CuO_{4+δ}* (talk). American Physical Society March Meeting, Baltimore, MD, USA March 16, 2006.
- Jason N. Hancock*, Zack Schlesinger, Yana Matsushita, Theodore H. Geballe, Ian R. Fisher. *Infrared Dynamics of Tl-doped PbTe* (talk). American Physical Society March Meeting, Los Angeles, California, USA, 2005.
- Zack Schlesinger, Chandra Turpen, Jason Hancock*, Glen Kowach, Art Ramirez. *Far-infrared phonons in underscreened negative thermal expansion system Zr(WO₄)₂* (talk). American Physical Society March Meeting, Los Angeles, California, USA, 2005.
- Jason N. Hancock*, Tim McKnew, Zack Schlesinger, John L. Sarrao, Zachary Fisk. *Optically Probing the Kondo Resonance in YbIn_{1-x}Ag_xCu₄* (poster). International Conference on Strongly Correlated Electron Systems (SCES 2004), Karlsruhe, Germany. August, 2004.
- Jason N. Hancock*, Tim McKnew, Zack Schlesinger, John Sarrao, Zachary Fisk. *Kondo Dynamics of YbIn_{1-x}Ag_xCu₄* (talk). International Conference on Low Energy Electrodynamics of Solids (LEES 2004), Kloster Banz, Germany, July 23, 2004.
- Jason N. Hancock*, Tim McKnew, Zack Schlesinger, John Sarrao, Zachary Fisk. *Optical Consequences of the Kondo Resonance in YbIn_{1-x}Ag_xCu₄* (talk). American Physical Society March Meeting, Austin, Texas, USA, March 5, 2003.
- Tim McKnew*, Jason N. Hancock, Zack Schlesinger, Zach Fisk, John L. Sarrao. *Evidence from Interband Optical Conductivity in YbIn_{1-x}Ag_xCu₄* (talk). American Physical Society March Meeting, Austin, Texas, USA, March 5, 2003.

- Chandra A. Turpen*, Jason N. Hancock, Zack Schlesinger, Glen Kowach, Arthur P. Ramirez. *Infrared active phonons and negative thermal expansion in ZrW_2O_8* (poster). American Physical Society March Meeting, Austin, Texas, USA, March 5, 2003.
- Jason N. Hancock*, Tim A. McKnew, Sonya L. Hoobler, Yvonne W. Rodriguez, Zack Schlesinger, John L. Sarrao, Zachary Fisk. *Studies of Optical Response Across the Phase Diagram of $YbIn_{1-x}Ag_xCu_4$* (poster). International Conference on Strongly Correlated Electron Systems (SCES 2001), Ann Arbor, Michigan, USA. August, 2001.
- Jason N. Hancock*, Sonya Hoobler, Tim McKnew, Zack Schlesinger, John Sarrao, Zachary Fisk. *Spectroscopic Exploration of the Phase Diagram of $YbIn_{1-x}Ag_xCu_4$* (talk). APS March Meeting, Seattle, Washington, USA, 2001.