Dmitry Reznik

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SUMMARY

Lead a neutron/x-ray/Raman scattering group investigating dynamics, structure, and magnetism in complex solids.

CURRENT RESEARCH

Colorado University-Boulder, USA

Associate Professor

Recent research focused on magnetism, superconductivity, and charge and lattice dynamics in complex quantum solids with experiments performed at x-ray and neutron facilities worldwide.

Funding from NSF, DOE, DARPA (over 3M total since coming to CU)

~100 publications, ~4600 citations, ~1300 citations since 2016, H-index: 34 (google scholar)

~75 invited talks

H-index: 34 (google scholar)

Raman scattering projects

- Time-resolved UV Raman scattering at an NSF-funded Raman scattering laboratory.
- Electronic excitations in quantum materials with strong spin-orbit coupling
- Phonons and magnons in superconductors and related materials

X-ray scattering projects

- Charge excitations in high T_c superconductors
- Electron-phonon coupling in Fe-based superconductors
- Phonon softening and charge density wave formation

Neutron scattering projects

- Correlated electron physics in high T_c superconductors
- Effects of charge/magnetic checkerboard order on optic phonon dispersions
- Charge-orbital fluctuations in colossal magnetoresistance manganites
- Electron-phonon coupling and superconductivity in borocarbides
- Itinerant magnetism in MnSi
- Physics of FLASH

Experiments at: CEA-Saclay, France, Institut Laue Langevin (ILL), France, National Institute of Standards and Technology (NIST), Hahn-Maitner Institut (HMI), Germany, ISIS, England, Paul Scherer Institut, Switzerland, Munich Research Reactor, Germany, SPring-8, Japan, ESRF, France, Advanced Photon Source (APS), Argonne.

Collaborations with: Karlsruhe Institute of Technology (KIT), Brookhaven National Laboratory, NIST, Max Plank Institut (MPI), Stuttgart, MPI Dresden, Tohoku University, Japan, Osaka University**,** Japan, SPring-8, University of Tokyo, Universität Karlsruhe, HMI, TU Munchen, ESRF, APS, Carnegie Institution, University of Tennessee, University of Virginia, Florida International University, Stanford University, National Renewable Energy Lab.

PREVIOUS RESEARCH

Utilized x-ray, neutron, and Raman scattering to investigate nuclear and magnetic structure as well as lattice, charge, and spin dynamics of high T_c superconductors, fullerenes, and itinerant magnets. Developed extensions to industry standards in computer science.

X-ray scattering projects

- Measured wavevector-range of anomalous phonon softening in the stripe phase of the cuprates.
- Detailed measurements, analysis, and calculations of powder diffraction by carbon nanotubes.
- Discovered new soft phonons in chromium

Neutron scattering projects

- Isolated giant electron-phonon coupling related to charge stripes in high T_c superconductors
- Discovered hourglass magnetic dispersion in $YBa_2Cu_3O_{6.95}$
- Partial magnetic order in MnSi under hydrostatic pressure
- Identified phonon anomalies associated with colossal magnetoresistance (CMR) in manganites.
- Found optical magnon in $YBa_2Cu_3O_{6.1}$
- Measured self-energy effects of bond-buckling modes in $YBa_2Cu_3O_7$
- Elucidated temperature dependence of the magnetic resonance peak in $YBa_2Cu_3O_7$.
- Investigated rotational dynamics of alkali-doped C_{60}.

Raman scattering projects

- Established doping dependence of plane-polarized electronic Raman scattering in high T_c superconductors.
- Performed first measurements of the full spectrum and resonant profile of Raman active c-axis charge excitations in $YBa_2Cu_3O_7$.
- Improved understanding of the normal state electronic Raman scattering in $YBa_2Cu_3O_{6+x}$ and confirmed previous results on the superconducting state.

TEACHING

Colorado University-Boulder, USA

Mentoring

- Supervise thesis research of graduate students.

  Ph.D. defended:

  Jhih-An Yang, Spring 2017 “Conventional and Ultrafast Pump-Probe Time-Resolved Raman Spectroscopy of Strongly Correlated Systems”.

  Adrian Merritt, Spring 2020 “Inelastic Neutron and X-Ray Scattering Applied To High-Temperature Superconductivity”.

  Nicholas Pellatz, Spring 2021 “Raman Scattering as a Probe of Interactions in Strongly-Correlated Materials”.

Masters defended: William Oldham, Fall 2016 "Hysteresis Of The Nearly Commensurate To Commensurate Charge Density Wave Phase Transition In Tantalum Disulfide Using Raman Spectroscopy."

- Supervised undergraduate independent study including an Honor's student.

Classroom teaching:

- Solid State Physics (graduate and undergraduate level) Phys7440 (Fa'10,Fa'11, Fa'16); Phys 4340 (Sp'11, Sp'12,Sp'13, Sp'17, SP'21) Enrollment: 10-25 students
- Freshman Lab: Phys1140 (Sp'15) Enrollemnt: ~600 students
- Sophmore Lab: Phys2150 (Fa'15, Fa'18) ~100 students
- Junior Lab Phys3330: (Fa'17, Sp'18, Fa'20) Enrollment: ~60 students
- Senior Lab Phys4430: (Fa'14, Fa'21) Enrollment: ~20 students
- Introduction to Modern Physics: Phys2130 (Fa'12, Sp'13) Enrollment ~70 students
- Optics: (Fa'18) ~ 25 students
- Materials Science and Engineering: Guest lecture on x-ray diffraction (Fa'17)
- Developed Raman Scattering lab for senior lab class, Phys4430

Online:

- Recorded an invited online lecture for Physics 412 at Rice University (Sp'17)
- Recorded online lectures for Phys 3330 (Fa'20)
- Senior Lab Phys4430, liveinteractive online lectures (Sp'21)

SERVICE

University of Colorado -Boulder, USA

- Committees: Graduate admissions (6 years), Graduate student mentoring (1year), Comps II (4 years), Faculty Search (1 year), A&S Physics Advisory (1 year), Engineering Physics Advisory (3 years)
- Public lecture (2017) Title: "From the discovery of the electron to gravitational waves: Physics experiments behind the modern world."

Worldwide

- Referee grant proposals for Department of Energy and National Science Foundation
- Referee beamtime access proposals for neutron scattering facilities in USA and Japan.
- Referee for journals including Nature Materials, Nature Communications, Physical Review Letters, Physial Review B and others
- Member of the NIST Center for Neutron Research (NCNR) user group
- Organizer of the American Conference on Neutron Scattering in 2020 (online) and 2022 (CU-Boulder)

EMPLOYMENT HISTORY

University of Colorado-Boulder, Boulder, CO **2010-present**
Associate professor

IFP, Forschungszentrum Karlsruhe (now KIT), Germany
2001 – 2009
Group leader, neutron/x-ray scattering

Employment and Consulting in Information Technology **1997 – 2001**
Project leader, software architect

University of California-San Diego **1996**
Research associate, Physics department

National Institute of Standards and Technology **1992 – 1995**
Physicist, Reactor Radiation Division, sponsored by National Research Council

University of Illinois at Urbana-Champaign **1988 – 1992**
Graduate assistant, Physics department

VISITING APPOINTMENTS

Brookhaven National Laboratory, Upton, NY **2007**
Visiting scientist, summer program

Tohoku University, Sendai, Japan **2006**
Visiting professor, sponsored by International Frontier Center for Advanced Materials

Laboratoire Léon Brillouin, Saclay, France **1995**
Visiting scientist

Institute for Solid State Physics (ISSP), Chernogolovka, Russia **1992**
Visiting scientist

AWARDS

Fellow Of the American Physical Society, **2017**

EDUCATION

Ph.D., 1993, in Physics
University of Illinois at Urbana-Champaign
Advisor: M.V. Klein
Thesis: “Electronic Light Scattering in the Layered Cuprates”

A.B., 1988, in Physics and Mathematics
Cornell University

PERSONAL INFO

Citizenship: USA
Foreign Languages: French, Russian

FUNDING

2010: ICAM Junior Exchange Award, **$20,000**. Travel grant for postdoc Dan Parshall.

2010-2013: NFF/MRI award num 0960292: **$630,000** as a coPi (with Dan Dessau as PI), project name: "Development of a Time Resolved Ultraviolet Spectroscopies Laboratory"

2011-2014: DOE BES Neutron Scattering program award num: DESC0006939: **$450,000**, Single PI grant, project name: "Neutron and X-ray Scattering Investigation of Electron-Phonon Effects in Cuprate Superconductors and Related Compounds"

2014-2017: DOE BES Neutron Scattering program award num: DESC0006939 (renewal): **$450,000**

2014-2016: NSF DMR award number 1410111: **$400,000** "Investigation of Quantum Materials Using Pump-Probe Raman Scattering"

2017-2020: DOE BES Neutron Scattering program award num: DESC0006939 (renewal): **$480,000**,

2017-2022: NSF DMR award number 1410111: **$483,000** "Investigation of Quantum Materials Using Pump-Probe Raman Scattering"

2018-2020: Driven and Nonequilibrium Quantum Systems (DRINQS) awarded starting Oct 1: **$2,000,000** (shared between 7 PIs including DR)

2020-2023: DOE BES Neutron Scattering program award num: DESC0006939 (renewal): **$490,000**.

INVITED TALKS

Workshop on meV IXS (Online) **2021**

Quantum Complex Matter (Online) **2021**

XXVIII International Materials Research Congress (IMRC), Cancun, Mexico **2019**

John's Hopkins Condensed Matter Seminar, Baltimore **2019**

International Workshop on Strong Correlations and Angle-Resolved Photoemission Spectroscopy (CORPES'19) **2019**

Superstripes, Ischia, Italy **2019**

Naval Research Lab Theory Group Seminar **2018**

Ultrafast Dynamics, Washington, DC. **2017**

Symposium on High Temperature Superconductivity, Moscow, Russia **2017**

Workshop on Quantum Criticality, Aspen **2017**

Superstripes 2017, Ischia, Italy **2017**

Advanced Photon Source User Meeting, Argonne **2017**

Rice University Solid State Physics Seminar **2017**

Pairing Interaction of High Temperature Superconductors, Suwon, South Korea **2016**

X-ray Echo Spectroscopy Workshop, Argonne Nat'l lab **2016**

IMPACT 2016, Cargese, France **2016**

Superstripes'16, Ischia, Italy **2016**

EMN Meeting, Prague, Czech Republic **2016**

Superstripes'15, Ischia, Italy **2015**

Competing Interactions and Colossal Responses in Transition Metal Compounds, Telluride, CO **2015**

XXIII International Materials Research Congress (IMRC), Cancun, Mexico	**2014**
International School and Workshop on Electronic Crystals ECRYS-2014, Cargese, France	**2014**
Neutron Scattering Program Principal Investigators' Meeting, Gaithersburg, MD	**2014**
XXII International Materials Research Congress (IMRC), Cancun, Mexico	**2013**
Competing Interactions and Colossal Responses in Transition Metal Compounds, Telluride, CO	**2013**
High Resolution Spectroscopy with x-rays, Wako, Japan	**2012**
Neutron Scattering Program Principal Investigators' Meeting, Gaithersburg, MD	**2012**
APS March Meeting, Boston, MA	**2012**
Forum on Inelastic Neutron scattering from Correlated Electron Systems, Knoxville, TN	**2011**
Electronic Structure of Novel Materials, Ringberg, Germany	**2011**
Workshop on High T_c and Fe-based Superconductors, Sendai, Japan	**2011**
The XXII Congress and General Assembly of the International Union of Crystallography, Madrid, Spain	**2011**
2011 Telluride Workshop on Correlated Electron Systems, Telluride, CO	**2011**
Workshop on Hard Condensed Matter with Neutrons, Knoxville, TN	**2010**
Super-PIRE Kickoff Meeting, Knoxville, TN	**2010**
Superconductivity Explored by Neutron Scattering Experiments, Grenoble, France	**2010**
Recent Progress on Spectroscopies and High-T_c Superconductors, Sendai, Japan	**2010**
Electronic Structure of Fe-based Superconductors, Stuttgart, Germany	**2010**
APS March Meeting, Portland, OR	**2010**
8th Asia-Pacific Workshop on Novel Quantum Materials, Seoul, South Korea	**2009**
Workshop on cuprate and pnictide superconductors, Sendai, Japan	**2009**
Workshop on High Temperature Superconductivity, Tokyo, Japan	**2009**
Workshop on Spectroscopies in Strongly Correlated Electron systems, Sendai, Japan	**2008**
Stripes'08, Erice, Italy	**2008**
Nanodynamics Beamline Workshop, Hyogo, Japan	**2008**
APS March Meeting, New Orleans, LA	**2008**
Spectroscopies in Novel Superconductors (SNS2007), Sendai, Japan	**2007**
CREST Workshop on Electron-Phonon Coupling in Correlated Electron Systems, Tokyo, Japan	**2007**
Stripes'06, Rome, Italy	**2006**

8th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors (M2S-HTSC-VIII), Dresden, Germany **2006**

HGF-Workshop "Condensed Matter", Jülich, Germany **2006**

Phonons in Correlated Electron Systems, Sendai, Japan **2006**

Phonon Measurements of Correlated Electron Materials, Kouto, Japan **2006**

Orbital 2005, Hamburg, Germany **2005**

Dynamical Properties of Solids 30, Cesky Krumlov, Czech Republic **2005**

Fifth International Conference on New Theories, Discoveries, and Applications of Superconductors and Related Materials, Chonqing, China **2004**

Self Organized Strongly Correlated Electron Systems, Santorini, Greece **2003**

Laboratoire Leon Brillouin (LLB) Users Meeting, Saclay, France **2002**

International Winterschool on Electronic Properties of High Temperature Superconductors, Kirchberg, Austria **1992**

Additional Seminars **1990 - 2015**

LLB, NIST, Brookhaven Natl. Lab., Naval Resesearch Lab., MPI Stuttgart, Los Alamos National Laboratory, University of California-San Diego, University of California-Davis, University of Minnesota, University of Virginia, University of Illinois, Institute of Solid State Physics (Russia), Karlsruhe Institute of Technology, Argonne National Lab, Okayama University, Nagoya University, Tohoku University, University of Tokyo, Spallation Neutron Source, University of Colorado, Columbia University, Argonne National Lab

PUBLICATION LIST

1. **Spinons and damped phonons in spin-1/2 quantum-liquid $Ba_4Ir_3O_{10}$ observed by Raman scattering,** A. Sokolik, S. Hakani, S. Roy, N. Pellatz, H. Zhao, G. Cao, I. Kimchi, D. Reznik, arXiv:2110.15916 (2021), submitted to *Phys. Rev. B Lett.*.
2. **Electron-momentum dependence of electron-phonon coupling underlies dramatic phonon renormalization in YNi_2B_2C,** Ph. Kurzhals, G. Kremer[2], Th. Jaouen, C. W. Nicholson, R. Heid, P. Nagel, J.-P. Castellan, A. Ivanov, M. Muntwiler, M. Rumo, B. Salzmann, V. N. Strocov, D. Reznik, C. Monney, and F. Weber, *Nature Communications*, **13,** 228 (2022).
3. **Relaxation timescales and electron-phonon coupling in optically-pumped $YBa_2Cu_3O_{6.9}$ revealed by time-resolved Raman scattering**, N. Pellatz, S. Roy, J.W. Lee, J.L. Schad, H. Kandel, N. Arndt, C.-B. Eom, and D. Reznik, *Phys. Rev. B Letters **104**, L180505 (2021).*
4. **Effect of the electronic charge gap on LO bond-stretching phonons in undoped La_2CuO_4 calculated using LDA+U**, T. C. Sterling and D. Reznik, Phys. Rev. B **104**, 134311 (2021).
5. **Reinvestigation of crystal symmetry and fluctuations in La_2CuO_4**, A. Sapkota, T. C. Sterling, P. M. Lozano, Yangmu Li, Huibo Cao, V. O. Garlea, D. Reznik, Qiang Li, I. A. Zaliznyak, G. D. Gu, and J. M. Tranquada, *Phys. Rev. B* **104**, 014304 (2021).
6. **Lattice dynamics in the double-helix antiferromagnet FeP**, A.S. Sukhanov, S.E. Nikitin, M.S. Pavlovskii, T.C. Sterling, N.D. Andryushin, A.S. Cameron, Y.V. Tymoshenko, H.C. Walker, I.V. Morozov, I.O. Chernyavskii, S. Aswartham, D. Reznik, D.S. Inosov, *Physical Review Research* **2**, 043405 (2020).
7. **Automating Analysis of Neutron Scattering Time-of-Flight Single Crystal Phonon Data**, D. Reznik and I. Ahmadova, *Quantum Beam Science* **4**, 41 (2020).
8. **Quest for quantum states via field-altering technology**, G. Cao, H. Zhao, B. Hu, N. Pellatz, D. Reznik, P. Schlottmann, I. Kimchi, *npj Quantum Materials* **5**, 1 (2020).
9. **Giant electron-phonon coupling of the breathing plane oxygen phonons in the dynamic stripe phase of $La_{1.67}Sr_{0.33}NiO_4$,** A. M. Merritt, A. D. Christianson, A. Banerjee, G. D. Gu, A. S. Mishchenko, and, D. Reznik, *Scientific Repor*ts **10**, 11426 (2020).
10. **Phonon spectrum of underdoped $HgBa_2CuO_{4+\delta}$ investigated by neutron scattering**, I. Ahmadova, T.C. Sterling, A.C. Sokolik, D.L. Abernathy, M. Greven, D. Reznik, *Phys. Rev. B* **101**, 184508 (2020).
11. **Ultrafast magnetic dynamics in insulating $YBa_2Cu_3O_{6+x}$ revealed by time resolved two-magnon Raman Scattering**, J.A. Yang, N. Pellatz, T. Wolf, D. Reznik, *Nature Communications* **11**, 2548 (2020).
12. **Nematic correlation length in iron-based superconductors probed by inelastic x-ray scattering**, A. M. Merritt, F. Weber, J.-P. Castellan, Th. Wolf, D. Ishikawa, A. H. Said, A. Alatas, R. M. Fernandes, A. Q. R. Baron, and D. Reznik, Phys. Rev. Lett. **124**, 157001 (2020).
13. **Low-energy phonons in $Bi_2Sr_2CaCu_2O_{8+\delta}$ and their possible interaction with electrons measured by inelastic neutron scattering**, A. M. Merritt, J.-P. Castellan, T. Keller, S. R. Park, J. A. Fernandez-Baca, G. D. Gu, D. Reznik, *Phys. Rev. B* **100**, 144502 (2019).
14. **Unconventional Hund Metal in MnSi**, X. Chen, I. Krivenko, M.B. Stone, A.I. Kolesnikov, T. Wolf, D. Reznik, K.S. Bedell, *Nature communications* **11**, 83 (2019).
15. **Nature and impact of stripe freezing in $La_{1.67}Sr_{0.33}NiO_4$**, A.M. Merritt, D. Reznik, V.O. Garlea, G.D. Gu, and J.M. Tranquada, *Phys. Rev. B* **100**, 195122 (2019).
16. **Electron-phonon coupling in undoped cuprate $YBa_2Cu_3O_6$ estimated from Raman and optical conductivity spectra**, D. Farina, G. De Filippis, A. S. Mishchenko, N. Nagaosa, Jhih-An Yang, D. Reznik, T. Wolf, and V. Cataudella, *Phys. Rev. B* **98**, 121104(R) (2018).

17. **Soft phonons reveal the nematic correlation length in $Ba(Fe_{0.94}Co_{0.06})_2As_2$**, F. Weber, D. Parshall, L. Pintschovius, J.-P. Castellan, M. Kauth, M. Merz, Th. Wolf, M. Schütt, J. Schmalian, R. M. Fernandes, and D. Reznik, *Phys. Rev. B* **98**, 014516 (2018)
18. **Polaronic correlations and phonon renormalization in $La_{1-x}Sr_xMnO_3$ (x= 0.2, 0.3)**, M Maschek, J-P Castellan, D Lamago, D Reznik, F Weber, Phys. Rev. B **97**, 245139 (2018)
19. **Evidence for a nematic phase in $La_{1.75}Sr_{0.25}NiO_4$**, R. Zhong, B.L. Winn, G. Gu, D. Reznik, J.M. Tranquada, *Physical Review Lett.* **118**, 177601 (2017)
20. **Restoration of quantum critical behavior by disorder in pressure-tuned (Mn,Fe)Si.** T. Goko, C. J. Arguello, A. Hamann, Th. Wolf, M. Lee, D. Reznik, A. Maisuradze, R. Khasanov, E. Morenzoni and Y. J. Uemura, npj Quantum Materials (2017) 2:44; doi:10.1038/s41535-017-0049-0
21. **Novel Electron-Phonon Relaxation Pathway in Graphite Revealed by Time-Resolved Raman Scattering and Angle-Resolved Photoemission Spectroscopy,** Jhih-An Yang, S. Parham, D. Dessau, and D. Reznik, Scientific Reports **7**, 40876 (2017).
22. **Absence of magnetic field dependence of the anomalous bond-stretching phonon in $YBa_2Cu_3O_{6.6}$**, D. Reznik, D. Parshall, S.-R. Park, J.W. Lynn, T. Wolf, Journal of Superconductivity and Novel Magnetism, 1-2. (2016).
23. **Polaronic metal phases in $La_{0.7}Sr_{0.3}MnO_3$ uncovered by inelastic neutron and x-ray scattering**, M. Maschek, D. Lamago, J.P. Castellan, A. Bosak, D. Reznik, F. Weber, Physical Review B **93** (4), 045112 (2016).
24. **High-energy electronic excitations in Sr_2IrO_4 observed by Raman scattering,** Jhih-An Yang, Yi-Ping Huang, Michael Hermele, Tongfei Qi, Gang Cao, Dmitry Reznik, *Phys. Rev. B* **91**, 195140 (2015).
25. **Close correlation between magnetic properties and the soft phonon mode of the structural transition in $BaFe_2As_2$ and $SrFe_2As_2$**, D. Parshall, L. Pintschovius, D. Lamago, J.-P. Castellan, J. L. Niedziela, Th. Wolf, D. Reznik *Phys. Rev. B* 91, 134426 (2015).
26. **Fluctuating defects in the incipient relaxor $K_{1-x}Li_xTaO_3$ (x=0.02),** C. Stock, P. M. Gehring, G. Xu, D. Lamago, D. Reznik, M. Russina, J. Wen, and L. A. Boatner, *Phys. Rev. B* **90**, 224302 (2014).
27. **Spurious peaks arising from multiple scattering events involving the sample environment in inelastic neutron scattering**, L. Pintschovius, D. Reznik, F. Weber, P. Bourges, D. Parshall, R. Mittal, Samrath Lal Chaplot, R. Heid, T. Wolf, D. Lamago, J.W. Lynn, Applied Crystallography, **47** 1472 (2014).
28. **Direct observation of dynamic charge stripes in $La_{1.67}Sr_{0.33}NiO_4$**, S. Anissimova, D. Parshall, G. D. Gu, K. Marty, M. D. Lumsden, Songxue Chi, J. A. Fernandez-Baca, D. L. Abernathy, D. Lamago, J. M. Tranquada, *D. Reznik, Nature Communications* **5**, 3467 (2014).
29. **Phonons and electron-phonon coupling in YNi_2B_2C**, F. Weber, L. Pintschovius, W. Reichardt, R. Heid, K.-P. Bohnen, A. Kreyssig, D. Reznik, and K. Hradil, *Phys. Rev. B* **89**, 104503 (2014)
30. **Phonon spectrum of $SrFe_2As_2$ determined using multizone phonon refinement**, D. Parshall, R. Heid, J. L. Niedziela, Th. Wolf, M. B. Stone, D. L. Abernathy, and D. Reznik, *Phys. Rev. B* **89**, 064310 (2014).
31. **Evidence for a charge collective mode associated with superconductivity in copper oxides from neutron and x-ray scattering measurements of $La_{2-x}Sr_xCuO_4$**, S. R. Park, T. Fukuda, A. Hamann, D. Lamago, L. Pintschovius, M. Fujita, K. Yamada, and D. Reznik, *Phys. Rev. B Rapid Communications*. **89**, 020506 (2014).
32. **Large lattice distortions associated with the magnetic transition in $La_{0.7}Sr_{0.3}MnO_3$**, F. Weber, D. N. Argyriou, O. Prokhnenko, and D. Reznik, *Phys. Rev. B Rapid Communications* **88**, 241106 (2013). DOI: 10.1103/PhysRevB.88.241106, http://link.aps.org/doi/10.1103/PhysRevB.88.241106

33. **Broken relationship between superconducting pairing interaction and electronic dispersion kinks in $La_{2-x}Sr_xCuO_4$ measured by angle-resolved photoemission,** S. R. Park, Y. Cao, Q. Wang, M. Fujita, K. Yamada, S.-K. Mo, D. S. Dessau, and D. Reznik, *Phys. Rev. B Rapid Communications* **88**, 220503 (2013) DOI:10.1103/PhysRevB.88.220503
34. **Optical phonons and the soft mode in 2H-$NbSe_2$**, F. Weber, R. Hott, R. Heid, K.-P. Bohnen, S. Rosenkranz, J.-P. Castellan, R. Osborn, A. H. Said, B. M. Leu, and D. Reznik, *Phys. Rev. B* **87**, 245111 (2013).
35. **Phonon anomalies and dynamic stripes**, D. Reznik, Invited review article *Physica C* **481**, 75 (2012).
36. **Competition between commensurate and incommensurate magnetic ordering in Fe_{1+y} Te**, D. Parshall, G. Chen, L. Pintschovius, D. Lamago, Th. Wolf, L. Radzihovsky, and D. Reznik, *Phys. Rev. B* **85**, 140515 (2012).
37. **Phonon response to charge and orbital order in $LaSr_2Mn_2O_7$**, F. Weber, S. Rosenkranz, J.-P Castellan, R. Osborn, D. Reznik, H. Zheng, J. F. Mitchell, Y. Chen, Song, J. Lynn, *Phys. Rev. Lett.* **107**, 207202 (2011).
38. **Effects of charge inhomogeneities on elementary excitations in $La_{2-x}Sr_xCuO_4$**, S. R. Park, A. Hamann, L. Pintschovius, D. Lamago, G. Khaliullin, M. Fujita, K. Yamada, G. D. Gu, J. M. Tranquada, D. Reznik, *Phys. Rev. B,* **84**, 214516 (2011)
39. **Unusual electron-phonon interaction of the buckling mode in $YBa_2Cu_3O_7$**, M. Raichle, D. Reznik, M. Bakr, C. Ulrich, V. Hinkov, K. Hradil, D. Lamago, M. Bröll, C.T. Lin, and B. Keimer, *Phys*. *Rev. Lett.* **107**, 177004 (2011).
40. **Extended phonon collapse and the origin of the charge-density-wave in $NbSe_2$**, F. Weber, S. Rosenkranz, J.-P. Castellan, R. Osborn, R. Hott, R. Heid, K.-P. Bohnen, T. Egami, A. Said, and D. Reznik, *Phys. Rev. Lett.,* **107**, 107403 (2011).
41. **Search for an Influence of Superconductivity on the Phonons in $Ba(Fe_{1-x}Co_x)_2As_2$**, D. Lamago, L. Pintschovius, D. Reznik, R. Heid, T. Wolf, R. Mittal, S.L. Chaplot, *Physica C*, doi:10.1016/j.physc.2011.08.004 (2011).
42. **Temperature dependence of low-energy phonons in magnetic non-superconducting $TbNi_2B_2C$**, S. Anissimova, A. Kreyssig, O. Stockert, M. Loewenhaupt, and D. Reznik, *Phys Rev. B*, 104509 (2011).
43. **Magnetic blue phase in an itinerant magnet MnSi**, A. Hamann, D. Lamago, Th. Wolf, H. von Löhneysen, D. Reznik, *Phys. Rev. Lett.,***107**, 037207 (2011).
44. **Measurement of strong phonon softening in Cr with and without Fermi-surface nesting by inelastic x-ray scattering**, D. Lamago, M. Hoesch, M. Krisch, R. Heid, K.-P. Bohnen, P. Böni, and D. Reznik, *Phys. Rev. B* **82**, 195121 (2010).
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