Kenneth S. Burch

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Education

2006-Jan	PhD Physics	University of California, San Diego
2004	MSc Physics	University of California, San Diego
2001	BSc Physics-Honors	University of California, Santa Cruz

Professional Experience

2020–current	Professor	**Boston College**
2015–2020	Associate Professor	**Boston College**
2013–2015	Assistant Professor	**Boston College**
2012–2013	Founder of CREATE-HEATER program	**University of Toronto**
2008–2013	Assistant Professor	**University of Toronto**
2006–2008	Director's Fellow	**Los Alamos National Laboratory**
2001–2006	Graduate Student Researcher	**University of California, San Diego**
2001–2002	Chair	**University of California Student Association**
2000–2001	Undergraduate Researcher	**Stanford University**
2000	Undergraduate Researcher	**University of California, San Diego**
1997–1998	Undergraduate Research Assistant	**University of California, Santa Cruz**

Professional Affiliations and Activities

Member	American Physical Society, Canadian Association of Physicists
Chair	LEES Conference 2021, Graduate Committee(18-19), Search Committee (17-18), Integrated Science for Society Curricula Committee (15-16), Colloquium Committee (14-16), Physical & Technical Services Committee (12-13)
Representative	User Advisory Committee of The Canadian Light Source, National High Magnetic Field Laboratory Users Committee
Referee	Science, Nature, Nanoletters, Nature Materials, Phys. Rev. Lett., DOE, NSERC, NSF, Phys. Rev. B, J. of The Opt. Soc. of America, Appl. Phys. Lett., J. of Raman Spec., New J. of Phys., NSC-Poland

Awards

American Physical Society Fellow	2022
Lee-Osheroff-Richardson Prize	2012
Ontario Early Researcher Award	2011-2016
Los Alamos National Lab DirectorÕs Fellowship	2006 - 2008
APS Outstanding Dissertation in Magnetism	2006
Malcolm R. Stacey Memorial Scholarship	2003 - 2005
GAANN Fellowship	2001 - 2002

Popular Media Coverage

Axial Higgs mode spotted in materials at room temperature Physics World, July 4th, 2022
Elusive particle discovered in a material through tabletop experiment Space Daily, July 4th, 2022
New Higgs-Related Particle Discovered In Tabletop Experiments IFLScience, June 10th, 2022

Quantum Computer Not Working? Grab Some Scotch Tape Wired, September 18th, 2012
Scotch tape may stick quantum computing to the masses NBC News, September 11th, 2012
Scotch Tape aids superconductivity breakthrough Toronto Star, September 13th, 2012
Scotch Tape Even Makes Semiconductors Better Gizmodo, September 16th, 2012

Invited Talks

Summary: Over 85 - APS March Meeting; GRC-Superconductivity, GRC - 2D Materials Beyond Graphene, MRS, AVS, Quantum Materials Symposium, E-MRS; Many N. American, European or Asian institutions including: MIT, Stanford, Princeton, Columbia, UC Boulder, Penn State, U. British Columbia, IOP-Beijing, Seoul National U., U. of Tokyo, Georgia Tech., Rice, U. of Rochester, l'Universite de Genève, EPF - Lausanne, Neel Institute - Grenoble, MPI-Stuttgart, NREL, LBNL, BNL

Active Funding

NSF-ECCS *NSF-BSF: High-Temperature Superconducting Photon Detectors*	$316,039	(2022-2025)
BARDA *Ultra-sensitive PON detection of SARS-CoV-2 and Influenza A antigens using graphene biosensors*	$250,000	(2022-2023)
NIH-SBIR Phase II *Rapid Assessment of Illicit Drugs in Wastewater*	$232,099	(2022-2023)
NSF-DMR *INTERN: Collaborative Grant in Quantum Computing with BBN-Raytheon*	$30,518	(2021)
NSF-MRI *Acquisition of Thermal Scanning Probe Lithography in a Glovebox for Research and Training in Materials and Devices*	$267,400	(2021-2024)
GRIP Molecular Inc *Developing Graphene Multiplexed Detectors*	$230,000	(2021-2022)
DOE-PBM *A Nonlinear Approach to Topological Semimetals*	$448,000	(2021-2024)
ARO *Trade-Offs of the Circular Photogalvanic Effect in Topological*	$129,602	(2021-2023)
AFOSR *Exploring Correlated Topological States with Charge Density Waves*	$813,879 (452,607-BC)	(2020-2023)
NSF-DMR *Understanding the Hinge Modes in a Topological Superconductor*	$553,954	(2020-2023)
ONR *2D Heterostructures of Relativistic Mott Insulators*	$589,916	(2020-2023)
NSF-DMR *Support for the Low Energy Electrodynamics in Solids Conference 2021*	$10,600	(2021-2022)
ARO *Support for the Low Energy Electrodynamics in Solids Conference 2021*	$5,250	(2021-2022)
AFOSR *DURIP: Multidimensional Probe of Next Generation Heterostructures*	$156,693	(2019-2022)
Total Active Grants:	$3,440,579	

Industry:

Patents: 2 Provisional, 1 full, 1 being licensed
Partners: GRIP Molecular, Giner Inc., BBN Raytheon

K.S. Burch Publications

Summary: (http://goo.gl/04ZDsY)
90 Publications
3 Invention Disclosures, 2 Patents
$>$ 6000 citations; H # 38

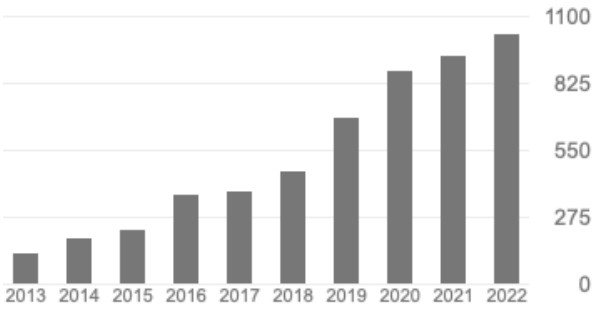

Figure 1: Citations according to Google Scholar as of 10-23-2022.

Peer-Reviewed Publications

[1] Y. Wang, *et al.*, *Nature* **606**, 896 (2022).

[2] N. Kumar, *et al.*, *ACS Nano* **16**, 3704 (2022).

[3] X. Wang, *et al.*, *Science Advances* **8**, eabl7707 (2022).

[4] A. Gao, *et al.*, *Nature* **595**, 521 (2021).

[5] H.-Y. Yang, *et al.*, *Nature Communications* **12**, 5292 (2021).

[6] Q. Ma, A. G. Grushin, K. S. Burch, *Nature Materials* (2021).

[7] H. Gao, *et al.*, *Chemistry of Materials* (2021).

[8] X.-Y. Zhang, *et al.*, *PRX Quantum* **2**, 030352 (2021).

[9] X. Chen, *et al.*, *Matter* (2022).

[10] Y. Liu, K. Slagle, K. S. Burch, J. Alicea, *Phys. Rev. Lett.* **129**, 037201 (2022).

[11] T. H. Nguyen, *et al.*, *Phys. Rev. Lett.* **127**, 267203 (2021).

[12] G. B. Osterhoudt, *et al.*, *Phys. Rev. X* **11**, 011017 (2021).

[13] N. Kumar, *et al.*, *MEDICAL DEVICES & SENSORS* **3**, e10121 (2020).

[14] Y. Wang, *et al.*, *Nano Letters* (2020).

[15] Y. Wang, *et al.*, *npj Quantum Materials* **5**, 14 (2020).

[16] T. A. Tartaglia, *et al.*, *Science Advances* **6** (2020).

[17] S. Lei, *et al.*, *Science Advances* **6**, eaay6407 (2020).

[18] N. Kumar, *et al.*, *Biosensors and Bioelectronics* p. 112123 (2020).

[19] M. J. Gray, *et al.*, *Review of Scientific Instruments* **91**, 073909 (2020).

[20] M. J. Gray, *et al.*, *Nano Letters* **19**, 4890 (2019).

[21] B. Zhou, *et al.*, *Journal of Physics and Chemistry of Solids* **128**, 291 (2019).

[22] G. B. Osterhoudt, *et al.*, *Nature Materials* **18**, 471 (2019).

[23] J. Coulter, *et al.*, *Phys. Rev. B* **100**, 220301 (2019).

[24] M. Brotons-Gisbert, *et al.*, *Nature Nanotechnology* **14**, 442 (2019).

[25] G. B. Osterhoudt, *et al.*, *Physical Review B* **98**, 014308 (2018).

[26] S. Gao, *et al.*, *Proceedings of the National Academy of Sciences* **115**, 6986 (2018).

[27] K. S. Burch, D. Mandrus, J.-G. Park, *Nature* **563**, 47 (2018).

[28] M. Abramchuk, *et al.*, *Advanced Materials* p. 1801325 (2018).

[29] P. Zareapour, *et al.*, *New Journal of Physics* **19**, 043026 (2017).

[30] Y. Tian, *et al.*, *Physical Review B* **95**, 094104 (2017).

[31] P. Zareapour, *et al.*, *Superconductor Science and Technology* **29**, 125006 (2016).

[32] Y. Tian, M. J. Gray, H. Ji, R. Cava, K. S. Burch, *2D Materials* **3**, 025035 (2016).

[33] Y. Tian, G. B. Osterhoudt, S. Jia, R. Cava, K. S. Burch, *Applied Physics Letters* **108**, 041911 (2016).

[34] Y. Tian, K. S. Burch, *Applied spectroscopy* **70**, 1861 (2016).

[35] Y. Tian, *et al.*, *Review of Scientific Instruments* **87**, 043105 (2016).

[36] L. J. Sandilands, *et al.*, *Physical Review B* **93**, 075144 (2016).

[37] H. Luo, *et al.*, *Chemistry of Materials* **28**, 1927 (2016).

[38] S. Kushwaha, *et al.*, *Nature communications* **7**, 11456 (2016).

[39] C.-K. Chan, P. A. Lee, K. S. Burch, J. H. Han, Y. Ran, *Physical review letters* **116**, 026805 (2016).

[40] L. J. Sandilands, Y. Tian, K. W. Plumb, Y.-J. Kim, K. S. Burch, *Physical review letters* **114**, 147201 (2015).

[41] K. Post, *et al.*, *Physical review letters* **115**, 116804 (2015).

[42] J. Moir, *et al.*, *ChemSusChem* **8**, 1557 (2015).

[43] J. Moir, *et al.*, *ChemSusChem* **8**, 1627 (2015).

[44] P. Zareapour, *et al.*, *Physical Review B* **90**, 241106 (2014).

[45] X. G. Xu, *et al.*, *ACS nano* **8**, 11305 (2014).

[46] L. J. Sandilands, *et al.*, *Physical Review B* **90**, 094503 (2014).

[47] L. Sandilands, *et al.*, *Physical Review B* **90**, 081402 (2014).

[48] A. A. Reijnders, *et al.*, *arXiv preprint arXiv:1407.6713* (2014).

[49] A. A. Reijnders, *et al.*, *Physical Review B* **89**, 075138 (2014).

[50] K. Plumb, *et al.*, *Physical Review B* **90**, 041112 (2014).

[51] P. Mirtchev, *et al.*, *Journal of Materials Chemistry A* **2**, 8525 (2014).

[52] A. Hayat, H.-Y. Kee, K. S. Burch, A. M. Steinberg, *Physical Review B* **89**, 094508 (2014).

[53] Y. Tian, C. Adamo, D. G. Schlom, K. S. Burch, *Applied Physics Letters* **102**, 041906 (2013).

[54] H. Ji, *et al.*, *Journal of Applied Physics* **114**, 114907 (2013).

[55] H. Ji, *et al.*, *Materials Research Bulletin* **48**, 2517 (2013).

[56] B. Chapler, *et al.*, *Physical Review B* **87**, 205314 (2013).

[57] P. Zareapour, *et al.*, *Nature communications* **3**, 1056 (2012).

[58] A. Lupascu, *et al.*, *Applied Physics Letters* **101**, 223106 (2012).

[59] A. Hayat, *et al.*, *Physical Review X* **2**, 041019 (2012).

[60] C. Beekman, A. Reijnders, Y. S. Oh, S. Cheong, K. Burch, *Physical Review B* **86**, 020403 (2012).

[61] S. Zhao, *et al.*, *Applied Physics Letters* **98**, 141911 (2011).

[62] C. Lange, *et al.*, *Lasers and Electro-Optics (CLEO), 2011 Conference on* (IEEE, 2011), pp. 1–2.

[63] B. Chapler, *et al.*, *Physical Review B* **84**, 081203 (2011).

[64] D. Talbayev, *et al.*, *Physical review letters* **104**, 227002 (2010).

[65] A. Schafgans, *et al.*, *Physical review letters* **104**, 157002 (2010).

[66] L. Sandilands, *et al.*, *Physical Review B* **82**, 064503 (2010).

[67] A. LaForge, *et al.*, *Physical Review B* **81**, 064510 (2010).

[68] R. Bouskila, *et al.*, *Applied Physics Letters* **96**, 163103 (2010).

[69] Z. Li, *et al.*, *Physical Review B* **79**, 079902 (2009).

[70] A. LaForge, *et al.*, *Physical Review B* **79**, 104516 (2009).

[71] M. M. Qazilbash, *et al.*, *Physical Review B* **77**, 115121 (2008).

[72] A. LaForge, *et al.*, *Physical review letters* **101**, 097008 (2008).

[73] K. Burch, D. Awschalom, D. Basov, *Journal of Magnetism and Magnetic Materials* **320**, 3207 (2008).

[74] K. Burch, *et al.*, *Physical review letters* **100**, 026409 (2008).

[75] A. LaForge, *et al.*, *arXiv preprint arXiv:0705.0045* (2007).

[76] A. LaForge, *et al.*, *Physical Review B* **76**, 054524 (2007).

[77] K. Burch, *et al.*, *Physical Review B* **75**, 054523 (2007).

[78] K. Burch, *et al.*, *Physical Review B Condensed Matter And Materials Physics* **75**, 54523 (2007).

[79] M. Qazilbash, *et al.*, *Physical Review B* **74**, 205118 (2006).

[80] Z. Li, *et al.*, *Physical Review B* **74**, 195404 (2006).

[81] Z. Li, *et al.*, *Physical Review-Section B-Condensed Matter* **74**, 195404 (2006).

[82] K. Burch, *et al.*, *arXiv preprint cond-mat/0604146* (2006).

[83] K. Burch, *et al.*, *Physical review letters* **97**, 087208 (2006).

[84] K. Burch, *et al.*, *Physical Review-Section B-Condensed Matter* **71**, 125340 (2005).

[85] K. S. Burch, *et al.*, *Physical Review B* **71**, 125340 (2005).

[86] K. S. Burch, *et al.*, *Physical review letters* **95**, 046401 (2005).

[87] W. Padilla, *et al.*, *Review of Scientific Instruments* **75**, 4710 (2004).

[88] K. S. Burch, J. Stephens, R. Kawakami, D. Awschalom, D. Basov, *Physical Review B* **70**, 205208 (2004).

[89] E. Singley, *et al.*, *Physical Review B* **68**, 165204 (2003).

[90] D. Basov, *et al.*, *Review of scientific instruments* **74**, 4703 (2003).