

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

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 Director’s 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 100 - 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 <i>NSF-BSF: High-Temperature Superconducting Photon Detectors</i>	\$316,039	(2022-2025)
BARDA <i>Ultra-sensitive PON detection of SARS-CoV-2 and Influenza A antigens using graphene biosensors</i>	\$250,000	(2022-2023)
NIH-SBIR Phase II <i>Rapid Assessment of Illicit Drugs in Wastewater</i>	\$232,099	(2022-2023)
NSF-DMR <i>INTERN: Collaborative Grant in Quantum Computing with BBN-Raytheon</i>	\$30,518	(2021)
NSF-MRI <i>Acquisition of Thermal Scanning Probe Lithography in a Glovebox for Research and Training in Materials and Devices</i>	\$267,400	(2021-2024)
GRIP Molecular Inc <i>Developing Graphene Multiplexed Detectors</i>	\$230,000	(2021-2022)
DOE-PBM <i>A Nonlinear Approach to Topological Semimetals</i>	\$448,000	(2021-2024)
ARO <i>Trade-Offs of the Circular Photogalvanic Effect in Topological</i>	\$129,602	(2021-2023)
AFOSR <i>Exploring Correlated Topological States with Charge Density Waves</i>	\$813,879 (452,607-BC)	(2020-2023)
NSF-DMR <i>Understanding the Hinge Modes in a Topological Superconductor</i>	\$553,954	(2020-2023)
ONR <i>2D Heterostructures of Relativistic Mott Insulators</i>	\$589,916	(2020-2023)
NSF-DMR <i>Support for the Low Energy Electrodynamics in Solids Conference 2021</i>	\$10,600	(2021-2022)
ARO <i>Support for the Low Energy Electrodynamics in Solids Conference 2021</i>	\$5,250	(2021-2022)
AFOSR <i>DURIP: Multidimensional Probe of Next Generation Heterostructures</i>	\$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

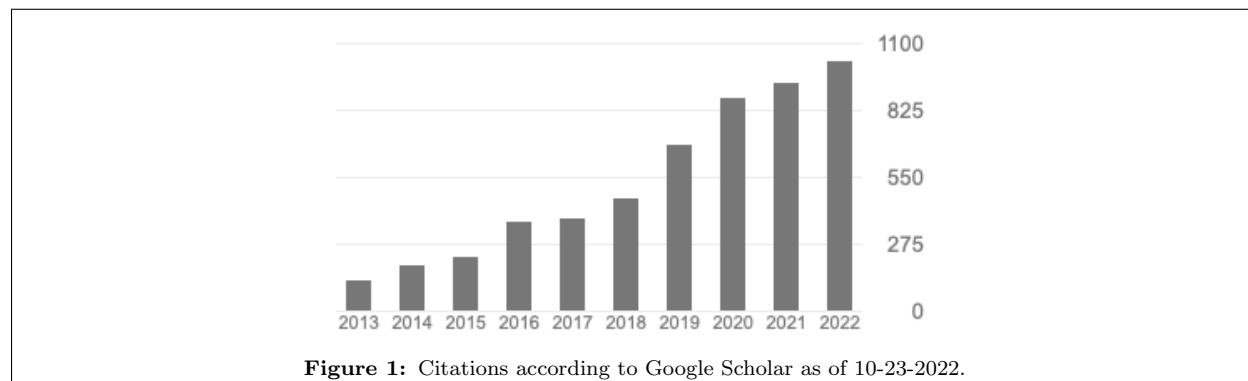
K.S. Burch Significant Publications

Summary: (<http://goo.gl/04ZDsY>)

90 Publications

3 Invention Disclosures, 2 Patents

> 6000 citations; H# = 38



Spectroscopy of Quantum Materials

1. Y. Wang *et al.*, *Nature* **606**, 896–901 (2022).
2. A. Gao *et al.*, *Nature* **595**, 521–525 (2021).
3. Q. Ma, A. G. Grushin, K. S. Burch, *Nature Materials* (June 2021).
4. G. B. Osterhoudt *et al.*, *Phys. Rev. X* **11**, 011017 (1 Jan. 2021).
5. T. A. Tartaglia *et al.*, *Science Advances* **6** (2020).
6. G. B. Osterhoudt *et al.*, *Nature Materials* **18**, 471–475 (2019).
7. K. S. Burch, D. Mandrus, J.-G. Park, *Nature* **563**, 47–52 (2018).
8. M. Abramchuk *et al.*, *Advanced Materials*, 1801325 (2018).
9. C.-K. Chan, P. A. Lee, K. S. Burch, J. H. Han, Y. Ran, *Physical review letters* **116**, 026805 (2016).
10. L. J. Sandilands, Y. Tian, K. W. Plumb, Y.-J. Kim, K. S. Burch, *Physical review letters* **114**, 147201 (2015).

Devices with Quantum Materials

1. N. Kumar *et al.*, *ACS Nano* **16**, 3704–3714 (Mar. 2022).
2. Y. Wang *et al.*, *Nano Letters* (Nov. 2020).
3. M. Brotons-Gisbert *et al.*, *Nature Nanotechnology* **14**, 442–446 (2019).
4. N. Kumar *et al.*, *Biosensors and Bioelectronics*, 112123 (2020).
5. N. Kumar *et al.*, *MEDICAL DEVICES & SENSORS* **3**, e10121 (Dec. 2020).
6. H. Gao *et al.*, *Chemistry of Materials* (2021).
7. H. Luo *et al.*, *Chemistry of Materials* **28**, 1927–1935 (2016).
8. P. Mirtchev *et al.*, *Journal of Materials Chemistry A* **2**, 8525–8533 (2014).

Technique Development

1. M. J. Gray *et al.*, *Review of Scientific Instruments* **91**, 073909 (2020).
2. Y. Tian *et al.*, *Review of Scientific Instruments* **87**, 043105 (2016).