

# ILIJA ZELJKOVIC

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**Education** **Harvard University**, Cambridge, MA

**Ph.D.** in Physics, May 2013

Dissertation Title: “Visualizing the Interplay of Structural and Electronic Disorders in High-Temperature Superconductors using Scanning Tunneling Microscopy” (*Advisor: Jenny Hoffman*)

**Washington University in Saint Louis**, Saint Louis, MO

**B.S.** in Physics; **B.S.** in Computer Science

Minors in Mathematics and Economics, *Summa Cum Laude*, May 2007

**Research** *Assistant Professor*

07/2015 – Present

**Appointments** **Boston College**, Physics Department, Chestnut Hill, MA

*Postdoctoral Research Fellow*

06/2013 – 06/2015

**Boston College**, Physics Department, Chestnut Hill, MA

*Graduate Research Assistant*

02/2008 – 05/2013

**Harvard University**, Physics Department, Cambridge, MA

**Awards** ARO Young Investigator Award (YIP) (2017)

NSF CAREER Award (2017)

DARPA Young Faculty Award (2017)

Purcell Graduate Fellowship (2007)

**Refereed Publications** Zhenyu Wang, Daniel Walkup, Philip Derry, Thomas Scaffidi, Melinda Rak, Sean Vig, Anshul Kogar, Ilija Zeljkovic, Ali Husain, Luiz H Santos, Yuxuan Wang, Andrea Damascelli, Yoshiteru Maeno, Peter Abbamonte, Eduardo Fradkin and Vidya Madhavan, “Quasiparticle Interference and Strong Electron-Mode Coupling in the Quasi-One-Dimensional Bands of Sr<sub>2</sub>RuO<sub>4</sub>”

*Nature Physics* 13, 799 (2017) ([link](#))

Dennis Huang, Stephen Liu, Ilija Zeljkovic, J.F. Mitchell and Jennifer E. Hoffman, “Etching of Cr tips for scanning tunneling microscopy of cleavable oxides”

*Review of Scientific Instruments* 88, 023705 (2017) ([link](#))

Ilija Zeljkovic, Daniel Walkup, Badih Assaf, Kane L. Scipioni, R. Sankar, Fangcheng Chou and Vidya Madhavan, “Strain engineering Dirac surface states in heteroepitaxial topological crystalline insulator thin films”

*Nature Nanotechnology* 10, 849 (2015) ([link](#))

Ilija Zeljkovic, Yoshinori Okada, Maksym Serbyn, R. Sankar, Daniel Walkup, Wenwen Zhou, Junwei Liu, Guoqing Chang, Yung Jui Wang, M. Zahid Hasan, Fangcheng Chou, Hsin Lin, Arun Bansil, Liang Fu and Vidya Madhavan, “Dirac mass generation from crystal symmetry breaking on the surfaces of topological crystalline insulators”

*Nature Materials* 14, 318 (2015) ([link](#))

Ilija Zeljkovic, Kane Scipioni, Daniel Walkup, Yoshinori Okada, Wenwen Zhou, R. Sankar, Guoqing Chang, Yung Jui Wang, Hsin Lin, A. Bansil, Fangcheng Chou, Ziqiang Wang and Vidya Madhavan, “Nanoscale determination of the mass enhancement factor in the lightly-doped bulk insulator lead selenide”

*Nature Communications* 6, 6559 (2015) ([link](#))

R. Sankar, M. Neupane, S.-Y. Xu, C. J. Butler, [I. Zeljkovic](#), I. Panneer Muthuselvam, F.-T. Huang, S.-T. Guo, Sunil K. Karna, M.-W. Chu, W. L. Lee, M.-T. Lin, R. Jayavel, V. Madhavan, M. Z. Hasan and F. C. Chou, “Large single crystal growth, transport property, and spectroscopic characterizations of three-dimensional Dirac semimetal  $\text{Cd}_3\text{As}_2$ ”  
*Scientific Reports* 5, 12966 (2015) ([link](#))

[Ilija Zeljkovic](#), Yoshinori Okada, Cheng-Yi Huang, R. Sankar, Daniel Walkup, Wenwen Zhou, Maksym Serbyn, Fangcheng Chou, Wei-Feng Tsai, Hsin Lin, A. Bansil, Liang Fu, M. Zahid Hasan and Vidya Madhavan, “Mapping the unconventional orbital texture in topological crystalline insulators”  
*Nature Physics* 10, 572 (2014) ([link](#))

[Ilija Zeljkovic](#), Jouko Nieminen, Dennis Huang, Tay-Rong Chang, Yang He, Horng-Tay Jeng, Zhijun Xu, Jinsheng Wen, Genda Gu, Hsin Lin, Robert S. Markiewicz, Arun Bansil and Jennifer E. Hoffman, “Nanoscale interplay of strain and doping in a high-temperature superconductor”  
*Nano Letters* 14, 6749 (2014) ([link](#))

Yang He, Yi Yin, M. Zech, Anjan Soumyanarayanan, Michael M. Yee, Tess Williams, M. C. Boyer, Kamallesh Chatterjee, W. D. Wise, [Ilija Zeljkovic](#), Takeshi Kondo, T. Takeuchi, H. Ikuta, Peter Mistark, Robert S. Markiewicz, Arun Bansil, Subir Sachdev, E. W. Hudson and Jennifer E. Hoffman, “Fermi Surface and Pseudogap Evolution in a Cuprate Superconductor”  
*Science* 344, 608 (2014) ([link](#))

[Ilija Zeljkovic](#), Dennis Huang, Can-Li Song, Bing Lv, Ching-Wu Chu and Jennifer E. Hoffman, “Nanoscale Surface Element Identification and Dopant Homogeneity in the High- $T_c$  Superconductor  $\text{Ca}_{1-x}\text{Pr}_x\text{Fe}_2\text{As}_2$ ”  
*Physical Review B* 87, 201108R (2013) ([link](#))

[Ilija Zeljkovic](#) and J. E. Hoffman, “Interplay of chemical disorder and electronic inhomogeneity in unconventional superconductors”  
*Physical Chemistry Chemical Physics* 15, 13462 (2013) ([link](#))

[Ilija Zeljkovic](#), Elizabeth J. Main, Tess L. Williams, M. C. Boyer, Kamallesh Chatterjee, W. D. Wise, Yi Yin, Martin Zech, Adam E. Pivonka, Takeshi Kondo, T. Takeuchi, Hiroshi Ikuta, Jinsheng Wen, Zhijun Xu, G. D. Gu, E. W. Hudson and Jennifer E. Hoffman, “Scanning tunneling microscopy imaging of symmetry-breaking structural distortion in the bismuth-based cuprate superconductors”  
*Nature Materials* 11, 585-589 (2012) ([link](#))

[Ilija Zeljkovic](#), Zhijun Xu, Jinsheng Wen, Genda Gu, Robert S. Markiewicz and Jennifer E. Hoffman, “Imaging the impact of single oxygen atoms on superconducting  $\text{Bi}_{2+y}\text{Sr}_{2-y}\text{CaCu}_2\text{O}_{8+x}$ ”  
*Science* 337, 320 (2012) ([link](#))

## Preprints

Daniel Walkup, Badih Assaf, Kane L. Scipioni, R. Sankar, Fangcheng Chou, Guoqing Chang, Hsin Lin, [Ilija Zeljkovic](#) and Vidya Madhavan, “Interplay of orbital effects and nanoscale strain in topological crystalline insulators”  
*arXiv*: 1610.09337 ([link](#))

## Invited Talks

“Interplay of Dirac fermions and structural deformations in topological crystalline insulators,” UMass Boston, Boston, MA, **November 2016** (*Physics Colloquium*)

“Interplay of Dirac fermions and structural deformations in topological crystalline insulators,” **APS March Meeting**, Baltimore, MD, **March 2016**

“Interplay of Dirac fermions and structural deformations in topological crystalline insulators,” The 19<sup>th</sup> Symposium on Condensed Matter Physics, Belgrade, Serbia, **September 2015**

“Interplay of Dirac fermions and structural deformations in topological crystalline insulators,” Emerging Frontiers in Experimental Condensed Matter Physics, NSF Workshop, Arlington, VA, **May 2015**

“Spectroscopic characterization of quantum materials using cryogenic ultra-high vacuum scanning tunneling microscopy,” New England Society for Microscopy Symposium, Woods Hole, MA, **May 2015**

“Dirac fermions and broken symmetries in topological crystalline insulators,” U. C. Davis, Davis, CA, **March 2015** (*Physics Colloquium*)

“Interplay of Dirac Fermions and Structural Deformations in Topological Crystalline Insulators,” MIT, Cambridge, MA, **February 2015** (*Condensed Matter Seminar*)

“Dirac fermions and broken symmetries in topological crystalline insulators,” Boston College, Chestnut Hill, MA, **February 2015** (*Physics Colloquium*)

“Dirac fermions and broken symmetries in topological crystalline insulators,” Boston University, Boston, MA, **February 2015** (*Condensed Matter Seminar*)

“Dirac fermions and broken symmetries in topological crystalline insulators,” University of Colorado at Boulder, Boulder, CO, **February 2015** (*Physics Colloquium*)

“Symmetry protected Dirac electrons in topological crystalline insulators,” Vanderbilt University, Nashville, TN, **January 2015** (*Physics Colloquium*)

“Strain engineering of Dirac surface states in topological crystalline insulator thin films,” U. C. Santa Cruz, Santa Cruz, CA, **January 2015** (*Condensed Matter Seminar*)

“Symmetry protected Dirac fermions in topological crystalline insulators,” U. C. Santa Cruz, Santa Cruz, CA, **January 2015** (*Physics Colloquium*)

“Strain engineering of Dirac surface states in topological crystalline insulator heteroepitaxial thin films,” Boston University, Boston, MA, **October 2014** (*Condensed Matter Seminar*)

“Symmetry protected Dirac fermions in topological crystalline insulators,” Clark University, Worcester, MA, **October 2014** (*Physics Colloquium*)

“The impact of chemical inhomogeneity on the electronic disorder in a high- $T_c$  superconductor,” University of Connecticut, Storrs, CT, **March 2013** (*Condensed Matter Seminar*)

**Teaching**      PHYS 8910: Topics in Physics – Microscopy and Spectroscopy Techniques, and Applications to Quantum Materials (**Fall 2015**)  
PHYS 4200: Electricity & Magnetism I (**Spring 2017**)  
PHYS 4545: Condensed Matter Physics (**Fall 2017**)

**Professional Service**      Reviewer for: NSF-DMR, Science, Nature Materials, Physical Review Letters, Physical Review B, Physical Review X, Solid State Communications  
Session Chair: APS March Meeting (**2015, 2016**)

**Community Service**      Initiated and organized “Undergraduate Research Symposia” talks at BC (**2015 – present**)  
Organized Undergraduate Research Poster Session at BC (**2016**)  
Faculty mentor for students in Research Science Institute program at MIT (**2016**)  
Junior faculty panel on pursuing faculty jobs, held at Harvard U (**2016**)  
Presented at Chinese Youth Summer Research Program at BC (**2016**)