

Dillon Wong

CONTACT INFORMATION Email: dilwong@gmail.com
Website: http://www.dilwong.com

EDUCATION **University of California, Berkeley**
Ph.D. Physics, 2017

- Advisor: Michael F. Crommie
- Dissertation: Tuning Electrostatic Potentials for Imaging the Quantum Properties of Massless Dirac Fermions in Graphene

M.A. Physics, 2013
B.A. Physics, 2011

- Highest Distinction in General Scholarship (*summa cum laude*)
- Minor in Mathematics

AWARDS AND HONORS Princeton Materials Science Postdoctoral Fellowship, 2017
Caltech Institute for Quantum Information and Matter Postdoctoral Scholar, 2017 (Declined)
Lars Commins Memorial Award in Experimental Physics, 2016
Electronic Materials Symposium Best Poster Award, 2015
National Defense Science and Engineering Graduate Fellowship, 2013
UC Berkeley Outstanding Graduate Student Instructor Award, 2012
Berkeley Fellowship for Graduate Study, 2011
UC Berkeley Physics Undergraduate Commencement Speaker Award, 2011 (Declined)

SKILLS Low-Temperature UHV Scanning Tunneling Microscopy and Spectroscopy
Scanning Electron Microscopy, Electron Beam Lithography
Raman Spectroscopy, Wire Bonding, Lathe and Milling
C++, IDL, Python, R, Java, HTML/CSS/Javascript, MATLAB, Mathematica, LaTeX
Adobe Illustrator, Autodesk Maya, AutoCAD, SolidWorks, LabVIEW, COMSOL

EXPERIENCE **Princeton University**
Postdoctoral Research Associate **June 2017 - Present**
I am a postdoctoral fellow affiliated with the Princeton Center for Complex Materials and the Princeton Institute for the Science and Technology of Materials. I work in Prof. Ali Yazdani's Princeton Nanoscale Microscopy Laboratory.

University of California, Berkeley
Student Researcher **May 2010 - May 2017**
I was a student in Prof. Michael Crommie's condensed matter physics research group. I fabricated graphene field-effect transistors and studied their electronic properties using scanning tunneling microscopy.

Teaching Assistant **August 2011 - December 2011**
I taught an undergraduate course in experimental physics and semiconductor electronics. My duties were to help students troubleshoot their lab projects and to grade lab reports. I also supervised a workshop that helped students prepare for the GRE.

Programmer **June 2009 - July 2011**
I was a programmer at the Samuel Silver Space Sciences Laboratory. I wrote code for organizing and

calibrating data collected by the Fast Auroral Snapshot Explorer, a NASA plasma physics satellite that operated between 1996 and 2009.

PATENTS

Local Doping of Two-Dimensional Materials, United States Patent 9449851

PRESENTATIONS

ExxonMobil Fellows Poster Session, Clinton, New Jersey, 2018
PCCM NSF Site Visit Poster Session, Princeton, New Jersey, 2018
APS March Meeting Contributed Talk, New Orleans, Louisiana, 2017
MIT Invited Talk, 2016
Princeton University Condensed Matter Invited Seminar, 2016
Caltech Institute for Quantum Information and Matter Invited Seminar, 2016
Stanford University Invited Talk, 2016
University of Seoul Invited Colloquium, 2016
BES-MSE Division On-Site Review Poster Session, Lawrence Berkeley National Laboratory, 2016
APS March Meeting Contributed Talk, Baltimore, Maryland, 2016
UC Berkeley Physics 290K Condensed Matter Invited Seminar, 2016
DOE SP2 Program Grant Review Talk, Berkeley, California 2015
Electronic Materials Symposium Poster Session, Santa Clara, California 2015
Ohio State University Condensed Matter Experiment Invited Seminar, 2015
APS March Meeting Contributed Talk, San Antonio, Texas, 2015
APS March Meeting Contributed Talk, Denver, Colorado, 2014
Graphene Week Contributed Talk, Chemnitz, Germany, 2013
BES-MSE Division On-Site Review Poster Session, Lawrence Berkeley National Laboratory, 2013

PUBLICATIONS

Dillon Wong*, Kevin P. Nuckolls*, Myungchul Oh*, Biao Lian*, Yonglong Xie, Sangjun Jeon, Kenji Watanabe, Takashi Taniguchi, B. Andrei Bernevig, Ali Yazdani. “Cascade of electronic transitions in magic-angle twisted bilayer graphene” *Nature* **582**, 198-202 (2020)

Dillon Wong*, Sangjun Jeon*, Kevin P. Nuckolls*, Myungchul Oh*, Simon C. J. Kingsley, Ali Yazdani. “A modular ultra-high vacuum millikelvin scanning tunneling microscope” *Review of Scientific Instruments* **91**, 023703 (2020)

Wu Shi, Salman Kahn, Lili Jiang, Sheng-Yu Wang, Hsin-Zon Tsai, **Dillon Wong**, Takashi Taniguchi, Kenji Watanabe, Feng Wang, Michael F. Crommie, Alex Zettl. “Reversible writing of high-mobility and high-carrier-density doping patterns in two-dimensional van der Waals heterostructures” *Nature Electronics* **3**, 99-105 (2020)

Zahra Pedramrazi*, Charlotte Herbig*, Artem Pulkin*, Shujie Tang, Madeleine Phillips, **Dillon Wong**, Hyejin Ryu, Michele Pizzochero, Yi Chen, Feng Wang, Eugene J. Mele, Zhi-Xun Shen, Sung-Kwan Mo, Oleg V. Yazyev, Michael F. Crommie. “Manipulating Topological Domain Boundaries in the Single-Layer Quantum Spin Hall Insulator 1T'-WSe₂” *Nano Letters* **19**, 5634-5639 (2019)

Jiong Lu*, Hsin-Zon Tsai*, Alpin N. Tatan*, Sebastian Wickenburg, Arash A. Omrani, **Dillon Wong**, Alexander Riss, Erik Piatti, Kenji Watanabe, Takashi Taniguchi, Alex Zettl, Vitor M. Pereira, Michael F. Crommie. “Frustrated supercritical collapse in tunable charge arrays on graphene” *Nature Communications* **10**, 477 (2019)

Dillon Wong*, Yang Wang*, Wuwei Jin, Hsin-Zon Tsai, Aaron Bostwick, Eli Rotenberg, Roland K. Kawakami, Alex Zettl, Arash A. Mostofi, Johannes Lischner, Michael F. Crommie. “Microscopy of hydrogen and hydrogen-vacancy defect structures on graphene devices” *Physical Review B* **98**, 155436 (2018)

Miguel M. Ugeda, Artem Pulkin, Shujie Tang, Hyejin Ryu, Quansheng Wu, Yi Zhang, **Dillon Wong**, Zahra Pedramrazi, Ana Martín-Recio, Yi Chen, Feng Wang, Zhi-Xun Shen, Sung-Kwan Mo, Oleg

V. Yazyev, Michael F. Crommie. “Observation of topologically protected states at crystalline phase boundaries in single-layer WSe₂” *Nature Communications* **9**, 3401 (2018)

Jairo Velasco Jr.*, Juwon Lee*, **Dillon Wong***, Salman Kahn, Hsin-Zon Tsai, Joseph Costello, Torben Umeda, Takashi Taniguchi, Kenji Watanabe, Alex Zettl, Feng Wang, Michael F. Crommie. “Visualization and Control of Single-Electron Charging in Bilayer Graphene Quantum Dots” *Nano Letters* **18**, 5104-5110 (2018)

Shujie Tang*, Chaofan Zhang*, **Dillon Wong**, Zahra Pedramrazi, Hsin-Zon Tsai, Chunjing Jia, Brian Moritz, Martin Claassen, Hyejin Ryu, Salman Kahn, Juan Jiang, Hao Yan, Makoto Hashimoto, Donghui Lu, Robert G. Moore, Chan-Cuk Hwang, Choongyu Hwang, Zahid Hussain, Yulin Chen, Miguel M. Ugeda, Zhi Liu, Xiaoming Xie, Thomas P. Devereaux, Michael F. Crommie, Sung-Kwan Mo, Zhi-Xun Shen. “Quantum spin Hall state in monolayer 1T'-WTe₂” *Nature Physics* **13**, 683-687 (2017)

Dillon Wong*, Fabiano Corsetti*, Yang Wang*, Victor W. Brar, Hsin-Zon Tsai, Qiong Wu, Roland K. Kawakami, Alex Zettl, Arash A. Mostofi, Johannes Lischner, Michael F. Crommie. “Spatially resolving density-dependent screening around a single charged atom in graphene” *Physical Review B* **95**, 205419 (2017)

Sebastian Wickenburg*, Jiong Lu*, Johannes Lischner, Hsin-Zon Tsai, Arash A. Omrani, Alexander Riss, Christoph Karrasch, Han Sae Jung, Ramin Khajeh, **Dillon Wong**, Kenji Watanabe, Takashi Taniguchi, Alex Zettl, Antonio H. Castro Neto, Steven G. Louie, Michael F. Crommie. “Tuning charge and correlation effects for a single molecule on a graphene device” *Nature Communications* **7**, 13553 (2016)

Juwon Lee*, **Dillon Wong***, Jairo Velasco Jr., Joaquin F. Rodriguez-Nieva, Salman Kahn, Hsin-Zon Tsai, Takashi Taniguchi, Kenji Watanabe, Alex Zettl, Feng Wang, Leonid S. Levitov, Michael F. Crommie. “Imaging electrostatically confined Dirac fermions in graphene quantum dots” *Nature Physics* **12**, 1032-1036 (2016)

Jairo Velasco Jr.*, Long Ju*, **Dillon Wong***, Salman Kahn, Juwon Lee, Hsin-Zon Tsai, Chad Germany, Sebastian Wickenburg, Jiong Lu, Takashi Taniguchi, Kenji Watanabe, Alex Zettl, Feng Wang, Michael F. Crommie. “Nanoscale Control of Rewriteable Doping Patterns in Pristine Graphene/Boron Nitride Heterostructures” *Nano Letters* **16**, 1620-1625 (2016)

Hsin-Zon Tsai*, Arash A. Omrani*, Sinisa Coh*, Hyungju Oh, Sebastian Wickenburg, Young-Woo Son, **Dillon Wong**, Alexander Riss, Han Sae Jung, Giang D. Nguyen, Griffin F. Rodgers, Andrew S. Aikawa, Takashi Taniguchi, Kenji Watanabe, Alex Zettl, Steven G. Louie, Jiong Lu, Marvin L. Cohen, Michael F. Crommie. “Molecular Self-Assembly in a Poorly Screened Environment: F₄TCNQ on Graphene/BN” *ACS Nano* **9**, 12168-12173 (2015)

Dillon Wong*, Yang Wang*, Jeil Jung*, Sergio Pezzini, Ashley M. DaSilva, Hsin-Zon Tsai, Han Sae Jung, Ramin Khajeh, Youngkyou Kim, Juwon Lee, Salman Kahn, Sajjad Tollabimazraehno, Haider Rasool, Kenji Watanabe, Takashi Taniguchi, Alex Zettl, Shaffique Adam, Allan H. MacDonald, Michael F. Crommie. “Local spectroscopy of moiré-induced electronic structure in gate-tunable twisted bilayer graphene” *Physical Review B* **92**, 155409 (2015)

Dillon Wong*, Jairo Velasco Jr.*, Long Ju*, Juwon Lee, Salman Kahn, Hsin-Zon Tsai, Chad Germany, Takashi Taniguchi, Kenji Watanabe, Alex Zettl, Feng Wang, Michael F. Crommie. “Characterization and manipulation of defects in insulating hexagonal boron nitride using scanning tunnelling microscopy” *Nature Nanotechnology* **10**, 949-953 (2015)

Han Sae Jung, Hsin-Zon Tsai, **Dillon Wong**, Chad Germany, Salman Kahn, Youngkyou Kim,

Andrew S. Aikawa, Dhruv K. Desai, Griffin F. Rodgers, Aaron J. Bradley, Jairo Velasco Jr., Kenji Watanabe, Takashi Taniguchi, Feng Wang, Alex Zettl, Michael F. Crommie. “Fabrication of Gate-Tunable Graphene Devices for Scanning Tunneling Microscopy Studies with Coulomb Impurities” *Journal of Visualized Experiments* doi:10.3791/52711 (2015)

Yang Wang*, **Dillon Wong***, Andrey V. Shytov, Victor W. Brar, Sangkook Choi, Qiong Wu, Hsin-Zon Tsai, William Regan, Alex Zettl, Roland K. Kawakami, Steven G. Louie, Leonid S. Levitov, Michael F. Crommie. “Observing Atomic Collapse Resonances in Artificial Nuclei on Graphene” *Science* **340**, 734-737 (2013)

*These authors contributed equally to this work.