

Yuanbo Zhang (张远波)

Department of Physics, Fudan University
Physics Building, Room S434, 2205 Songhu Road, Shanghai 200438, China
Phone: +86-21-31249043 *Email:* zhyb@fudan.edu.cn

Professional Experience

Professor of Physics, Fudan University, Shanghai, China	2011-present
Postdoctoral Associate, IBM Almaden Research Center, USA	2010
Miller Research Fellow, University of California at Berkeley	Sept. 2006-2009

Education

Ph.D. in Physics, Columbia University Thesis: Electronic Transport in Graphene Advisor: Philip Kim	June 2006
B.S. in Physics, Peking University, China	Fall 2000

Honors and Awards

The Innovative Young Scientist Prize, Chinese Vacuum Science and Technology	2018
Chang Jiang Scholarship (长江特聘教授), Ministry of Education, China	2016
Sir Martin Wood China Prize, Oxford Instruments	2016
Nishina Asia Award, Nishina Memorial Foundation, Japan	2014
Qiu Shi Outstanding Young Scholar Award, Qiu Shi Foundation, China	2013
Eastern Scholarship Award (东方学者), Shanghai, China	2012
IUPAP Young Scientist Prize (C8), International Union of Pure and Applied Physics	2010
Miller Fellowship, University of California at Berkeley	2006-09
Charles H. Townes Fellowship, Columbia University	2005-06

Invited Presentations

Nature Conference on 2D Materials: Visions of Future Research and Applications, Xi'an, China	Nov. 2019
International Conference on the Formation of Semiconductor Interfaces, Shanghai, China	Jun. 2019
Magnetic and Superconducting Materials Conference, Seoul, Korea	Aug. 2019
Spectroscopies in Novel Superconductors, Tokyo, Japan	Jun. 2019
APS March Meeting, Boston, USA	Mar. 2019
SPSTM-7 & LTSPM-1 International Conference, Nijmegen	Jul. 2018
Brazilian Physical Society Autumn Meeting, Foz do Iguaçu, Brazil	May 2018
MRS Fall Meeting, Boston, USA	Nov. 2018
HMF23, Toulouse, France	Jul. 2018

M ² S, Beijing, China	Aug. 2018
ICON-2DMAT, Melbourne, Australia	Dec. 2018
Quantum Materials Symposium, Berlin, Germany	Oct. 2017
8 th International Symposium on Surface Science (ISSS8), Tsukuba, Japan	Oct. 2017
Recent Progress in Graphene and Two-dimensional Materials Research Conference, Singapore	Sept. 2017
Flatlands beyond Graphene, Lausanne, Switzerland	Aug. 2017
EP2DS-22 and MSS-18, State College, USA	Jul. 2017
OCPA9, Beijing	Jul. 2017
APS March Meeting, New Orleans, USA	Mar. 2017
8 th International Conference on Advanced Materials and Nanotechnology, New Zealand	Feb. 2017
FET2016, Minnesota, USA	Sept. 2016
IVC-20, Busan, South Korea	Aug. 2016
ICPS 2016, Beijing	Jul. 2016
Recent Progress in Graphene Research, Australia	Nov. 2015
Graphene Week, Manchester, UK	Jun. 2015
MRS Spring Meeting, San Francisco, USA	Apr. 2015
APS March Meeting, San Antonio, USA	Mar. 2015
Muju International Winter School Series, Muju Resort, South Korea	Jan. 2015
International Conference on Topological Quantum Phenomena, Kyoto, Japan	Dec. 2014
FET2014, Kashiwa, Japan	Oct. 2014
International Conference on Two-Dimensional Layered Materials (IC2DMat), Hangzhou, China	Oct. 2014
IPS14 Conference, Michigan State University, East Lansing, USA	Aug. 2014
OCPA8 Conference, Singapore	Jun. 2014
4th ICQs Conference on Spintronics, Beijing	Jun. 2014
Hong Kong Forum of Physics, Hong Kong	Dec. 2013
Gezhi Symposium, Peking University	Oct. 2013
5th workshop for Emergent Materials Research, Pohang, Korea	Jul. 2012
A3 Conference, Urumqi, China	Oct. 2011
CNMM International Workshop, Beijing	Sept. 2011
OCPA7 Conference, Taiwan	Aug. 2011
Semiconductor Physics Conference, Hohhot, China	Aug. 2011
The 11th Asia Pacific Physics Conference (APPC11), Shanghai	Nov. 2010
Dasan Conference on Graphene - New Science and Technology, Korea	Nov. 2010
30th International Conference on the Physics of Semiconductors, Seoul, Korea	Jul. 2010
International Conference on Superlattices, Nanostructures and Nanodevices, Beijing, China	Jul. 2010
Graphene Week, University of Maryland, College Park, USA	Apr. 2010
Colloquium, Department of Physics, National Taiwan University, Taipei	Mar. 2009
Colloquium, University of Virginia, Charlottesville, Virginia	Feb. 2009
Colloquium, University of Chicago, Chicago	Jan. 2009
Colloquium, University of California at Santa Barbara, Santa Barbara	Jan. 2009
APS March Meeting, Pittsburgh	Mar. 2009
The 2008 Asian Conference on Nanoscience and Nanotechnology, Singapore	Nov. 2008
Colloquium, Department of Physics, Fudan University, Shanghai	Oct. 2008

International Conference on Nanoscience + Technology (ICN+T), Keystone	Jul. 2008
APS March Meeting, Denver	Mar. 2007
Free Electron Laser Workshop, Synchrotron Radiation Center, UW-Madison	Aug. 2006
Gordon Conference, Correlated Electron Systems, Mount Holyoke College	Jun. 2006

Publication List

1. “Tunable correlated Chern insulator and ferromagnetism in a moiré superlattice” Guorui Chen, Aaron L. Sharpe, Eli J. Fox, Ya-Hui Zhang, Shaoxin Wang, Lili Jiang, Bosai Lyu, Hongyuan Li, Kenji Watanabe, Takashi Taniguchi, Zhiwen Shi, T. Senthil, David Goldhaber-Gordon, **Yuanbo Zhang** and Feng Wang, *Nature* **579**, 56–61 (2020).
2. “Quantum anomalous Hall effect in intrinsic magnetic topological insulator MnBi_2Te_4 ” Yujun Deng, Yijun Yu, Meng Zhu Shi, Zihan Xu, Jing Wang, Xian Hui Chen and Yuanbo Zhang, *Science* **367**, 895-900 (2020).
3. “High-temperature superconductivity in monolayer $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ ” Yijun Yu, Liguang Ma, Peng Cai, Ruidan Zhong, Cun Ye, Jian Shen, G. D. Gu, Xian Hui Chen and **Yuanbo Zhang**, *Nature* **575**, 156–163 (2019).
4. “Flat Chern Band from Twisted Bilayer MnBi_2Te_4 ” Biao Lian, Zhaochen Liu, **Yuanbo Zhang** and Jing Wang, *Phys. Rev. Lett.*, in press. Preprint at arXiv:1908.02581.
5. “Mapping Dynamical Magnetic Responses of Ultra-thin Micron-size Superconducting Films using Nitrogen-vacancy Centers in Diamond” Ying Xu, Yijun Yu, Yuen Yung Hui, Yudan Su, Jun Cheng, Huan-Cheng Chang, **Yuanbo Zhang**, Y. Ron Shen and Chuanshan Tian, *Nano Lett.* **19**, 5697-5702 (2019).
6. “Signatures of Tunable Superconductivity in a Trilayer Graphene Moiré Superlattice” Guorui Chen, Aaron L. Sharpe, Patrick Gallagher, Ilan T. Rosen, Eli Fox, Lili Jiang, Bosai Lyu, Hongyuan Li, Kenji Watanabe, Takashi Taniguchi, Jeil Jung, Zhiwen Shi, David Goldhaber-Gordon, **Yuanbo Zhang** and Feng Wang, *Nature* **572**, 215–219 (2019).
7. “Evidence of a Gate-Tunable Mott Insulator in a Trilayer Graphene Moiré Superlattice” Guorui Chen, Lili Jiang, Shuang Wu, Bosai Lyu, Hongyuan Li, Bheema Lingam Chittari, Kenji Watanabe, Takashi Taniguchi, Zhiwen Shi, Jeil Jung, **Yuanbo Zhang** and Feng Wang, *Nature Physics* **15**, 237–241 (2019).
8. “Gate-Tunable Topological Flat Bands in Trilayer Graphene Boron-Nitride Moiré Superlattices” Bheema Lingam Chittari, Guorui Chen, **Yuanbo Zhang**, Feng Wang and Jeil Jung, *Phys. Rev. Lett.* **122**, 016401 (2019).
9. “Discrete Superconducting Phases in FeSe-Derived Superconductors” T. P. Ying, M. X. Wang, X. X. Wu, Z. Y. Zhao, Z. Z. Zhang, B. Q. Song, Y. C. Li, B. Lei, Q. Li, Y. Yu, E. J. Cheng, Z. H. An, **Y. Zhang**, X. Y. Jia, W. Yang, X. H. Chen, and S. Y. Li, *Phys. Rev. Lett.* **121**, 207003 (2018).
10. Fangyuan Yang, Zuocheng Zhang, Nai Zhou Wang, Guo Jun Ye, Wenkai Lou, Xiaoying Zhou, Kenji Watanabe, Takashi Taniguchi, Kai Chang, Xian Hui Chen and **Yuanbo Zhang** “Quantum Hall Effect in Electron-doped Black Phosphorus Field-effect Transistors” *Nano Lett.*, **18**, 6611-6616 (2018).
11. Yujun Deng, Yijun Yu, Yichen Song, Jingzhao Zhang, Nai Zhou Wang, Zeyuan Sun, Yangfan Yi, Yi Zheng Wu, Shiwei Wu, Junyi Zhu, Jing Wang, Xian Hui Chen and **Yuanbo Zhang** “Gate-tunable Room-temperature Ferromagnetism in Two-dimensional Fe_3GeTe_2 ” *Nature* **563**, 94–99 (2018).
12. Zuocheng Zhang, Likai Li, Jason Horng, Nai Zhou Wang, Fangyuan Yang, Yijun Yu, Yu Zhang, Guorui Chen, Kenji Watanabe, Takashi Taniguchi, Xian Hui Chen, Feng Wang and **Yuanbo Zhang** “Strain-modulated Bandgap and Piezo-resistive Effect in Black Phosphorus Field-effect Transistors”, *Nano Lett.* **17**, 6097–6103 (2017).
13. Guorui Chen, Mengqiao Sui, Duoming Wang, Shuopei Wang, Jeil Jung, Pilkyung Moon, Shaffique Adam, Kenji Watanabe, Takashi Taniguchi, Shuyun Zhou, Mikito Koshino, Guangyu Zhang, and **Yuanbo**

- Zhang** “Emergence of Tertiary Dirac Points in Graphene Moiré Superlattices” *Nano Lett.* **17**, 3576 (2017).
14. Likai Li, Jonghwan Kim, Chenhao Jin, Guojun Ye, Diana Y. Qiu, Felipe H. da Jornada, Zhiwen Shi, Long Chen, Zuocheng Zhang, Fangyuan Yang, Kenji Watanabe, Takashi Taniguchi, Wencai Ren, Steven G. Louie, Xianhui Chen, **Yuanbo Zhang** and Feng Wang “Direct Observation of Layer-Dependent Electronic Structure in Phosphorene” *Nature Nanotechnology* **12**, 21–25 (2017).
 15. Ligu Ma, Cun Ye, Yijun Yu, Xiu Fang Lu, Xiaohai Niu, Sejoong Kim, Donglai Feng, David Tománek, Young-Woo Son, Xian Hui Chen and **Yuanbo Zhang** “A metallic mosaic phase and the origin of Mott insulating state in 1T-TaS₂” *Nature Communications* **7**, 10956 (2016).
 16. Likai Li, Fangyuan Yang, Guo Jun Ye, Zuocheng Zhang, Zengwei Zhu, Wen-Kai Lou, Liang Li, Kenji Watanabe, Takashi Taniguchi, Kai Chang, Yayu Wang, Xian Hui Chen and **Yuanbo Zhang** “Quantum Hall Effect in Black Phosphorus Two-dimensional Electron System” *Nature Nanotechnology* **11**, 593–597 (2016).
 17. Fei Wang, Guorui Chen, Wei Li, Yonggang Wang, Congxiao Wang, **Yuanbo Zhang** and Yongyao Xia “Layer Controllable Graphene Using Graphite Intercalation Compounds with Different Stage Numbers through Li Conversion Reaction” *Adv. Mater. Interfaces* **3**, 1500496 (2016).
 18. Zuocheng Zhang, Wei Wei, Fangyuan Yang, Zengwei Zhu, Minghua Guo, Yang Feng, Dejing Yu, Mengyu Yao, Neil Harrison, Ross McDonald, **Yuanbo Zhang**, Dandan Guan, Dong Qian, Jinfeng Jia, and Yayu Wang “Zeeman effect of the topological surface states revealed by quantum oscillations up to 91 Tesla” *Phys. Rev. B* **92**, 235402 (2015).
 19. Z. J. Xiang, G. J. Ye, C. Shang, B. Lei, N. Z. Wang, K. S. Yang, D. Y. Liu, F. B. Meng, X. G. Luo, L. J. Zou, Z. Sun, **Y. Zhang** and X. H. Chen “Pressure-induced Lifshitz transition in black phosphorus” *Phys. Rev. Lett.* **115**, 186403 (2015).
 20. Ziqi Miao, Qiong Wu, Xin Li, Qiong He, Kun Ding, Zhenghua An, **Yuanbo Zhang** and Lei Zhou “Widely tunable terahertz phase modulation with gate-controlled graphene metasurfaces” *Phys. Rev. X* **5**, 041027 (2015).
 21. Mengqiao Sui, Guorui Chen, Ligu Ma, Wen-Yu Shan, Dai Tian, Kenji Watanabe, Takashi Taniguchi, Xiaofeng Jin, Wang Yao, Di Xiao and **Yuanbo Zhang** “Gate-tunable Topological Valley Transport in Bilayer Graphene” *Nature Physics* **11**, 1027–1031 (2015).
 22. Likai Li, Guo Jun Ye, Vy Tran, Ruixiang Fei, Guorui Chen, Huichao Wang, Jian Wang, Kenji Watanabe, Takashi Taniguchi, Li Yang, Xian Hui Chen and **Yuanbo Zhang** “Quantum oscillations in a two dimensional electron gas in black phosphorus thin films” *Nature Nanotechnology* **10**, 608–613 (2015).
 23. Yijun Yu, Fangyuan Yang, Xiu Fang Lu, Ya Jun Yan, Y. H. Cho, Ligu Ma, Xiaohai Niu, Sejoong Kim, Young-Woo Son, Donglai Feng, Shiyan Li, Sang-Wook Cheong, Xian Hui Chen and **Yuanbo Zhang** “Gate-tunable Phase Transitions in 1T-TaS₂” *Nature Nanotechnology* **10**, 270–276 (2015).
 24. D. N. Basov, M. M. Fogler, A. Lanzara, Feng Wang and **Yuanbo Zhang** “Colloquium: Graphene spectroscopy” *Rev. Mod. Phys.* **86**, 959 (2014).
 25. Longbin Qiu, Qiong Wu, Zhibin Yang, Xuemei Sun, **Yuanbo Zhang** and Huisheng Peng “Freestanding Aligned Carbon Nanotube Array Grown on a Large-Area Single-Layered Graphene Sheet for Efficient Dye-Sensitized Solar Cell” *Small* **11**, 1150-1155 (2014).
 26. Likai Li, Yijun Yu, Guo Jun Ye, Qingqin Ge, Xuedong Ou, Hua Wu, Donglai Feng, Xian Hui Chen and **Yuanbo Zhang** “Black phosphorus field-effect transistors” *Nature Nanotechnology* **9**, 372–377 (2014).
 27. Zhiwen Shi, Chenhao Jin, Wei Yang, Long Ju, Jason Horng, Xiaobo Lu, Hans A. Bechtel, Michael C. Martin, Deyi Fu, Junqiao Wu, Kenji Watanabe, Takashi Taniguchi, **Yuanbo Zhang**, Xuedong Bai, Enge Wang, Guangyu Zhang and Feng Wang “Gate-dependent pseudospin mixing in graphene/boron nitride moiré superlattices” *Nature Physics* **10**, 743–747 (2014)
 28. Long Ju, Jairo Velasco Jr., Edwin Huang, Salman Kahn, Casey Nosiglia, Hsin-Zon Tsai, Wei Yang, Takashi Taniguchi, Kenji Watanabe, **Yuanbo Zhang**, Guangyu Zhang, Michael Crommie, Alex Zettl

- and Feng Wang “Photo-induced Doping in Graphene/Boron Nitride Heterostructures” *Nature Nanotechnology* **9**, 348–352 (2014).
29. W. Yang, Z. Shi, G. Chen, C.-C. Liu, L. Zhang, G. Xie, M. Cheng, D. Wang, R. Yang, D. Shi, K. Watanabe, T. Taniguchi, Y. Yao, **Y. Zhang** and G. Zhang “Epitaxial Growth of Single-Domain Graphene on Hexagonal Boron Nitride” *Nature Materials* **12**, 792–797 (2013).
 30. Gang Mi, Likai Li, **Yuanbo Zhang** and Gengfeng Zheng “Sn-doped Bismuth Telluride Nanowires with High Conductivity” *Nanoscale* **4**, 6276 (2012).
 31. J. Horng, C.-F. Chen, B. Geng, C. Girit, **Y. Zhang**, Z. Hao, H. A. Bechtel, M. Martin, A. Zettl, M. F. Crommie, Y. R. Shen and F. Wang “Drude conductivity of Dirac fermions in graphene” *Phys. Rev. B* **83**, 165113 (2011).
 32. A. Splendiani, L. Sun, **Y. Zhang**, T. Li, J. Kim, C.-Y. Chim, G. Galli and F. Wang “Emerging Photoluminescence in Monolayer MoS₂” *Nano Lett.* **10**, 1271–1275 (2010).
 33. V. W. Brar (韦小宝), S. Wickenburg (魏烈钢), M. Panlasigui, C.-H. Park, T. O. Wehling, **Y. Zhang** (张远波), R. Decker, C. Girit, A. V. Balatsky, S. G. Louie, A. Zettl and M. F. Crommie “Observation of Carrier-Density-Dependent Many-Body Effects in Graphene via Tunneling Spectroscopy” *Phys. Rev. Lett.* **104**, 036805 (2010).
 34. T.-T. Tang*, **Y. Zhang***, C.-H. Park, B. Geng, C. Girit, Z. Hao, M. C. Martin, A. Zettl, M. F. Crommie, S. G. Louie, Y. R. Shen and F. Wang “A Tunable Electron-Phonon Fano System in Gated Bilayer Graphene” *Nature Nanotechnology* **5**, 32 – 36 (2010).
 35. **Y. Zhang***, T.-T. Tang*, C. Girit, Z. Hao, M. C. Martin, A. Zettl, M. F. Crommie, Y. R. Shen and F. Wang, “Direct Observation of a Widely Tunable Bandgap in Bilayer Graphene” *Nature* **459**, 820 (2009).
 36. **Y. Zhang***, V. W. Brar*, C. Girit, A. Zettl and M. F. Crommie, “Origin of Spatial Charge Inhomogeneity in Graphene” *Nature Physics* **5**, 722 - 726 (2009)
 37. C. Girit, V. Bouchiat, O. Naaman, **Y. Zhang**, M. F. Crommie, A. Zettl and I. Siddiqi, “Tunable Graphene dc Superconducting Quantum Interference Device” *Nano Lett.* **9**, 198 (2009).
 38. **Y. Zhang**, V. W. Brar, F. Wang, C. Girit, Y. Yayan, M. Panlasigui, A. Zettl and M. F. Crommie, “Giant phonon-induced conductance in scanning tunneling spectroscopy of gate-tunable graphene” *Nature Physics* **4**, 627 (2008).
 39. F. Wang, **Y. Zhang**, C. Tian, C. Girit, A. Zettl, M. F. Crommie and Y. R. Shen, “Gate-Variable Optical Transitions in Graphene” *Science* **320**, 206 (2008).
 40. E. Stolyarova, D. Stolyarov, L. Liu, K. T. Rim, **Y. Zhang**, M. Han, M. Hybersten, P. Kim and G. Flynn “Scanning tunneling microscope studies of ultrathin graphitic (graphene) films on an insulating substrate under ambient conditions” *J. Phys. Chem. C* **112**, 6681–6688 (2008).
 41. V. W. Brar, **Y. Zhang** et. al., “Scanning tunneling spectroscopy of inhomogeneous electronic structure in monolayer and bilayer graphene on SiC” *Appl. Phys. Lett.* **91**, 122102 (2007).
 42. K. S. Novoselov, Z. Jiang, **Y. Zhang**, S. V. Morozov, H. L. Stormer, U. Zeitler, J. C. Maan, G. S. Boebinger, P. Kim and A. K. Geim, “Room-Temperature Quantum Hall Effect in Graphene” *Science* **315**, 1379 (2007). Brief Report.
 43. Y.-W. Tan, **Y. Zhang**, K. Bolotin, Y. Zhao, S. Adam, E. H. Hwang, S. Das Sarma, H. L. Stormer and P. Kim, “Measurement of Scattering Rate and Minimum Conductivity in Graphene” *Phys. Rev. Lett.* **99**, 246803 (2007).
 44. Z. Jiang, **Y. Zhang**, Y.-W. Tan, J. A. Jaszczak, H. L. Stormer and P. Kim, “Graphene in extremely high magnetic fields” *Int. J. Mod. Phys. B* **21**, 1123 (2007). Review Article.
 45. Z. Jiang, **Y. Zhang**, H. L. Stormer and P. Kim, “Quantum Hall States near the Charge Neutral Dirac Point in Graphene” *Phys. Rev. Lett.* **99**, 106802 (2007).
 46. Y.-W. Tan, **Y. Zhang**, H. L. Stormer and P. Kim, “Temperature Dependent Electron Transport in Graphene” *Eur. Phys. J. Special Topics* **148**, 15 (2007).

47. M. Y. Han, B. Oezylmaz, **Y. Zhang** and P. Kim, “Energy Band Gap Engineering in Graphene Nanoribbons” *Phys. Rev. Lett.* **98**, 206805 (2007).
48. M. Han, B. Oezylmaz, Y. Zhang, P. Jarillo-Herero and P. Kim “Electronic transport measurements in graphene nanoribbons” *PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS* **244**, 4134-4137 (2007). Review Article.
49. Z. Jiang, Y. Zhang, Y.-W. Tan, H. L. Stormer and P. Kim, “Quantum Hall effect in graphene” *Solid State Comm.* **143**, 14 (2007). Review Article.
50. J. Yan, **Y. Zhang**, P. Kim and A. Pinczuk, “Electric Field Effect Tuning of Electron-Phonon Coupling in Graphene” *Phys. Rev. Lett.* **98**, 166802 (2007).
51. M. S. Purewal, Y. Zhang and P. Kim. “Unusual transport properties in carbon based nanoscaled materials: nanotubes and graphene” *Physica Status Solidi B – Basic Solid State Physics* **243**, 3418-3422 (2006). Review Article.
52. **Y. Zhang**, Z. Jiang *et. al.*, “Landau Level Splitting in Graphene in High Magnetic Fields” *Phys. Rev. Lett.* **96**, 136806 (2006).
53. **Y. Zhang**, Y.-W. Tan, H. L. Stormer and P. Kim, “Experimental Observation of Quantum Hall Effect and Berry’s Phase in Graphene” *Nature* **438**, 201 (2005).
54. **Y. Zhang**, J. Small, M. Amori and P. Kim, “Electric Field Modulation of Galvanomagnetic Properties of Mesoscopic Graphite” *Phys. Rev. Lett.* **94**, 176803 (2005).
55. **Y. Zhang**, J. Small, W. Pontius and P. Kim, “Fabrication and Electric-field-dependent Transport Measurements of Mesoscopic Graphite Devices” *Appl. Phys. Lett.* **86**, 073104 (2005).