

## Zhou Li

Center of Emergent Matter Science RIKEN, Permanent Resident of Canada

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### EDUCATION

**PhD, Condensed Matter Theory**, University of Alberta, Edmonton, Canada, Sep. 2007-Jul. 2012  
(actually obtained Nov. 2012)

Advisor: Prof. Frank Marsiglio

**Master of Science, Theoretical Physics**, Peking University, Beijing, P.R. China, Sep. 2004-Aug. 2007

Advisor: Prof. Zhongshui Ma

**Bachelor of Science, Physics**, Nanjing University, Nanjing, P.R. China, Sep. 2000-Aug. 2004

Advisor: Prof. Dingyu Xing

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### COMPUTER SKILLS

- C/C++ 7+ years
- Chebyshev method
- Linux/Mac/Windows
- Lanczos method
- Mathematica
- Fortran

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### EMPLOYMENT HISTORY

JSPS Postdoc researcher in Prof. Nori's group.

RIKEN, Wako Shi, Japan since 03/2015

Postdoc researcher in Prof. Jarrell's group.

Department of Physics and CCT, Louisiana State University, Baton Rouge, LA, 09/2014-03/2015

Postdoc researcher in Prof. Carbotte's group.

Department of Physics, McMaster University, Hamilton ON, 07/2012-08/2014

Research assistant in Prof. Marsiglio's group.

Department of Physics, University of Alberta, Edmonton AB, 09/2007-07/2012

Teaching assistant

Department of Physics, University of Alberta, Edmonton AB, 09/2007-12/2010.

Research assistant in Prof. Zubin's group.

Department of Electrical and Computer Engineering, University of Alberta, 01/2012-06/2012,

Visiting Scholar in Prof. Nori's group, RIKEN, Tokyo, Japan, 03/2014

University of Wollongong, Australia

10/2006-12/2006, Research assistant

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### **TEACHING EXPERIENCE**

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University of Alberta, Lab, Phys 126, Fluids, Fields and Radiation

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University of Alberta, Lab, Phys 124, Particles and Waves

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University of Alberta, Lab, Phys 130, Wave Motion, Optics, and Sound

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### **RESEARCH COLLABORATION**

Brookhaven National laboratory, New York, United States

Department of Physics, University of California, San Diego

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### **SCHOLARSHIPS**

JSPS Postdoc fellowship for North American and European researchers, International, 2015 (\$5544000 JPY)

Chinese Institute of Physics international young scientist fellowship, International, 2014 (\$40000 USD), declined

ICAM-I2CAM Travel Award, International, 2014 (\$2400 USD)

Chinese Government Award for outstanding PhD, National, 2012 (\$6000 USD)

Dissertation Scholarship, Province of Alberta, 2011 (\$28000 CAD)

Andrew Stewart Memorial Graduation Prize, Province of Alberta, 2011 (\$5000 CAD)

Alberta Ingenuity Scholarship, Province of Alberta, 2009-2010 (\$82000 CAD)

Golden Bell Jar Graduate Scholarship in Physics, University of Alberta, 2008 (\$25000 CAD)

Provost Doctoral Entrance Award, University of Alberta, 2007, 2008 (\$16000 CAD)

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### PUBLICATIONS

19. Zhou Li and J. P. Carbotte, Optical spectral weight: comparison of weak and strong spin-orbit coupling, Phys. Rev. B **91**, 115421 (2015)
18. Zhou Li and J. P. Carbotte, Electron-phonon correlations on spin texture of gapped helical Dirac Fermions, Eur. Phys. J. B **88**(4), 1-9 (2015)
17. Zhou Li and J. P. Carbotte, Hexagonal warping on spin texture, Hall conductivity and circular dichroism of topological insulator, Phys. Rev. B. **89**, 165420 (2014)
16. Zhou Li and J. P. Carbotte, Conductivity of Dirac fermions with phonon induced topological crossover, Phys. Rev. B, **88**, 195133 (2013)
15. Zhou Li and J. P. Carbotte, Particle-hole asymmetry on Hall conductivity of a topological insulator, Phys. Rev. B. **89**, 085413 (2014)
14. Zhou Li, F. Marsiglio and J. P. Carbotte, Vanishing of interband light absorption in a persistent spin helix state, Scientific Reports, **3**: 2828 (2013).
13. Zhou Li and J.P. Carbotte, Magneto-optical conductivity in a topological insulator, Phys. Rev. B, **88**, 045414 (2013).
12. Zhou Li and J.P. Carbotte, Phonon structure in dispersion curves and density of states of massive Dirac fermions, Phys. Rev. B, **88**, 045417 (2013).
11. Zhou Li and J.P. Carbotte, Hexagonal warping on optical conductivity of surface states in Topological Insulator Bi<sub>2</sub>Te<sub>3</sub>, Phys. Rev. B, **87**, 155416 (2013).
10. Zhou Li and J.P. Carbotte, Impact of electron-phonon interaction on dynamic conductivity of gapped Dirac fermions: application to single layer MoS<sub>2</sub>, Physica B, **421**, 97 (2013).

9. Zhou Li and J.P. Carbotte, Longitudinal and spin/valley Hall optical conductivity in single layer MoS<sub>2</sub>, Phys. Rev. B. **86** 205425 (2012)
8. Zhou Li, Lucian Covaci and Frank Marsiglio, Impact of Dresselhaus vs. Rashba spin-orbit coupling on the Holstein polaron, Phys. Rev. B **85** 205112 (2012)
7. Zhou Li and Frank Marsiglio, The polaron-like nature of an electron coupled to phonons, Journal of Superconductivity and Novel Magnetism. 25, 5, 1313-1317 (2012)
6. Zhou Li, Lucian Covaci, Mona Berciu, Devin Baillie and Frank Marsiglio, Impact of spin-orbit coupling on the Holstein polaron, Phys. Rev. B **83** 195104 (2011).
5. Zhou Li, Carl Chandler and Frank Marsiglio, Perturbation theory of the mass enhancement for a polaron coupled to acoustic phonons, Phys. Rev. B **83** 045104 (2011).
4. Zhou Li, Devin Baillie, Cindy Blois and Frank Marsiglio, Ground state properties of the Holstein model near the adiabatic limit, Phys. Rev. B **81** 115114 (2010).
3. Stepan Grinek, Zhou Li, Jie Chen, Qinwei Shi and Frank Marsiglio, arXiv: 0912.1532 (2009).
2. Zhou Li, Zhongshui Ma, and Chao Zhang, Temperature dependence of the intrinsic spin Hall effect in Rashba spin-orbit coupled systems, Europhysics Letters. **82** 67003 (2008).
1. Zhou Li, A. R. Wright, Zhongshui Ma and Chao Zhang, Spin-orbit interaction enhanced polaron effect in two-dimensional semiconductors, Applied Physics Letters **90**, 112103 (2007), Reprinted in Virtual Journal of Nanoscale Science and Technology, March 26th (2007).

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#### INVITED PRESENTATIONS

- 17, Zhou Li, Oral, **invited talk**, Kyoto University, Japan, 04/2015
- 16, Zhou Li, Oral, **invited talk**, HUST, Wuhan, China, 04/2014
- 15, Zhou Li, Oral, **invited talk**, SUSTC, Shenzhen, China, 04/2014
- 14, Zhou Li, Oral, **invited talk**, Southeast University, Nanjing, China, 04/2014
- 13, Zhou Li, Oral, **invited talk**, CSRC, Beijing, China, 04/2014
- 12, Zhou Li, Oral, **invited talk**, Institute of Physics, CAS, Beijing, China, 04/2014
- 11, Zhou Li, Oral, **invited talk**, Shenzhen University, Shenzhen, China, 04/2014
- 10, Zhou Li, Oral, **invited talk**, Nanjing University, Nanjing, China, 04/2014

- 9, Zhou Li, Oral, **invited talk**, Wuhan University, Wuhan, China, 04/2014
- 8, Zhou Li, Oral, **invited talk**, Beihang University, Beijing, China, 03/2014
- 7, Zhou Li, Oral, **invited talk**, Zhengzhou University, Zhengzhou, China, 04/2014
- 6, Zhou Li, Oral, **invited talk**, RIKEN, Tokyo, Japan, 03/2014
- 5, Zhou Li, Oral, **invited talk**, APS March meeting, Denver, Colorado, 03/2014.
4. Zhou Li, Oral, **invited talk**, Seminar, Physics, University of Sherbrooke, Canada, 10/2013.
3. Zhou Li, Oral, **invited talk**, 4 Corner southwest Ontario condensed matter symposium, Perimeter Institute, Waterloo, Canada, 04/2013.
2. Zhou Li, Oral, **invited talk**, Condensed matter lunchtime seminar at University of Alberta, 09/2011
1. Zhou Li, Oral, **invited talk**, XIV Training Course in the Physics of Strongly Correlated Systems, Salerno, Italy 10/2009.

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#### **CONFERENCE PRESENTATIONS**

12. Zhou Li, Oral, APS March meeting, Boston, MA. 03/2015
11. Zhou Li, Poster, CIFAR Quantum Materials conference, Vancouver, Canada, 05/2013
10. Zhou Li, Oral, APS March meeting, Baltimore, U.S. 03/2013
9. Zhou Li, Oral, APS March meeting, Boston, MA. U.S. 03/2012
8. Zhou Li, Oral and poster, GPSA colloquium, Edmonton, Canada 09/2011
7. Zhou Li, Oral and poster, EPQHS4, Beijing, China, 06/2011
6. Zhou Li, Poster, CIFAR Quantum Materials conference, Vancouver, Canada, 05/2011
5. Zhou Li, Oral, APS March Meeting, Dallas, Texas, U.S. 03/2011
4. Zhou Li, Poster, GPSA colloquium, Edmonton, Canada 09/2010.
3. Zhou Li, Poster, CIFAR Quantum Materials conference, Montreal, Canada, 05/2010
2. Zhou Li, Oral, APS March Meeting, Portland, Oregon, U.S. 03/2010.
1. Zhou Li, Poster, RPBMT15, Columbus, Ohio, United States, 07/2009

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## LEADERSHIP ACTIVITIES

Organization of an international session at APS March meeting 2014, one of the most prestigious meetings in North America.

Organization of 2nd annual Symposium on Graduate Physics Research at University of Alberta, 2011

Elected as vice president of Graduate Physics Student Association at University of Alberta, 2011-2012

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## PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Member of the Canadian Association of Physicists

Member of the American Physical Society

Referee for Physical review B, Physical review letters, Physical Chemistry Chemical Physics, Chemical Physics Letters, Materials Research Innovations

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## REFERENCE

1. Prof. Frank Marsiglio, University of Alberta, email: [fm3@ualberta.ca](mailto:fm3@ualberta.ca)
2. Prof. J. P. Carbotte, McMaster University, email: [carbotte@mcmaster.ca](mailto:carbotte@mcmaster.ca)
3. Prof. Franco Nori, RIKEN, email: [fnori@riken.jp](mailto:fnori@riken.jp)