

邱奎霖 助理教授



邱奎霖 助理教授

Kuei-Lin Chiu

klc@mail.nsysu.edu.tw,

eins0728@gmail.com

07-5252000-3725

[量子電路實驗室](#)

到職年月：2019 年 8 月

研究室：物理館 PH6004

*學歷:

- 英國劍橋大學物理系博士 (2008 - 2012)
- 國立交通大學物理所碩士 (2004 - 2006)
- 國立嘉義大學應用物理系學士 (2000 - 2004)

主要經歷:

- 國立中山大學物理系助理教授 (2019/08 - Present)
- 中國科學技術大學量子信息重點實驗室副研究員(副教授) (2017/07 - 2018/08)
- 美國麻省理工學院物理學系博士後研究員 (2015/01 - 2017/05)
- 英國劍橋大學電機工程學系/石墨烯研究中心博士後研究員(2013/03 - 2014/10)

專長

- 量子傳輸、超導量子電路實驗、二維材料元件

任教科目

- 學士班：應用數學、普通物理
- 研究所：書報討論、量子計算專題

研究興趣及方向

- 二維材料奈米元件
- 二維材料約瑟夫森結
- 超導量子電路
- 量子計算元件

研究計劃

科技部計畫：基於拓樸材料之超導量子比特。執行期限：109/08/01 ~ 112/07/31

期刊論文

- "A flux tunable superconducting quantum circuit based on Weyl semimetal MoTe₂". **Kuei-Lin Chiu***, D. G. Qian, J. W. Qiu, W. Y. Liu, D. Tan, V. Mosallanejad, S. Liu, Z. T. Zhang, Y. Zhao, D. P. Yu; **Accepted in Nano Letters** (*corresponding author)
- "Cryogenic Materials and Circuit Integration for Quantum Computer". Wei-Chen Chien, Shun-Jhou Jhan, **Kuei-Lin Chiu**, Yu-xi Liu, Eric Kao, Yu He, Ching-Ray Chang; **Journal of Electronic Materials, ISSN 1543-186X, 2020**
- "The Second Quantum revolution with Quantum Computers". Ching-Ray Chang, Yeu-Chung Lin, **Kuei-Lin Chiu**, Tsung-Wei Huang; **AAPPS Bulletin, Feature Article, Vol. 30, No. 1, 2020**
- "Design of graphene waveguide: Effect of edge orientation and waveguide configuration". Nayyar Abbas Shah, Vahid Mosallanejad, **K. L. Chiu***, Guo-ping Guo; **Phys. Rev. B., 100, 125412, 2019** (*corresponding author)
- "Optoelectronic properties of bottom gate-defined in-plane monolayer WSe₂ p-n junction". Di Liu, Xiao-Zhuo Qi, **Kuei-Lin Chiu**, Takashi Taniguchi, Xi-Feng Ren, Guo-Ping Guo; **Chin. Phys. B 27, 87303, 2018**(URL: <http://cpb.iphy.ac.cn/EN/10.1088/1674-1056/27/8/087303>)
- "Coherent transport in Y-junction graphene waveguide". Vahid Mosallanejad, **K. L. Chiu** and Guo-Ping Guo; **J. Phys.: Condensed Matter 30, 445301, 2018**
- "Single-electron Transport in Graphene-like Nanostructures". **K. L. Chiu***, Y. Xu; **Physics Reports 669, 1-42, 2017** (*: first and corresponding author, selected as a highlighted article in Physics Reports; 5-Year Impact Factor: **22.124**)Interview: <https://www.journals.elsevier.com/physics-reports/highlighted-articles/layered-materials-could-be-the-future-of-quantum-computing>
- "Magnetic-field-induced charge redistribution in disordered graphene double quantum dots". **K. L. Chiu**, M. R. Connolly, A. Cresti, J. P. Griffiths, G. A. C. Jones, C. G. Smith; **Phys. Rev. B., 92, 155408, 2015**
- "Gigahertz quantized charge pumping in graphene quantum dots". M. R. Connolly, **K. L. Chiu**, S. P. Giblin, M. Kataoka, J. D. Fletcher, C. Chua, J. Griffiths, G. A. C. Jones, V. I. Fal'ko C. G. Smith, T. J. B. M. Janssen; **Nature Nanotechnology, 8, 417-420, 2013** (5-Year Impact Factor: **40.632**);Media coverage: highlighted in Sciencedaily, Physicsworld, Newelectronics, etc)Interview: <https://www.sciencedaily.com/releases/2013/05/130512141212.htm>

- *"Single-particle probing of edge state formation in a graphene nanoribbon"*. **K. L. Chiu**, M. R. Connolly, A. Cresti, C. Chua, S. J. Chorley, F. Sfigakis, S. Milana, A. C. Ferrari, J. P. Griffiths, G. A. C. Jones, C. G. Smith; ***Phys. Rev. B.* 85, 205452, 2012**
- *"Tilted potential induced coupling of localized states in a graphene nanoconstriction"*. M. R. Connolly, **K. L. Chiu**, A. Lombardo, A. Fasoli, A. C. Ferrari, D. Anderson, G. A. C. Jones, and C. G. Smith; ***Phys. Rev. B.* 83, 115441, 2011**
- *"Scanning gate microscopy of current-annealed single layer graphene"*. M. R. Connolly, **K. L. Chiu**, C. G. Smith, D. Anderson, G. A. C. Jones, A. Lombardo, A. Fasoli, and A. C. Ferrari; ***Appl. Phys. Lett.* 96, 113501, 2010**
- *"Studies on the electronic and vibrational states of colloidal CdSe/ZnS quantum dots under high pressures"*. C T Yuan, Y C Lin, Y N Chen, **K L Chiu**, W C Chou, D S Chuu, W H Chang, H S Lin, R C Ruaan and C M Lin; ***Nanotechnology* 18, 185402, 2007**

專書專章

- *"Single electron transport and possible quantum computing in 2D materials"*
Invited chapter in *"21st Century Nanoscience – A Handbook: Nanophotonics, Nanoelectronics, and Nanoplasmonics (Volume Six)"*. **Kuei-Lin Chiu; Taylor & Francis (CRC Press), ISBN 9780815356417, November 5, 2020**

邀請演講

1. *"A flux tunable superconducting quantum circuit based on Weyl semimetal"*. **Department of Physics, National Taiwan university, 13, December, 2019**, Seminar Coordinator: **Prof. Hsi-Sheng Goan**
2. *"A superconducting transmon based on topological materials"*. **Department of Physics, National Tsing Hua university, 3, December, 2019**, Seminar Coordinator: **Prof. Chung-Yu Mou**
3. *"A superconducting qubit based on topological materials"*. **Department of Physics, National Cheng Kung University, 18, November, 2019**, Seminar Coordinator: **Prof. Chung-Hsien Chou**
4. *"A superconducting qubit based on topological materials"*. **Institute of Physics, Academia Sinica (Taiwan), 11, November, 2019**, Seminar Coordinator: **Prof. Chii-Dong Chen**

5. *"A superconducting qubit based on topological materials"*. **Department of Electronics Engineering, National Chiao Tung University**, 1, November, 2019, Seminar Coordinator: **Prof. Hung-Ming Chen**
6. *"Superconducting Quantum Computing - an Engineering Point of View"*. **Department of Physics, National Cheng Kung University**; 8, October, 2018; Seminar Coordinator: **Prof. Yueh-Nan Chen**
7. *"Superconducting Quantum Computing - an Engineering Point of View"*. **Taiwan Semiconductor Manufacturing Company Limited (TSMC)**; 5, October, 2018; Seminar Coordinator: **Dr. William Gallagher**
8. *"Superconducting Quantum Computing - an Engineering Point of View"*. **Department of Electronics Engineering,, National Chiao Tung University**; 5, October, 2018; Seminar Coordinator: **Prof. Hung-Ming Chen**
9. *"Quantum computing in 2D material platforms"*. **Department of Physics, Southern University of Science and Technology**; 28, December, 2017; Seminar Coordinator: **Prof. Dapeng Yu**
10. "Spin Qubit coherent Control" Host of session for Prof. Lieven Vanderspyen and Prof. Ferdinand Kuemmeth; **International Workshop on Recent Experimental Progress in Semiconductor Qubits**, University of Science and Technology of China, Hefei, China, 13th - 15th September, 2017
11. *"Quantum computing - a brief overview from algorithms to platforms"* **Advanced Semiconductor and IC Technology Forum, Taiwan**; 15, December, 2017; Seminar Coordinator: **Prof. Wen-Tsuen Chen (Former president of National Tsing-Hua University, Taiwan)**
12. *"Single particle probing in 2D materials"*. **School of Electronic Science and Engineering, Nanjing University**; 07, July, 2017; Seminar Coordinator: **Prof. Feng-Qiu Wang**
13. *"Single particle probing in 2D materials"*. **Key Lab of Quantum Information, University of Science and Technology of China (USTC)**; 03, July, 2017; Seminar Coordinator: **Prof. Guo-Ping Guo**
14. *"Single-electron transport in graphene nanostructures"* **School of Physics and Astronomy, University of Manchester**; 17, March, 2014; Seminar Coordinator: **Prof. K. S. Novoselov, Prof. A.C. Ferrari, Prof. V. Fal'ko**

15. *“Probing and control of single-electron transport in graphene nanostructures”***Department of Electrical and Systems Engineering, University of Pennsylvania; 27, January, 2014**; Seminar Coordinator: **Prof. Lee C. Bassett**

16. *“Charge pumping in graphene quantum dot”*. **Institute of Physics, AcademiaSinica, Taiwan; 01, November, 2012**; Seminar Coordinator: **Prof. Chia-Seng Chang**

17. *“Chargepumping in graphene quantum dot”*.**NationalCenter for Theoretical Sciences(South); 15, October, 2012**; Seminar Coordinator: **Prof. Yueh-Nan Chen**

18. *“Transport properties of graphene nanodevices- nanoribbons, quantum dots and double quantum dots”*.**Institute of Atomic and Molecular Sciences, AcademiaSinica, Taiwan; 3, April, 2012**; Seminar Coordinator: **Prof. Yuh-Lin Wang**

19. *“Transport properties of graphene nanodevices- nanoribbons, quantum dots and double quantum dots”*.**NationalCenter for Theoretical Sciences(South); 28, March, 2012**; Seminar Coordinator: **Prof. Yueh-Nan Chen**

實驗室成員 (更新至 109 學年度)

Post-graduate:

洪立翰 (碩二)

張有義 (碩二)

陳泳有 (碩二)

Undergraduate:

林威辰 (大四)

簡子翔 (大四)

謝凱閔 (大四)

陳永翔 (大四)

吳柏鎰 (大三)

吳東欣 (大三)

廖德璋 (大三)

羅程瀚 (大三)

涂榕芳 (大三)

Visiting students:

Thomas Kuo (Department of Physics, University of Michigan, Ann Arbor)

張瑞霖 (高雄醫學大學大四)