Tai-Min Liu 劉岱泯

Assistant Professor, Department of Applied Physics

886-8-7663800 Ext. 33463

tmliu@mail.nptu.edu.tw

Room 402, Science Building I, Pingshih Campus

Quantum Transport Laboratory

Research Field

Electron Transport

Condensed Matter Physics

Education

Ph. D., Physics, University of Cincinnati, USA

Publications

1.1 Journal Paper

1.1.1 M. Palma, D. Maradan, L. Casparis, T.-M. Liu, F. Froning, D. M. Zumbühl (2017, Apr). Magnetic cooling for microkelvin nanoelectronics on a cryofree platform. *Rev. Sci. Instr.*, 88, 043902.

1.1.2 D. Maradan, L. Casparis, T.-M. Liu, D. E. F. Biesinger, C. P. Scheller, D. M. Zumbühl, J. D. Zimmerman, A. C. Gossard (2014, Jun). GaAs Quantum Dot Thermometry Using Direct Transport and Charge Sensing. *Journal of Low Temperature Physics*, Volume 175, Issue 5-6, pp 784-798.

1.1.3 C. P. Scheller, T.-M. Liu, G. Barak, A. Yacoby, L. N. Pfeiffer, K. W. West, D. M. Zumbühl (2014, Feb). Possible Evidence for Helical Nuclear Spin Order in GaAs Quantum Wires. *Physical Review Letters*, 112, 066801.

1.1.4 Tai-Min Liu, Anh T. Ngo, Bryan Hemingway, Steven Herbert, Michael Melloch, Sergio E. Ulloa, and Andrei Kogan (2012, Jul). Quantitative study of spin-flip cotunneling transport in a quantum dot. *Physical Review B*, 86, 045430.

1.1.5 Tai-Min Liu, Bryan Hemingway, Andrei Kogan, Steven Herbert, and Michael Melloch (2011, Aug). Magnetic splitting of the zero-bias peak in a quantum point contact with a tunable aspect ratio. *Physical Review B*, 84, 075320.

1.1.6 Chen-Cheng Wu, Tai-Min Liu, Tai-Ying Wei, Li Xin, Yi-Ci Li, Li-Shu Lee, Che-Kai Chang, Jaw-Luen Tang, Sidney S. Yang, and Tai-Huei Wei (2010, Oct). Kramers–Kronig relation between nonlinear absorption and refraction of C60 and C70. *Optics Express*, Vol. 18, Issue 22, pp. 22637-22650.

1.1.7 Tai-Min Liu, Bryan Hemingway, Andrei Kogan, Steven Herbert, and Michael Melloch (2009, Jul). Magnetic-Field-Induced Crossover to a Nonuniversal Regime in a Kondo Dot. *Physical Review Letters*, 103, 026803.

1.2 Conference Paper

1.2.1 Zong-Wei Wu, Chien-Chen Lee, Ping-Qian Yang, Ting-An Jian, Fang-Yuh Lo, Hua-Shu Hsu, **Tai-Min Liu**, Anneal Temperature Dependence of Resistive Switching in Cu/ZnO/ITO Devices, contributed poster, Physics Annual Meeting, Taoyuan, Taiwan (2024)

1.2.2 Li-Ying Wu, **Tai-Min Liu**, Non-Zero-Crossing Current-Voltage Hysteresis in Cu/Cr_2O_3/ITO Devices, contributed poster, Physics Annual Meeting, Taoyuan, Taiwan (2024)

1.2.3 Zong-Wei Wu, Ping Qian Yang, Ting-An Jian, Fang-Yuh Lo, Hua-Shu Hsu, **Tai-Min Liu***, "Anomalous Resistive Switching Phenomenon of Cu/ZnO/ITO Devices", contributed poster, *MRM2023/IUMRS-ICA2023 Grand Meeting* (2023)

1.2.4 Zong-Wei Wu, Ting-An Jian, Li-Ying Wu, Fang-Yuh Lo, **Tai-Min Liu**, ZnO based Resistive Switching in Planar and Sandwich Structures, contributed poster, Physics Annual Meeting, Tainan, Taiwan (2023)

1.2.5 Po Yu Lin and **Tai-Min Liu***, "Fabrication and Anisotropy of a Metal-Semiconductor Thermocouple Sensor", contributed poster, Annual Meeting of Taiwan Thermoelectric Society (2021)

1.2.6 Pinjhen Lin and **Tai-Min Liu***,"Conductance Oscillation in Tunneling Spectroscopy of Quantum Wires",contributed poster, Physics Annual Meeting, Hsinchu, Taiwan (2017)

1.2.7 **Tai-Min Liu***, "Tunneling Spectroscopy of Quantum Double Wires", contributed poster, Physics Annual Meeting, Hsinchu, Taiwan (2016)

1.2.8 Yuet-Loy Chan, **Tai-Min Liu***, Dah-An Luh, Meng-Fan Luo, Yao-Jane Hsu, and Der-Hsin Wei "*Status of the Synchrotron-radiation-light-illuminated STM at NSRRC*", contributed poster , Physics Annual Meeting, Hsinchu, Taiwan (2015)

1.2.9 Yuet-Loy Chan, **Tai-Min Liu***,and Der-Hsin Wei "*Towards a Chemical-Specific STM* ", contributed talk, the 32nd symposium for spectroscopic technologies and surface sciences, Kaohsiung, Taiwan (2014)

1.2.10 Pei-Yu Cheng, Meng-Ruei Chiang, Yuet-Loy Chan, **Tai-Min Liu**and D. H. Wei,"*Metal penetration and its relevance to the magnetic property of C60-Co bilayers*", contributed poster,Annual meeting of Taiwan Association for Magnetic Technology, Hsinchu, Taiwan (2014).

1.2.11 Pei-Yu Cheng, Meng-Ruei Chiang, Yuet-Loy Chan, **Tai-Min Liu**and D. H.Wei"*Probing the depth of metal penetration in Co-C60bilayer by NEXAFS*",contributed poster, twenty first NSRRC Users' Meeting & Workshop, Hsinchu, Taiwan(2014).

1.2.12 Pei-Yu Cheng, Meng-Ruei Chiang, Yuet-Loy Chan, **Tai-Min Liu**and D. H. Wei"*Metal penetrationand its relevance to the magnetic property of C60-Co bilayers*", contributed poster,International conference of Asian Union of Magnetic Society, Hainan, China(2014).

1.2.13 Lucas Casparis,Myrsini Lafkioti, Dario Maradan, **Tai-Min Liu**, Dominik M. Zumbuhl, Christian Reichl, Werner Dietsche, Werner Wegscheider"*Density Gradients in the Integer and Fractional Quantum Hall Effect*", contributed poster,NCCR QIST Meeting, Zurich, Switzerland (2014)

1.2.14 **T. –M. Liu**, B. Hemingway, A. Kogan, S. Herbert, M. Melloch, T. A. Costi, "*Magnetoconuctance of single-electron transistor in the Kondo regime*", APS March Meeting, contributed talk, Dollars, TX, USA (2011)

1.2.15 **T. -M. Liu**, A. T. Ngo, B. Hemingway, S. Ulloa, M. Melloch, S. Herbert, A. Kogan, "*A quantitative study of spin-flip cotunneling transport in a quantum dot"*, APS March Meeting, contributed talk, Portland, OR, USA (2010)

1.2.16 **T. -M. Liu**, B. Hemingway, A. Kogan, S. Herbert, M. Melloch, "*Magnetic splitting of the zerobias peak in a quantum point contact with a variable aspect ratio"*, APS March Meeting, contributed talk, Pittsburgh, PA, USA (2009)

1.2.17 **T. -M. Liu**, M. Torabi, A. Maharjan, A. Kogan, M. Melloch, S. Herbert, *"Non-linear conductance of a short quantum point contact"*, APS March Meeting, contributed poster, New Orleans, LA, USA (2008)

Academic Projects

2.1 MOST

2.1.1 Principal investigator – Tai-Min Liu

2.1.1.1 Quantum Transport in a Single-electron Transistor and Single electron Transistor Arrays under Magnetic Fields (105-2112-M-153-001-MY3; 2016/01/01~2018/12/31)

2.1.2 Co-investigator– Tai-Min Liu

2.1.2.1 Pilot Project for Taiwan's cutting-edge solid state experiment community, south Taiwan hub (111-2112-M-006 -032, 037 -; 2022/08/01~2024/07/31)

2.1.2.2 Study of ferrimagnetic transition metal oxide materials with asymmetric antiferromagnetic coupling and antiferromagnetic coupling transition metal oxide materials (MOST 109-2112-M-153-002, 006-; 2020/08/01~2022/10/31)

2.1.2.3 The study of interfacial novel physical properties in carbon based composites (MOST 104-2112-M-153-002-MY3; 2017/08/01~2020/10/31)

2.2 MOE

2.3 Others

Relevant Experience

3.1 Academic Experience

3.1.1 Assistant Researcher, National Synchrotron Radiation Research Center (2014-2015 March)

3.1.2 Post-doctoral Researcher, Dept. of Physics, University of Basel, Basel, Switzerland (2011 – 2013)

3.2 Teaching Experience

3.3 Others

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