

## Chia-Yi Ju (朱家誼)



## Chia-Yi Ju

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Department of Physics  
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RESEARCH INTEREST      Quantum Formalism/Non-Hermitian Quantum Physics, String Theories, Supersymmetric Field Theories, and Quantum Information.

EXPERIENCE	Editorial Board Member, Physics Bimonthly (2022 - ) Assistant Professor, National Sun Yat-sen University (2022 - ) Postdoctoral Fellow, National Chung Hsing University (2016 - 2022) Research Assistant, Tunghai University (2009 - 2010) Lab Instructor, Tunghai University (2008 - 2009) Assistant Squad Leader, Republic of China Marine Corps (2007 - 2008)
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EDUCATION

C.N. Yang Institute for Theoretical Physics  
&  
Department of Physics and Astronomy,  
Stony Brook University (2010 - 2016)

Ph.D. in Physics (2016)

Advisor: Warren Siegel

Department of Physics,  
National Chung Hsing University (2003 - 2007)

B.Sc. in Physics (2007)

PUBLICATIONS

- Wei-Ming Chen, Yen-Ting Lin, **Chia-Yi Ju**, “*Non-Hermitian Generalization of Rayleigh-Schrödinger Perturbation Theory*,” Phys. Rev. A **111**, 022211 (2025).  
 <<Editors’ Suggestion>>
- **Chia-Yi Ju** and Szu-Ming Chen, “*Non-Orientable Quantum Hilbert Space Bundle*,” arXiv:2412.06548 [quant-ph] (2024).
- **Chia-Yi Ju** and Fu-Hsiang Huang, “*Quantum State Behavior at Exceptional Points and Quantum Phase Transitions*,” arXiv:2403.16503 [quant-ph] (2024).
- Wan-Guan Chang, **Chia-Yi Ju**, Guang-Yin Chen, Yueh-Nan Chen, Huan-Yu Ku, “*Visually quantifying single-qubit quantum memory*,” Phys. Rev. Res. **6**,

023035 (2024).

- **Chia-Yi Ju**, Adam Miranowicz, Yueh-Nan Chen, Guang-Yin Chen, Franco Nori, “*Emergent Parallel Transports and Curvatures in Non-Hermitian Quantum Mechanics*,” Quantum **8**, 1277 (2024).
- **Chia-Yi Ju**, Wan-Yu Liu, Shuo-Yen Chen, Guang-Yin Chen, “*Prolonging the Qubits Entanglement via Local Surface Plasmon Modes*,” SPIN **13**(2), 2340017 (2023).
- **Chia-Yi Ju**, Adam Miranowicz, Fabrizio Minganti, Chuan-Tsung Chan, Guang-Yin Chen, Franco Nori, “*Einstein’s Quantum Elevator: Hermitization of Non-Hermitian Hamiltonians via a Generalized Vielbein Formalism*,” Phys. Rev. Res. **4**, 023070 (2022).
- Yu-Chin Tzeng, **Chia-Yi Ju**, Guang-Yin Chen, Wen-Min Huang, “*Hunting for the non-Hermitian exceptional points with fidelity susceptibility*,” Phy. Rev. Res. **3**, 013015 (2021).
- Dharmesh Jain, **Chia-Yi Ju**, Warren Siegel, “*Simplifying  $4d \mathcal{N} = 3$  Harmonic Superspace*,” Phys. Rev. D **102**, 066007 (2020).
- **Chia-Yi Ju**, Ming-Hsun Chou, Guang-Yin Chen, Yueh-Nan Chen, “*Optical quantum frequency filter based on generalized eigenstates*,” Opt Express **28**, 17868 (2020).
- **Chia-Yi Ju**, Adam Miranowicz, Guang-Yin Chen, Franco Nori, “*Non-Hermitian Hamiltonians and no-go theorems in quantum information*,” Phys. Rev. A **100**, 062118 (2019).
- **Chia-Yi Ju**, Warren Siegel, “*Gauging Unbroken Symmetries in F-theory*,” Phys. Rev. D **94**, 106004 (2016).
- **Chia-Yi Ju**, Warren Siegel, “*Systematizing semishortening conditions*,” Phys. Rev. D **90**, 125004 (2014).
- Fei Fang Chung, Sy-Sang Liaw, **Chia-Yi Ju**, “*Brazil nut effect in a rectangular plate under horizontal vibration*,” Granul. Matter **11**(2), 79 (2009).
- Fei Fang Chung, **Chia-Yi Ju**, Sy-Sang Liaw, “*Spiral trajectory in the horizontal Brazil nut effect*,” Phys. Rev. E **77**(6), 061304 (2008).

## TALKS

### Conferences/Workshops

- Taiwanese-German Young Researchers Forum on Quantum Information Science, “*Something Will Come of Something — Emergent Dimensions*”, Dec. 19, 2023.
- International Workshop on Quantum Information Processing and Applications 2022, “*Something Will Come of Something — Emergent Dimensions*”, Dec. 11, 2022.
- 2022 Workshop on Quantum Science and Technology, “*Roaming in the Parameter Space: Emergent Dimensions*”, Aug. 26, 2022.
- Pseudo-Hermitian Hamiltonians in Quantum Physic XIX<vPHHQP<XX, “*Einstein’s Quantum Elevator: Hermitization of Non-Hermitian Hamiltonians via a Generalized Vielbein Formalism*”, Jul. 7, 2022.
- 2022 Young Researchers Forum on Quantum Information Science, “*The Geometry of Quantum States*”, Feb. 11, 2022.

- 2021 Non-Hermitian Physics (Online) ICTS, Bengaluru, India, “*The Geometry of Quantum States*”, Mar. 24, 2021.
- 2020 AMO Summer School, “*The Dynamics and Deformations of Hilbert Spaces*”, Sep. 1, 2020.
- Workshop NH2019TD | IIS-Chiba | The University of Tokyo, “*The Geometries of Quantum States and the No-Go Theorems*”, Nov. 28, 2019.
- Workshop NH2019 | IIS-Chiba | The University of Tokyo, “*From Geometry of NHQM to No-Go Theorems*”, Aug. 8, 2019.
- 2018 Workshop on Quantum Science and Technology, “*A Possible Quantum Filter*”, Sep. 4, 2018.
- 2018 Young Researchers Forum on Quantum Information Science, “*Quantum Resonators*”, Jun. 30, 2018.

## Seminars/Colloquiums

- RIKEN, “*A Geometric Approach to Quantum Mechanics and its Applications*”, Aug. 7, 2024.
- National Taiwan Normal University, “*Emergent dimensions, evolutions, and event-horizon-like phenomena*”, Oct. 25, 2023.
- RIKEN, “*How hidden dimensions can emerge naturally from parameter spaces and derive the evolution equations for quantum states*”, Jun. 27, 2023.
- National Yang Ming Chiao Tung University, “*Emergent Dimensions from the Parameter Space*”, May 30, 2023.
- Chung Yuan Christian University, “*Something Will Come of Something — Emergent Dimensions*”, Dec. 21, 2022.
- National Sun Yat-sen University, “*An Informal Introduction to Formal Theory – Non-Hermitian Quantum System Inspired Formalism*”, Nov 10, 2022.
- National Cheng Kung University, “*Roaming in the Parameter Space – Emergent Dimensions*”, Oct 31, 2022.
- National Sun Yat-sen University, “*An Informal Introduction to Formal Theory – From Geometry to Quantum Physics*”, Mar 31, 2022.
- National Sun Yat-sen University, “*The Geometry of Quantum States*”, Sep 30, 2021.
- National Cheng Kung University, “*The Geometry of Quantum States*”, May 6, 2021.
- National Cheng Kung University, “*A Geometrical Phase Transition*”, Mar 22, 2021.
- National Cheng Kung University, “*The Dynamics and Deformations of Hilbert Spaces*”, May 11, 2020.
- Tunghai University, “*The Geometry of (Non-)Hermitian Quantum Mechanics*”, Mar 13, 2020.
- National Taiwan University, “*A Geometric Approach to Quantum Mechanics*”, Jun 14, 2019.
- National Cheng Kung University, “*A Geometric Approach to Quantum Mechanics*”, Apr 8, 2019.

- National Changhua University of Education, “*Geometric Approach to Quantum Mechanics*”, May 1, 2019.
- National National Tsing Hua University, “*A Possible Quantum Filter*”, Oct 23, 2018.
- National Kaohsiung Normal University, “*A Possible Quantum Filter*”, Oct 17, 2018.
- National Cheng Kung University, “*A Possible Quantum Filter*”, Sep 17, 2018.
- National Kaohsiung Normal University, “*To String, or Not to String – Beyond Standard Model*”, Apr 11, 2018.
- National Chung Hsing University, “*To String, or Not to String – Beyond Standard Model*”, Jan 12, 2018.