# Chih-Chung Liu

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Personal Webpage

## Research Interests

Gauge Theory, Mathematical Physics, Differential Geometry

## Education

- B.S. in Material Engineering, University of California at Los Angeles (2004).

- B.S. in Mathematics, University of California at Los Angeles (2004).

- M.A. in Mathematics, University of California at Los Angeles (2006).

- Ph.D. in Mathematics, University of Illinois at Urbana-Champaign (2013).

## Employments

5. **Department of Mathematics, National Cheng-Kung University, Tainan, Taiwan**. Associate Professor, 2022-Present.

4. **Department of Mathematics, National Cheng-Kung University, Tainan, Taiwan**. Assistant Professor, 2016-2022.

3. **Department of Mathematics, National Cheng-Kung University, Tainan, Taiwan**. Non-tenure track Assistant Professor, 2014-2016.

2. **Taida Institute of Mathematics, Taipei, Taiwan**. Research Assistant, April-June 2013.

1. **Taiwan Air Force**. Airman - Mandatory Service, 2013-2014.

## Publications and Preprints

5. **The Kapustin-Witten Equations and Nonabelian Hodge Theory** (joint with S. Rayan, Y. Tanaka). European Journal of Mathematics, 2022.

4. **The Gromov Limit of Vortex Moduli Spaces** (joint with G. La Nave). Review in Mathematical Physics, 2019.

3. **An Algebraic Construction of a Solution to the Mean Field Equations on Hyperelliptic Curves and its Adiabatic Limit** (joint with J-M Liou). Proceedings of American Mathematical Society, 2018.

2. **Dynamics of Abelian Vortices Without Common Zeros in the Adiabatic Limit** . Communication in Mathematical Physics, 2014.

1. **The Analytic and Asymptotic Bahaviors of Vortices**. Ph.D. Thesis supervised by Steven Bradlow and Gabriele La Nave.

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[1]Updated February 20, 2024

# Invited Talks

4. *The Kapustin-Witten Equations on Closed Kähler Surfaces.* Fu Jen Catholic University, New Taipei, Taiwan, The Mathematical Society of Taiwan, December, 5, 2020.

3. *Gromov Compactification of Vortex Moduli Space and Possible Application to $L^2$ Geometry.* Stony Brook, NY, USA, Simons Center for Geometry and Physics, November, 12, 2019.

2. *Bubble Tree of Vortex Moduli Spaces.* Waseda University, Tokyo, Japan, National Center for Theoretical Sciences, Waseda University, Osaka City University, December, 14, 2016.

1. *The Bubbling of Vortex Moduli Spaces and Related Topics.* National Tsing-Hua University, Hsinchu, Taiwan, National Center for Theoretical Sciences, December, 25, 2015.

# Teaching Experience

- Instructor in NCKU for calculus, topology, real analysis, differential geometry, undergraduate geometry.

- Teaching Assistant in UIUC and UCLA for calculus and various pre-calculus courses.

- Grader in UCLA, various undergraduate courses.

# Outreach

- Instructor for calculus advanced courses in Tainan First Senior High School, Tainan, Taiwan (August of 2019-2023).

- Supervision for scientific project for the science honor program for Tainan First Senior High School. (2021, 2022)