

# Chenghao Zhang

## General Information

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Name: Chenghao Zhang

Gender: Male

Birthplace: Wenzhou, Zhejiang, China

Email: cz38@illinois.edu

## EDUCATION

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Peking University

Beijing, China

BS in Dept. of Physics, School of Physics

Sep.2015- Jul.2019

Advisor: Prof. Yuhai Tu & Prof. Qi Ouyang

- GPA 3.68/4

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University of Illinois at Urbana Champaign

Urbana, IL, USA

Ph.D. in Dept. of Physics, College of Engineering

Aug. 2019 –

Advisor: Prof. Martin Gruebele

- GPA 3.92/4.00

## RESEARCH EXPERIENCE

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**Peking University (Department of Physics)**

Beijing, China

**IBM Thomas J. Watson Research Center**

Yorktown Heights, NY USA

**Project: Investigating energy constraint of accurate spatial orientation in biosystem**

- Advisor: Prof. Yuhai Tu & Prof. Qi Ouyang Aug. 2018 – Jul. 2019

**University of Illinois at Urbana Champaign (Dept. of Physics)** Urbana, IL, USA

**Project: Large scale simulation of Quantum energy flow between molecular fragments**

- Advisor: Prof. Martin Gruebele and Prof. Edwin Sibert Jul. 2020 - Jan. 2021

**Project: Quantum Information scrambling and out of time ordered correlation functions (OTOCs) in molecular systems.**

- Advisor: Prof. Martin Gruebele and Prof. Peter Wolynes      Sept. 2020 -

**Projects: Surface crossing and energy flow in many dimensional quantum systems**

- Advisor: Prof. Martin Gruebele, Prof. David E. Logan and Prof. Peter Wolynes  
Aug. 2022 – Jan. 2023

## SELECTED AWARDS AND HONORS

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- Cyrus Tang Scholarship      Peking University 2015-2017
- Award for Academic Excellent      Peking University 2016-2017
- Excellent Graduate      Peking University 2019
- University Fellowship      University of Illinois at Urbana Champaign 2021, 2022
- IBM-Zerner Graduate Student Award      61<sup>st</sup> Sanibel Symposium 2022
- Grad Travel Award      University of Illinois at Urbana Champaign 2022
- Mavis Future Faculty Fellow      University of Illinois at Urbana Champaign 2023-2024

## PUBLICATION

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† Equal contribution

1. Chenghao Zhang, Edwin L. Sibert III and Martin Gruebele, “A phase diagram for energy flow limited reactivity”, J. Chem Phys. 154, 104301 (2021)

2. C. Zhang, P. G. Wolynes, and M. Gruebele, *Quantum Information Scrambling in Molecules*, Phys. Rev. A **105**, 033322 (2022).

3. C. Zhang, M. Gruebele, D. E. Logan, and P. G. Wolynes, *Surface Crossing and Energy Flow in Many-Dimensional Quantum Systems*, Proc. Natl. Acad. Sci. U.S.A. **120**, e2221690120 (2023)

4. D. Zhang<sup>†</sup>, C. Zhang<sup>†</sup>, Q. Ouyang, and Y. Tu, *Free Energy Dissipation Enhances Spatial Accuracy and Robustness of Self-Positioned Turing Pattern in Small Biochemical Systems*, Journal of The Royal Society Interface **20**, 20230276 (2023).

## TALK

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- 61<sup>st</sup> Sanibel Symposium poster presentation
- APS March Meeting 2022 Oral presentation  
Link: <https://meetings.aps.org/Meeting/MAR22/Session/Y01.1>
- 75<sup>th</sup> International Symposium on Molecular Spectroscopy (ISMS 2022)  
MH10: A phase diagram for energy flow limited reactivity  
TL10: Quantum Information scrambling in Molecules
- Condensed Matter Journal Club, UIUC Physics  
(Bounds on chaos from Eigenstate thermalization hypothesis)
- APS March Meeting 2023 Oral presentation  
Link: <https://meetings.aps.org/Meeting/MAR23/Session/Y33.12>
- 76<sup>th</sup> International Symposium on Molecular Spectroscopy (ISMS 2023)  
MJ01: Surface crossing and energy flow in many dimensional quantum systems