Jinchen Zhao

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EDUCATION

Duke Kunshan University/Duke University Dual Degree Undergraduate — 2019 - Present
B.S. in Applied Math & Computational Sciences (by Duke Kunshan) — *Kunshan, China*
B.S. in Interdisciplinary Studies: Applied Math & Computational Science (by Duke) — *Durham, USA*
GPA: 3.91/4 Major GPA: 3.95/4

PUBLICATIONS

[1] **Jinchen Zhao** and Myung-Joong Hwang, *Frustrated Superradiant Phase Transition*, Phys. Rev. Lett. 128, 163601 (2022).

[2] **Jinchen Zhao** and Myung-Joong Hwang, *Anomalous Multicritical Phenomena and Frustration Induced by Synthetic Magnetic Fields*, arXiv:2208.02268 (2022).

[3] Stefan Köstler, **Jinchen Zhao**, Chen Lyu, Simeon Völkel and Kai Huang, *Embedded Inertial Sensor for Tracking Projectile Impact on Granular Media*, EPJ Web Conf. Volume 249 (2021).

RESEARCH EXPERIENCE

Quantum Science Group, Duke Kunshan University — May 2021 – Present
Advisor: Dr. Myung-Joong Hwang — *Kunshan, China*

- Discovered the frustration of photons during the superradiant phase transition (SPT) of a Dicke lattice model and studied its novel critical behaviors.
- Studied the multi-critical phenomena and frustration of SPT induced by synthetic magnetic fields.
- Investigated frustrated SPT in open systems and its applications in passive quantum error correction.

Duke Quantum Center, Duke University — Jan 2022 – Apr 2022
Advisor: Dr. Kenneth R. Brown — *Durham, USA*

- Developed an auto-loading module for the trapped ion system, which tested successfully on the device and was added to the official control system.
- Conducted literature review on dynamics of trapped ions and quantum error correction.

Collective Dynamics Lab, Duke Kunshan University — Dec 2019 – Apr 2021
Advisor: Dr. habil. Kai Huang — *Kunshan, China*

- Monitored projectile motion under opaque granular material by embedded inertial measurement unit.
- Investigated the effect of granular drag under microgravity by the trajectory-reconstruction method.

PRESENTATIONS

Multicritical Phenomena in Synthetic Magnetic Fields, DKU Summer Research Poster Session, 2022.
Tricritical Point in a Dicke Triangle Model, Westlake University Summer Camp, 2022.
Frustrated Superradiant Phase Transition, DKU Summer Research Poster Session, 2021.
Trajectory Reconstruction of Inertial Sensors, DKU Summer Research Poster Session, 2020.

INDUSTRY EXPERIENCE

World Economic Forum Sep 2022 – Nov 2022
Advisor: Grigory Shutko (Online) *Geneva, Switzerland*

- Investigated the current forum workstreams and future expansion plans of global quantum computing networks in Greater China by investigating the related stakeholders: public, private, and academic.
- Wrote a research report to the World Economic Forum (to appear in the forum website).

AWARDS

Summer Research Scholar Fellowship	2020, 2021, 2022
Dean's List with Distinction	2019, 2020, 2022
National Encouragement Scholarship	2021
Natural & Applied Science Division Award	2020
Kunshan Government Full Scholarship	2019

COMMUNITY INVOLVEMENT

Duke Quantum Information Society, *Member*	Jan 2022 – May 2022
DKU Creative Maker Space, *Student Volunteer*	May 2020 – Apr 2021
Duke Math Meet, *Student Volunteer*	Aug 2020
DKU Math Seminar, *Organizer*	Aug 2019 – Jan 2020

COURSEWORK & SKILLS

Physics: Quantum Mechanics, Thermal Physics, Electricity and Magnetism, Intermediate Mechanics, Optics and Modern Physics.

Math: Partial Differential Equations, Stochastic Modeling, Mathematical Cryptography, Real Analysis, Complex Variables, ODE and Dynamical Systems, Numerical Analysis, Probability and Statistics, Linear Algebra, Introduction to Data Science.

Skills: Proficient in Python, Mathematica, LaTeX.

REFERENCES

Dr. Myung-Joong Hwang
Assistant Professor of Physics
Duke Kunshan University
myungjoong.hwang@duke.edu

Dr. Joshua Socolar
Professor of Physics
Duke University
socolar@duke.edu

Dr. habil. Kai Huang
Associate Professor of Physics
Duke Kunshan University
kai.huang186@duke.edu

Dr. Paul Stanley
Associate Dean of Undergraduate Studies
Duke Kunshan University
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