

Isaac Ruoquan Wang

Address: Room 373, Wilson Hall, Kirk Rd & Pine St, Batavia, IL, USA

E-mail: isaac.wang.us@gmail.com 📞 Phone: +1 (732)-322-1599

🌐 Homepage: <https://quarkquartet.github.io>

Carrier Experiences

· **Postdoctoral Research Associate** **Oct. 2023 -**
Fermi National Accelerator Laboratory, Theory Division *Illinois, USA*

Education

Rutgers University - New Brunswick **Sep. 2017 - Sep. 2023**
Ph.D., theoretical particle physics and cosmology *New Jersey, USA*

- **Thesis Advisor:** Prof. David Shih
- **Co-advisor:** Prof. Keisuke Harigaya (U-Chicago)
- **Thesis:** Electroweak (-like) phase transitions: baryogenesis, strong CP, and light particles

Fudan University **Sep. 2013 - Jun. 2017**
B.Sc., department of physics *Shanghai, China*

- **Thesis Advisor:** Prof. Xu-Guang Huang
- **Co-advisor:** Prof. Huan Zhong Huang (UCLA & Fudan U.)
- **Thesis:** Microcausality and CPT violation in chiral quantum electrodynamics

Publications

1. Discovering Dark Matter with the MUonE Experiment, *Gordan Krnjaic, Duncan Rocha and **Isaac R. Wang***, arXiv: 2409.00170, [INSPIRE](#)
2. Imprints of light dark matter on the evolution of cosmic neutrinos, ***Isaac R. Wang** and Xun-Jie Xu*, arXiv: 2312.17151, JCAP 05 (2024) 050, [INSPIRE](#)
3. ALP-Assisted Strong First-Order Electroweak Phase Transition and Baryogenesis, *Keisuke Harigaya and **Isaac R. Wang***, arXiv: 2309.00587, JHEP 04 (2024) 108, [INSPIRE](#)
4. Baryogenesis in a Parity Solution to the Strong CP Problem, *Keisuke Harigaya and **Isaac R. Wang***, arXiv: 2210.16207, JHEP 11 (2023) 189, [INSPIRE](#)
5. First-Order Electroweak Phase Transition and Baryogenesis from a Natural Light Singlet Scalar, *Keisuke Harigaya and **Isaac R. Wang***, arXiv: 2207.02867, [INSPIRE](#)
6. Dark Photon and Displaced Vertices in MUonE Experiment, *Iftah Galon, David Shih and **Isaac R. Wang***, arXiv: 2202.08843, Phys.Rev.D 107 (2023) 9, 095003, [INSPIRE](#)
7. Axiogenesis from $SU(2)_R$ Phase Transition, *Keisuke Harigaya and **Isaac R. Wang***, arXiv: 2107.09679, JHEP 10 (2021) 022, [INSPIRE](#)
8. Electroweak-like Baryogenesis with New Chiral Matter, *Kohei Fujikura, Keisuke Harigaya, Yuichiro Nakai and **Isaac R. Wang***, arXiv: 2103.05005, JHEP 07 (2021) 224, [INSPIRE](#)

Selected Talks

Selected and not limited to...

· Discovering dark photon and dark matter at the MUonE experiment <i>U. of Notre Dame Theory Seminar</i>	Nov. 2024 <i>Seminar</i>
· Discovering dark photon and dark matter at the MUonE experiment <i>UFlorida Theory Seminar</i>	Nov. 2024 <i>Seminar</i>
· Discovering dark photon and dark matter at the MUonE experiment <i>UCLA Nuclear Physics Seminar</i>	Oct. 2024 <i>Seminar</i>
· ALP-assisted electroweak phase transition and baryogenesis <i>Argonne Lab Theory Seminar</i>	Apr. 2024 <i>Seminar</i>
· Imprints of light dark matter on the evolution of cosmic neutrinos <i>U. Chicago EFI Seminar</i>	Jan. 2024 <i>Seminar</i>
· ALP-assisted electroweak phase transition and baryogenesis <i>Fermilab Theory Seminar</i>	Jan. 2024 <i>Seminar</i>
· ALP-assisted electroweak phase transition and baryogenesis <i>PIKIMO Fall 2023</i>	Nov. 2023 <i>Short Plenary</i>
· Baryogenesis in a parity solution to the strong CP problem <i>Pheno 2023</i>	May. 2023 <i>Parallel</i>
· Electroweak baryogenesis from a naturally light singlet scalar <i>Fermilab Theory Seminars</i>	Sep. 2022 <i>Seminar</i>
· Dark photon and displaced vertex search at the MUonE experiment <i>11th Workshop of the Long-Lived Particle Community (Virtual)</i>	Jun. 2022 <i>Short Plenary</i>
· Dark photon and displaced vertex search at the MUonE experiment <i>Pheno 2022</i>	May. 2022 <i>Parallel</i>
· Baryogenesis from $SU(2)_R$ phase transition <i>High-scale Baryogenesis Workshop (Virtual)</i>	Jan. 2022 <i>Plenary</i>
· Axiogenesis from $SU(2)_R$ phase transition <i>Brookhaven Forum 2021 (Virtual)</i>	Nov. 2021 <i>Parallel</i>

Workshops/Summer Schools/Visitings

· Visitor, Perimeter Institute <i>Waterloo, ON, Canada</i>	Jan. - Feb., 2025
· TASI 2022 , <i>Boulder, CO, USA</i>	Jun. 2022

Teaching Experience

· Teaching Assistant, Rutgers University, Introduction to Cosmology 444	Fall 2021
· Teaching Assistant, Rutgers University, Analytical Physics 124	Spring 2019
· Teaching Assistant, Rutgers University, Analytical Physics 123	Fall 2018
· Teaching Assistant, Rutgers University, General Physics Lab 205	Fall 2017

Skills

Natural Languages	English, Chinese Mandarin
Programming Languages	Python, C/C++, Mathematica, Emacs-Lisp, CSS, HTML
Computer Skills	Git, L ^A T _E X, Vim/Emacs/VSC, Linux/Unix, Keynote, MS Offices

References

Below is a list of individuals who have provided reference letters for me and had research experience together since I started my undergrad, arranged by the time we first met.

Xu-Guang Huang	Undergrad thesis advisor , Fudan University, huangxuguang@fudan.edu.cn
Huan Zhong Huang	Undergrad co-advisor , UCLA, huang@physics.ucla.edu
David Shih	Ph.D. thesis advisor , Rutgers University, dshih@physics.rutgers.edu
Yuichiro Nakai	Shanghai Jiaotong University & T.D.Lee Institute, ynakai@sjtu.edu.cn
Keisuke Harigaya	Ph.D. co-advisor , University of Chicago, kharigaya@uchicago.edu