Isaac Ruoquan Wang

(+1) 732-322-1599 ◇ Work Email ◇ Private Email Personal Website

Carrier Experiences

· **Postdoctoral Researcher** **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] Imprints of light dark matter on the evolution of cosmic neutrinos, ***Isaac R. Wang*** and *Xun-Jie Xu*, arXiv: 2312.17151, *INSPIRE*

[2] ALP-Assisted Strong First-Order Electroweak Phase Transition and Baryogenesis, *Keisuke Harigaya* and ***Isaac R. Wang***, arXiv: 2309.00587, *INSPIRE*

[3] Baryogenesis in a Parity Solution to the Strong CP Problem, *Keisuke Harigaya* and ***Isaac R. Wang***, arXiv: 2210.16207, doi: 10.1007/JHEP11(2023)189, *INSPIRE*

[4] First-Order Electroweak Phase Transition and Baryogenesis from a Natural Light Singlet Scalar, *Keisuke Harigaya* and ***Isaac R. Wang***, arXiv: 2207.02867, *INSPIRE*

[5] Dark Photon and Displaced Vertices in MUonE Experiment, *Iftah Galon*, *David Shih* and ***Isaac R. Wang***, arXiv: 2202.08843, doi: Phys.Rev.D 107 (2023) 9, 095003, *INSPIRE*

[6] Axiogenesis from $SU(2)_R$ Phase Transition, *Keisuke Harigaya* and ***Isaac R. Wang***, arXiv: 2107.09679, doi: 10.1007/JHEP10(2021)022, *INSPIRE*

[7] Electroweak-like Baryogenesis with New Chiral Matter, *Kohei Fujikura*, *Keisuke Harigaya*, *Yuichiro Nakai* and ***Isaac R. Wang***, arXiv: 2103.05005, doi: 10.1007/JHEP07(2021)224, *INSPIRE*

Selected Talks

· **Imprints of light dark matter on the evolution of cosmic neutrinos** **Jan. 2024**
U. Chicago EFI Seminar *Seminar*

· **ALP-assisted electroweak phase transition and baryogenesis** **Jan. 2024**
Fermilab Theory Seminar *Seminar*

· **ALP-assisted electroweak phase transition and baryogenesis** **Nov. 2023**
PIKIMO Fall 2023 *Short Plenary*

· **Baryogenesis in a parity solution to the strong CP problem** **May. 2023**
Pheno 2023 *Parallel*

· **Electroweak baryogenesis from a naturally light singlet scalar** **Oct. 2022**
UCLA TEPAPP Seminars *Seminar*

· **Electroweak baryogenesis from a naturally light singlet scalar** **Sep. 2022**
Fermilab Theory Seminars *Seminar*

· **Phase transition and baryogenesis from a naturally light scalar singlet** **Sep. 2022**
Majorana-Raychaudhuri Seminars (Virtual) *Seminar*

· **Phase transition and baryogenesis from a naturally light scalar singlet** **Aug. 2022**
Cambridge High Energy Physics Workshop 2022, Harvard/MIT, Cambridge, MA, USA *Parallel*

· **Dark photon and displaced vertex search at the MUonE experiment** **Jun. 2022**
11th Workshop of the Long-Lived Particle Community (Virtual), CERN, Zurich *Short Plenary*

· **Dark photon and displaced vertex search at the MUonE experiment** **May. 2022**
Pheno 2022, Pittsburgh, PA, USA *Parallel*

· **Baryogenesis from $SU(2)_R$ phase transition** **Jan. 2022**
High-scale Baryogenesis Workshop (Virtual), IPMU, Kashiwa, Japan *Plenary*

· **Axiogenesis from $SU(2)_R$ phase transition** **Dec. 2021**
AstroDark 2021 (Virtual), IPMU, Kashiwa, Japan *Poster*

· **Axiogenesis from $SU(2)_R$ phase transition** **Nov. 2021**
Brookhaven Forum 2021 (Virtual), Brookhaven National Laboratory, NY, USA *Parallel*

· **Electroweak-like baryogenesis with new chiral matter** **Jul. 2020**
Rutgers University (Virtual), NJ, USA *Journalclub*

Other Conferences/Workshops

· TASI 2022, *Boulder, CO, USA* **Jun. 2022**

· SUSY 2021, *Shanghai, China (Virtual)* **Aug. 2021**
· COSMO-21, *UIUC, IL (Virtual), USA* **Aug. 2021**
· Cambridge High Energy Workshop 2021, *Harvard/MIT, MA (Virtual), USA* **Jul. 2021**

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**

Selected Awards

· Torrey Fellowship, Rutgers University **Sep. 2017**
· Undergraduate Major Scholarship, Fudan University **Dec. 2015**

Skills

Natural Languages	English, Chinese Mandarin
Programming Languages	Python, C/C++, Mathematica, Emacs-Lisp, CSS, HTML
Computer Skills	Git, LaTeX, Vim/Emacs/VSC, Linux/Unix, Keynote, MS Offices

References

Below is a list of individuals who have provided reference letters for me since I started my PhD, arranged by the time we first met.

Prof. David Shih	**Ph.D. thesis advisor**, Rutgers University, dshih@physics.rutgers.edu
Prof. Yuichiro Nakai	Shanghai Jiaotong University & T.D.Lee Institute, ynakai@sjtu.edu.cn
Prof. Keisuke Harigaya	**Ph.D. co-advisor**, University of Chicago, kharigaya@uchicago.edu