

Isaac Ruoquan Wang

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Carrier Experiences

· **Postdoctoral Researcher**

Fermi National Accelerator Laboratory, Theory Division

Oct. 2023 -

Illinois, USA

Education

Rutgers University - New Brunswick

Ph.D., theoretical particle physics and cosmology

Sep. 2017 - Sep. 2023

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

B.Sc., department of physics

Sep. 2013 - Jun. 2017

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, JCAP 05 (2024) 050, *INSPIRE*
2. ALP-Assisted Strong First-Order Electroweak Phase Transition and Baryogenesis, *Keisuke Harigaya* and **Isaac R. Wang**, arXiv: 2309.00587, JHEP 04 (2024) 108, *INSPIRE*
3. Baryogenesis in a Parity Solution to the Strong CP Problem, *Keisuke Harigaya* and **Isaac R. Wang**, arXiv: 2210.16207, JHEP 11 (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, 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, JHEP 10 (2021) 022, *INSPIRE*
7. 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

· ALP-assisted electroweak phase transition and baryogenesis <i>Argonne Lab Theory Seminar</i>	Apr. 2024 Seminar
· Imprints of light dark matter on the evolution of cosmic neutrinos <i>U. Chicago EFI Seminar</i>	Jan. 2024 Seminar
· ALP-assisted electroweak phase transition and baryogenesis <i>Fermilab Theory Seminar</i>	Jan. 2024 Seminar
· ALP-assisted electroweak phase transition and baryogenesis <i>PIKIMO Fall 2023</i>	Nov. 2023 Short Plenary
· Baryogenesis in a parity solution to the strong CP problem <i>Pheno 2023</i>	May. 2023 Parallel
· Electroweak baryogenesis from a naturally light singlet scalar <i>UCLA TEPAPP Seminars</i>	Oct. 2022 Seminar
· Electroweak baryogenesis from a naturally light singlet scalar <i>Fermilab Theory Seminars</i>	Sep. 2022 Seminar
· Phase transition and baryogenesis from a naturally light scalar singlet <i>Majorana-Raychaudhuri Seminars (Virtual)</i>	Sep. 2022 Seminar
· Phase transition and baryogenesis from a naturally light scalar singlet <i>Cambridge High Energy Physics Workshop 2022</i>	Aug. 2022 Parallel
· Dark photon and displaced vertex search at the MUonE experiment <i>11th Workshop of the Long-Lived Particle Community (Virtual)</i>	Jun. 2022 Short Plenary
· Dark photon and displaced vertex search at the MUonE experiment <i>Pheno 2022</i>	May. 2022 Parallel
· Baryogenesis from $SU(2)_R$ phase transition <i>High-scale Baryogenesis Workshop (Virtual)</i>	Jan. 2022 Plenary
· Axiogenesis from $SU(2)_R$ phase transition <i>AstroDark 2021 (Virtual)</i>	Dec. 2021 Poster
· Axiogenesis from $SU(2)_R$ phase transition <i>Brookhaven Forum 2021 (Virtual)</i>	Nov. 2021 Parallel
· Electroweak-like baryogenesis with new chiral matter <i>Rutgers University (Virtual)</i>	Jul. 2020 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, 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 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