

Isaac Ruquan Wang

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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, 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

- **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 <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>UCLA TEPAPP Seminars</i>	Oct. 2022 <i>Seminar</i>
· Electroweak baryogenesis from a naturally light singlet scalar <i>Fermilab Theory Seminars</i>	Sep. 2022 <i>Seminar</i>
· Phase transition and baryogenesis from a naturally light scalar singlet <i>Majorana-Raychaudhuri Seminars (Virtual)</i>	Sep. 2022 <i>Seminar</i>
· Phase transition and baryogenesis from a naturally light scalar singlet <i>Cambridge High Energy Physics Workshop 2022, Harvard/MIT, Cambridge, MA, USA</i>	Aug. 2022 <i>Parallel</i>
· Dark photon and displaced vertex search at the MUonE experiment <i>11th Workshop of the Long-Lived Particle Community (Virtual), CERN, Zurich</i>	Jun. 2022 <i>Short Plenary</i>
· Dark photon and displaced vertex search at the MUonE experiment <i>Pheno 2022, Pittsburgh, PA, USA</i>	May. 2022 <i>Parallel</i>
· Baryogenesis from $SU(2)_R$ phase transition <i>High-scale Baryogenesis Workshop (Virtual), IPMU, Kashiwa, Japan</i>	Jan. 2022 <i>Plenary</i>
· Axionogenesis from $SU(2)_R$ phase transition <i>AstroDark 2021 (Virtual), IPMU, Kashiwa, Japan</i>	Dec. 2021 <i>Poster</i>
· Axionogenesis from $SU(2)_R$ phase transition <i>Brookhaven Forum 2021 (Virtual), Brookhaven National Laboratory, NY, USA</i>	Nov. 2021 <i>Parallel</i>
· Electroweak-like baryogenesis with new chiral matter <i>Rutgers University (Virtual), NJ, USA</i>	Jul. 2020 <i>Journalclub</i>

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