

# Isaac Ruoquan Wang

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## Carrier Experiences

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· **Postdoctoral Researcher**

*Fermi National Accelerator Laboratory, Theory Division*

**Oct. 2017 -**

*Illinois, USA*

## Education

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**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

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- [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

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· **ALP-assisted electroweak phase transition and baryogenesis**

*PIKIMO Fall 2023*

**Nov. 2023**

*Short Plenary*

· **Baryogenesis in a parity solution to the strong CP problem**

*Pheno 2023*

**May. 2023**

*Parallel*

· Electroweak baryogenesis from a naturally light singlet scalar <i>UCLA TEAPP 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>Invited 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

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· 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

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· 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

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

## Skills

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Natural Languages	English, Chinese Mandarin
Programming Languages	Python, C/C++, Mathematica, Emacs-Lisp
Computer Skills	Git, L <sup>A</sup> T <sub>E</sub> X, Vim/Emacs/VSC, Linux/Unix, Keynote, MS Offices

## References

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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