

# Qinrui LIU

## Curriculum Vitae

### BASIC INFORMATION

---

Department of Physics &  
Wisconsin IceCube Particle Astrophysics Center,  
University of Wisconsin-Madison

EMAIL: [qliu@icecube.wisc.edu](mailto:qliu@icecube.wisc.edu)  
ORCID: [0000-0003-3379-6423](https://orcid.org/0000-0003-3379-6423)  
HOMEPAGE: [qliu.github.io](https://qliu.github.io)

ADDRESS: 222 W. Washington Ave, Suite 500, Madison, WI 53703 USA

CITIZENSHIP: China

### APPOINTMENTS

---

2017-CURRENT	<i>Research Assistant</i> , Department of Physics and Wisconsin IceCube Particle Astrophysics Center (WIPAC), University of Wisconsin-Madison
2016-2017	<i>Teaching Assistant</i> , Department of Physics, University of Wisconsin-Madison

### EDUCATION

---

2016-CURRENT	Ph.D. student, Physics, University of Wisconsin-Madison <i>Advisor: Prof. Francis Halzen</i>
2012-2016	B.Sc., Honors Physics, Wuhan University, China

### HONORS AND AWARDS

---

2019	Emanuel Piore Award, <i>University of Wisconsin-Madison</i>
2013, 2014, 2015	University Scholarship, <i>Wuhan University</i>
2013, 2014, 2015	Peng Huanwu Excellent Student Scholarship, <i>Institute of Theoretical Physics, Chinese Academy of Sciences</i>
2013, 2014, 2015	Merit Student, <i>Wuhan University</i>
2012	Merit Student of the Province, <i>Education Department of Sichuan Province</i>

### SELECTED JOURNAL ARTICLES

---

1. Q. Liu, J. Lazar, C. A. Argüelles, and A. Kheirandish.  $\chi\text{ar}\nu$ : a tool for neutrino flux generation from WIMPs. *JCAP*, 10:043, 2020 [arXiv:2007.15010](https://arxiv.org/abs/2007.15010)
2. IceCube Collaboration. IceCube Search for High-Energy Neutrino Emission from TeV Pulsar Wind Nebulae. *Astrophys. J.*, 898(2):117, 2020 [arXiv:2003.12071](https://arxiv.org/abs/2003.12071)

3. G.-y. Huang and **Q. Liu**. Hunting the glashow resonance with peV neutrino telescopes. *JCAP*, 03(03):005, 2020 [arXiv:1912.02976](#)
4. IceCube Collaboration. Search for high-energy neutrino emission from X-ray binaries with IceCube, under preparation, target journal: *ApJL*

## CONFERENCE PROCEEDINGS

---

1. C. A. Argüelles, A. Kheirandish, J. Lazar, and **Q. Liu**. Search for Dark Matter Annihilation to Neutrinos from the Sun. In *IceCube Contributions to the 36th International Cosmic Ray Conference (ICRC2019)*, 2019 [arXiv:1909.03930](#)
2. **Q. Liu** and A. Kheirandish. Searching for High-Energy Neutrino Emission from TeV Pulsar Wind Nebulae. In *IceCube Contributions to the 36th International Cosmic Ray Conference (ICRC2019)*, 2019 [arXiv:1908.05279](#)

## CONFERENCES AND WORKSHOPS

---

### Talks

1. *Neutrino Flux from Dark Matter Annihilation and Decay*, Snowmass TF11 - Neutrino Theory mini-workshop, FNAL, USA, 9/2020
2. *Neutrino Flux Generation from DM annihilation and decay*, IceCube Collaboration Meeting, University of Wisconsin-Madison, Madison, WI, USA, 9/2020
3. *Search for Neutrinos from X-ray binaries*, IceCube Collaboration Meeting, University of Wisconsin-Madison, Madison, WI, USA, 9/2020
4. *Neutrino Fluxes from Dark Matter*, IceCube Collaboration Meeting, Chiba University, Chiba, Japan, 9/2019
5. *Search for Neutrinos from X-ray binaries*, IceCube Collaboration Meeting, Chiba University, Chiba, Japan, 9/2019
6. *Searching for High-Energy Neutrino Emission from TeV Pulsar Wind Nebulae*, ICRC, University of Wisconsin-Madison, Madison, WI, USA, 7/2019
7. *Stacking Search for Neutrinos from PWNe*, Invisibles 19, University of Valencia, Valencia, Spain, 6/2019
8. *Search for Neutrinos from Dark Matter Annihilation from the Sun*, IceCube Collaboration Meeting, University of Wisconsin-Madison, Madison, WI, USA, 5/2019
9. *Search for Neutrinos from X-ray binaries*, IceCube Collaboration Meeting, University of Wisconsin-Madison, Madison, WI, USA, 5/2019
10. *Stacking Search for Neutrinos from PWNe and Results*, IceCube Collaboration Meeting, Stockholm University, Stockholm, Sweden, 9/2018
11. *PWNe Stacking Update*, IceCube Collaboration Meeting, Georgia Tech, Atlanta, GA, USA, 5/2018

12. *A Search for Neutrino Emission from Binary Sources*, IceCube Collaboration Meeting, Humboldt University, Berlin, Germany, 10/2017
13. *Stacking Search for Neutrinos from Pulsar Wind Nebulae*, IceCube Collaboration Meeting, Humboldt University, Berlin, Germany, 10/2017

## Posters

1. *Neutrino Flux from WIMP Annihilation and Decay*, KASHIWA DARK MATTER SYMPOSIUM, 11/2020
2. *DMFlux: A Tool for Neutrino Flux Generation from Dark Matter Annihilation and Decay*, Neutrino 2020, FNAL, 6/2020
3. *Search for Neutrino Emission from X-ray Binaries with IceCube*, Neutrino 2020, FNAL, 6/2020
4. *Solar WIMP Annihilation Search with IceCube*, ICRC, University of Wisconsin-Madison, Madison, USA, 7/2019
5. *Search for Neutrinos from X-ray binaries*, Invisibles 19, University of Valencia, Valencia, Spain, 6/2019
6. *Searching for Neutrinos from Pulsar Wind Nebulae*, 8th International Fermi Symposium, Baltimore, MD, USA, 10/2018
7. *Searching for Neutrinos from Pulsar Wind Nebulae*, 21st International School of Cosmic Ray Astrophysics, Erice, Sicily, Italy, 8/2018

## SOFTWARE

---

- Languages: Python, C++, Mathematica
- Work Experience with PYTHIA, CRPropa, Herwig, nuSQuIDs, PROPOSAL, SkyLab, csky etc.
- I have been developing a package for neutrino flux computation from dark matter -  $\chi$ aro $\nu$  and participated in the development of SkyLab, an analysis framework for astrophysical neutrino source searches.

## SERVICE & OUTREACH

---

- Organization Committee of 2020 IceCube Bootcamp
- Organization Committee of WIPAC X-Meeting, 2020-present
- Translation of IceCube comic *Adventures with Rosie & Gibbs: the Lost Penguins* to Chinese.

## TEACHING EXPERIENCE

---

2016-2017	Teaching Assistant of Physics 201 (Classical Mechanics) for undergraduate students in Engineering, in charge of <i>discussion</i> and <i>lab instruction</i> .
-----------	--