

Department of Physics
Pennsylvania State University
320 Osmond Lab, University Park
PA 16802, USA

Phone: (814) 954-2785
E-mail: cxy52@psu.edu
Homepage: yuan-cc.github.io
Citizenship: China

RESEARCH INTERESTS

- Astroparticle physics (neutrinos, gamma rays and cosmic rays from extreme sources)
- High-energy astrophysics (particle acceleration, transport and radiation processes)
- Multimessenger astrophysics

EDUCATION

- Expected 2021 Ph.D. in Physics, Pennsylvania State University
Supervised by Prof. [Péter Mészáros](#) and Prof. [Kohta Murase](#)
Thesis: *High-Energy Neutrino and Electromagnetic Emissions from Galaxy and Super Massive Black Hole Mergers*
- 2016 B.Sc. in Astronomy and Space Science, Nanjing University, China
Supervised by Prof. Xiangyu Wang and Prof. Fayin Wang
Undergraduate Thesis: *The origin of high-energy astrophysical neutrinos*

HONORS & AWARDS

- 2020, 2019 David C. Duncan Graduate Fellowship, Penn State
- 2018 APS Graduate Student Travel Grant, American Physical Society
- 2017 Homer F. Braddock Scholarship, Penn State
- 2016 School of Astronomy and Space Science Dean's Scholarship, Nanjing University
- 2016 Outstanding Thesis Award, Nanjing University
- 2015 REU Intern Travel Grant (host institution: Penn State), Nanjing University

PUBLICATIONS

Journal articles

- [7] Zhang, T. B., Murase, K., **Yuan, C.**, Kimura, S. & Mészáros, P. “External Inverse-Compton Emission Associated with Extended and Plateau Emission of Short Gamma-Ray Bursts: Application to GRB 160821B”, *Submitted to ApJL*, [arXiv:2012.09143](#)
Contributions: portion of code development and discussion of results.
- [6] **Yuan, C.**, Murase, K., Kimura, S. & Mészáros, P. “Post-merger electromagnetic counterparts of supermassive black hole coalescences”, *submitted to ApJ Letters*
- *[5] **Yuan, C.**, Murase, K., Kimura, S. & Mészáros, P. “High-energy neutrino emission subsequent to gravitational wave radiation from supermassive black hole mergers”, *Phys. Rev. D* 102, 083013. doi: [10.1103/PhysRevD.102.083013](#)
- *[4] **Yuan, C.**, Murase, K. & Mészáros, P. (2020) “Complementarity of Stacking and Multi-

plet Constraints on the Blazar Contribution to the Cumulative High-Energy Neutrino Intensity”, *ApJ*, 890:1. doi: [10.3847/1538-4357/ab65ea](https://doi.org/10.3847/1538-4357/ab65ea)

- [3] **Yuan, C.**, Murase, K. & Mészáros, P. (2019) “Secondary Radio and X-ray Emissions from Galaxy Mergers”, *ApJ*, 878:76. doi: [10.3847/1538-4357/ab1f06](https://doi.org/10.3847/1538-4357/ab1f06)
- *[2] **Yuan, C.**, Mészáros, P., Murase K. & Jeong, D. (2018) “Cumulative Neutrino and Gamma-Ray Backgrounds from Halo and Galaxy Mergers”, *ApJ*, 857:50. doi: [10.3847/1538-4357/aab774](https://doi.org/10.3847/1538-4357/aab774)
- [1] **Yuan, C.** & Wang, F. (2015) “Cosmological Test Using Strong Gravitational Lensing Systems”, *MNRAS*, 452:3. doi: [10.1093/mnras/stv1444](https://doi.org/10.1093/mnras/stv1444)

Conference proceedings and other articles

- [2] **Yuan, C.**, Mészáros, P., Murase K. & Jeong, D. (2018) “Cumulative Neutrino and Gamma-Ray Backgrounds from Halo and Galaxy Mergers”, in *APS April meeting: U17.004*. [Talk abstract](#)
- [1] **Yuan, C.**, Murase K. & Mészáros, P. (2019) “A Multi-Messenger Picture of Galaxy Mergers: Neutrinos and Electromagnetic Emissions”, (*ICRC2019*) 1041. [Proceedings of Science](#)

CONFERENCES AND SCIENTIFIC TALKS

Oct 2020	Invited talk: High-energy neutrino and electromagnetic emissions from SMBH mergers. <i>CCAPP AstroParticle Lunch</i> , Ohio State University
Oct 2020	Talk: Galaxy and SMBH mergers in the era of multi-messenger astrophysics. <i>Astronomical seminar</i> , Tohoku University, Japan
Sep 2020	Lunch talk: High-energy neutrino emission from SMBH mergers. Dept. of Astronomy & Astrophysics, Penn State
Aug 2020	Invited talk: High-energy neutrino emission subsequent to GW radiation from SMBH mergers. <i>Time-Domain High-Energy Messenger Astrophysics Workshop</i> , University of Kyoto, Japan
Jul 2019	Poster: A Multi-Messenger Picture of Galaxy Merger. <i>36th International Cosmic Ray Conference (ICRC)</i> , Madison, WI
Jun 2019	Talk: A Multi-Messenger Picture of Galaxy Mergers: Neutrinos and Electromagnetic Emissions. <i>IGC@25: Multimessenger Universe Workshop</i> , State College, PA
May 2019	Invited talk: Galaxy and halo mergers in the era of multi-messenger astronomy. <i>Astronomy seminar</i> , Nanjing University, China
Apr 2018	Talk: Cumulative Neutrino and Gamma-Ray Backgrounds from Halo and Galaxy Mergers. <i>APS April meeting</i> , Columbus, OH
Aug 2015	Lunch talk: Monte Carlo simulations of electron-photon interactions with pair formation. Dept. of Astronomy & Astrophysics, Penn State

May 2015 **Talk:** Cosmological test using strong gravitational lensing systems. *Cosmology and Galaxy Workshop*, Yangzhou, China

CODE DEVELOPMENT

Astrophysical Multimessenger Emission Synthesize (AMES)

A time-dependent numerical code for the production and propagation of high-energy cosmic rays, neutrinos, and gamma-rays for various astrophysical environments

- Developed the code for photo-meson/photo-hadronic interaction cross sections and cosmic $\gamma\gamma$ interactions.

PROGRAMMING SKILLS

- Extensive experience in using **CRpropa**, an astrophysical simulation code for the propagation of ultra-high-energy particles.
- Programming languages: C++, Python, Mathematica and Fortran

TEACHING EXPERIENCE

2020 F	T.A. PHYS/MATH 479: Special and General Relativity
2018 S, 2019, 2020 S	Lab. T.A. PHYS 250: Introductory Physics
2018 F	Office hour assistant PHYS 525: Methods of Theoretical Physics
2016 F - 2017 F	Lab. T.A. PHYS 212: Electromagnetism

OUTREACH

Jul 2017,18,19	AstroFest - A Tour of Universe, Penn State
May 2018	K-12 Educators: Bring Cutting-Edge STEM Research into your Classroom, Penn State

REFERENCES

Dr. Péter Mészáros (nnp@psu.edu)

Eberly Chair Professor, Astronomy & Astrophysics and Physics, Penn State

Dr. Kohta Murase (murase@psu.edu)

Assistant Professor, Physics and Astronomy & Astrophysics, Penn State

Dr. Donghui Jeong (djeong@psu.edu)

Associate Professor, Astronomy & Astrophysics, Penn State

Dr. Xiangyu Wang (xywang@nju.edu.cn)

Professor, Astronomy & Space Science, Nanjing University, China