

# ZI-YAN YUWEN

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## EDUCATION

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- 🎓 **Ph.D. of Natural Science in Theoretical Physics** *Sep 2020 - Expected Jun 2025*  
Institute of Theoretical Physics, Chinese Academy of Sciences  
Supervisor: Prof. Rong-Gen Cai
- 🎓 **International Exchange** *Aug 2018 - Dec 2018*  
Department of Physics and Astronomy, Michigan State University
- 🎓 **Bachelor of Science (Honors Science Program in Physics)** *Sep 2016 - Jun 2020*  
School of Science, Xi'an Jiaotong University

## RESEARCH INTERESTS

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Cosmological first-order phase transitions, primordial black holes, gravitational wave physics, pulsar timing arrays, and black hole physics.

## PUBLICATIONS

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- **Zi-Yan Yuwen**, Cristian Joana, Shao-Jiang Wang and Rong-Gen Cai “Bubbles kick off primordial black holes to form more binaries”, [arXiv:2406.05838](https://arxiv.org/abs/2406.05838).
- Jun-Chen Wang, **Zi-Yan Yuwen**, Yu-Shi Hao and Shao-Jiang Wang, “General bubble expansion at strong coupling”, *PHYSICAL REVIEW D* 109 (2023) 9, 096012, [arXiv:2311.07347](https://arxiv.org/abs/2311.07347). (**Corresponding Author**)
- Jun-Chen Wang, **Zi-Yan Yuwen**, Yu-Shi Hao and Shao-Jiang Wang, “General backreaction force of cosmological bubble expansion”, [arXiv:2310.07691](https://arxiv.org/abs/2310.07691). (**Corresponding Author**)
- Rong-Gen Cai, Shao-Jiang Wang and **Zi-Yan Yuwen**, “Hydrodynamic sound shell model”, *PHYSICAL REVIEW D Letter* 108 (2023) 2, L021502, [arXiv:2305.00074](https://arxiv.org/abs/2305.00074). (**Corresponding Author**)
- Li Li, Shao-Jiang Wang and **Zi-Yan Yuwen**, “Bubble expansion at strong coupling”, *PHYSICAL REVIEW D* 108 (2023) 9, 096033, [arXiv:2302.10042](https://arxiv.org/abs/2302.10042). (**Corresponding Author**)
- Shao-Jiang Wang and **Zi-Yan Yuwen**, “The energy budget of cosmological first-order phase transitions beyond the bag equation of state”, *Journal of Cosmology and Astroparticle Physics* 10 (2022) 047, [arXiv:2206.01148](https://arxiv.org/abs/2206.01148). (**Corresponding Author**)
- Shao-Jiang Wang and **Zi-Yan Yuwen**, “Hydrodynamic backreaction force of cosmological bubble expansion”, *PHYSICAL REVIEW D* 107 (2023) 2, 023501, [arXiv:2205.02492](https://arxiv.org/abs/2205.02492).

INSPIREHEP Link of the publication details: <https://inspirehep.net/authors/2078475>

## AWARDS

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- **Best Presentation Award**, CosPA 2024, CNY 1,500, 2024
- **National Scholarship**, University of Chinese Academy of Sciences, CNY 30,000, 2023
- Outstanding students pacesetter, University of Chinese Academy of Sciences, 2023
- **National Scholarship**, University of Chinese Academy of Sciences, CNY 20,000, 2021
- Outstanding students, University of Chinese Academy of Sciences, 2021

- Outstanding graduates, Xi'an Jiaotong University, *2020*
- **Mount Everest Scholarship**, 1st class, Xi'an Jiaotong University, CNY 5,000/year, *2017-2019*

## CONFERENCE & TALKS

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- **The 2024 International Symposium on Cosmology and Particle Astrophysics**, Ningbo, China *Jun 2024*  
Contributed talk: Bubbles kick off primordial black holes to form more binaries
- **Annual Meeting of the Chinese Physical Society, Division of Gravitation and Relativistic Astrophysics, and the 6th Galileo-Xu Guangqi Meeting**, Hengyang, China *Apr 2024*  
Contributed talk: BubbleS kick off primordial black holes to form more binaries
- **International Mini-Workshop on Gravitational Waves in the Early Universe**, Beijing, China *Oct 2023*
- **The 2023 Shanghai Symposium on Particle Physics and Cosmology: Phase Transitions, Gravitational Waves and Colliders (SPCS2023)**, Shanghai, China *Jul 2023*  
Contributed talk: Bubble wall velocity from conservation of particle number density flux
- **The 15th International Conference on Gravitation, Astrophysics, and Cosmology (IC-GAC15)**, Gyeongju, Korea *Jul 2023*  
Contributed talk: Hydrodynamic sound shell model and corresponding gravitational waves
- **The 2023 Asia-Pacific School and Workshop on Gravitation, and Cosmology**, Hangzhou, China *May 2023*  
Contributed talk: Hydrodynamic sound shell model and corresponding gravitational waves
- **Annual Meeting of the Chinese Physical Society, Division of Gravitation and Relativistic Astrophysics**, Chongqing, China *Apr 2023*  
Contributed talk: Hydrodynamic sound shell model
- **The 23rd International Conference on General Relativity and Gravitation (GR23)**, Liyang, China *Jun 2022*