查帅 Shuai Zha– *Curriculum Vitae*

Address	Room 118, No. 1, Yunnan Observatories, Yangfangwang 396, Guandu District, Kunming, China, 650216
Mobile Phone	+86 18717906513
Email	zhashuai@ynao.ac.cn

Research interests

Supernovae, gravitational waves, stellar evolution

Positions

07/2023 - present	Research professor, Yunnan Observatories, Chinese Academy of Sciences
06/2021 - 07/2023	Postdoctoral researcher, Tsung-Dao Lee Institute, Shanghai Jiaotong University
09/2019 - 06/2021	Postdoctoral researcher, Department of Astronomy, Stockholm University

Education

08/2015 - 08/2019	Ph.D. - Physics Department, the Chinese University of Hong Kong *Research field: Supernova simulation and stellar evolution*
09/2012 - 07/2015	Master - Physics Department, Fudan University *Research field: Femtosecond laser spectroscopy and nonlinear optics*
09/2008 - 07/2012	B.Sc. - Physics Department, Fudan University

Publications

23 in total (**3** under review), **10** first author, **13** coauthor (mostly second author), 3 *Physical Review Letters*

h-index: 10 total citation: 772 (Google scholar)

Under review:

1. Strong magnetic field inside degenerate relativistic plasma and its impacts on the neutrino transport in Core-Collapse Supernovae
   Yudong Luo, **Shuai Zha**, Toshitaka Kajino
   Submitted to *Astrophysical Journal*;

2. The proper way to spatially decompose the gravitational-wave origin in stellar collapse simulations
   Shuai Zha
   Submitted to *Physical Review D* ;

3. He-accreting oxygen-neon white dwarfs and accretion-induced collapse events
   Zhengyang Zhang, Chengyuan Wu, Amar Aryan, **Shuai Zha**, Dongdong Liu, and Bo Wang
   Submitted to *Physical Review D* ;

First author:

1. Nucleosynthesis in the Innermost Ejecta of Magnetorotational Supernova Explosions in 3-dimensions
   Shuai Zha, Bernhard Müller, Jade Powell
   Accepted by *Astrophysical Journal* ; arXiv:2403.02072

2. Unveiling the Nature of Gravitational-Wave Emission in Core-collapse Supernovae with Perturbative Analysis
   Shuai Zha, Oliver Eggenberger Andersen, Evan O'Connor
   Accepted by *Physical Review D* ; arXiv:2403.02067

3. Light Curves of Type IIP Supernovae from Neutrino-driven Explosions of Red Supergiants Obtained by a Semi-analytic Approach
   Shuai Zha, Bernhard Müller, Amy Weir, Alexander Heger
   Astrophysical Journal **952**, 155 (2023); arXiv:2301.00359

4. Impact of Rotation on the Multimessenger Signatures of a Hadron-quark Phase Transition in Core-collapse Supernovae
   Shuai Zha, Evan P. O'Connor
   Physical Review D **106**, 123037 (2022); arXiv:2209.12418

5. Hydrodynamic Simulations of Electron-capture Supernovae: Progenitor and Dimension Dependence
   Shuai Zha, Evan P. O'Connor, Sean Couch, Shing-Chi Leung, Ken'ichi Nomoto
   MNRAS **513**, 1317 (2022); arXiv:2112.15257

6. Progenitor Dependence of Hadron-quark Phase Transition in Failing Core-collapse Supernovae
   Shuai Zha, Evan P. O'Connor, André da Silva Schneider
   Astrophysical Journal **911**, 74 (2021); arXiv:2103.02268

7. Gravitational-wave Signature of a First-order Quantum Chromodynamics Phase Transition in Core-Collapse Supernovae
   Shuai Zha, Evan P. O'Connor, Ming-chung Chu, Lap-Ming Lin, Sean M. Couch
   Physical Review Letters **125**, 051102 (2020); *Editor's Suggestions*; arXiv:2007.04716

8. Evolution of ONeMg Core in Super-AGB Stars toward Electron-Capture Supernovae: Effects of Updated Electron-Capture Rate
   Shuai Zha, Shing-Chi Leung, Toshio Suzuki, Ken'ichi Nomoto
   Astrophysical Journal **886**, 22 (2019); arXiv:1907.04184; IPMU *press.*

9. Accretion-Induced Collapse of Dark Matter Admixed White Dwarfs - II: Rotation and Gravitational-wave Signals
   Shuai Zha, Shing-Chi Leung, Ming-Chung Chu, Lap-Ming Lin
   Astrophysical Journal **883**, 13 (2019); arXiv:1908.05150

Coauthor:

10. Light curves of the explosion of ONe WD+CO WD merger remnant and type Icn supernovae
    Chengyuan Wu, **Shuai Zha**, Yongzhi Cai, Zhengyang Zhang, Yi Yang, Danfeng Xiang, Weili Lin, Xiaofeng Wang, Bo Wang
    Astrophysical Journal Letters (2024); arXiv:2405.06885

11. Detectability of hadron-quark phase transition in neutrino signals of failing core-collapse supernova
    Zidu Lin, **Shuai Zha**, Evan P. O'Connor, Andrew W. Steiner
    Physical Review D **109**, 023005 (2024); arXiv:2203.05141

12. Gravitational Waves from a Core g-Mode in Supernovae as Probes of the High-Density Equation of State
    Pia Jakobus, Bernhard Müller, Alexander Heger, **Shuai Zha**, Jade Powell, Anton Motornenko, Jan Steinheimer, Horst Stoecker
    Physical Review Letters **131**, 191201 (2023); arXiv:2301.06515

13. Supernova Preshock Neutronization Burst as a Probe of Non-Standard Neutrino Interactions
    Xu-Run Huang, **Shuai Zha**, Lie-Wen Chen
    Astrophysical Journal Letters **923**, L26 (2021); arXiv:2110.07249

14. Equation of State Dependence of Gravitational Waves in Core-Collapse Supernovae
    Oliver Eggenberger Andersen, **Shuai Zha**, André da Silva Schneider, Aurore Betranhandy, Sean M. Couch, Evan P. O'Connor
    Astrophysical Journal **923**, 201 (2021); arXiv:2106.09734

15. Electron capture rates in ^{20}Ne for a forbidden transition to the ground state of ^{20}F relevant to final evolution of high density O-Ne-Mg cores
    Toshio Suzuki, **Shuai Zha**, Shing-Chi Leung, Ken'ichi Nomoto
    Astrophysical Journal **881**, 64 (2019); arXiv:1905.10400

16. Accretion-Induced Collapse of Dark Matter Admixed White Dwarfs - I : Formation of Low-mass Neutron Stars
    Shing-Chi Leung, **Shuai Zha**, Ming-Chung Chu, Lap-Ming Lin, Ken'ichi Nomoto
    Astrophysical Journal **884**, 9 (2019); arXiv:1908.05102

17. Constraints on the chemical enrichment history of the Perseus Cluster of galaxies from high-resolution X-ray spectroscopy
    Aurora Simionescu et. al. (36 authors including Shuai Zha)
    Mon. Notices Royal Astron. Soc., **483**, 1701 (2018)

18. Surface pH and Ion Affinity at the Alcohol-Monolayer/Water Interface Studied by Sum- Frequency Spectroscopy
    Yu-Chieh Wen, **Shuai Zha**, Chuanshan Tian, and Yuen-Ron Shen
    The Journal of Physical Chemistry C, **120**, 28 (2016)

19. Unveiling Microscopic Structures of Charged Water Interfaces by Surface-Specific Vibrational Spectroscopy
    Yu-Chieh Wen, **Shuai Zha**, Xing Liu, Shanshan Yang, Pan Guo, Guosheng Shi, Haiping Fang, Yuen-Ron Shen, and Chuanshan Tian
    Physical Review Letters, **116**, 016101 (2016)

20. Carbon nanodots featuring efficient FRET for two-photon photodynamic cancer therapy with a low fs laser power density
    Jing Wang, Zehui Zhang, **Shuai Zha**, Yinyan Zhu, Peiyi Wu, Benjamin Ehrenberg, and Ji-Yao Chen
    Biomaterials, **35**, 9372 (2014)

Grants and Selected Awards

05/2024	ACAMAR visiting fellowship, 15k AUD
07/2022	China Postdoctoral Science Foundation General Program, 80k CNY
11/2021	Chinese International Postdoctoral Exchange Fellowship Program (Talent-Introduction Program), 400k CNY
06/2020	IAU travel grant for IAU Symposium 362, 400 Euro
12/2019	Grant for collaboration with University of Tokyo, 50k SEK
09/2017	Global Scholarship Programme for Research Excellence, CUHK, 20k HKD
09/2008	Scholarship for outstanding fresh undergraduate student, Fudan University

Computer times

08/2022 - 08/2023	CoI, Swedish National Infrastructure for Computing, 4.2 million core-h
08/2021 - 08/2022	CoI, Swedish National Infrastructure for Computing, 1.8 million core-h
08/2020 - 08/2021	CoI, Swedish National Infrastructure for Computing, 1 million core-h

Professional Activities

08/2024	Organizer of YNAO-SWIFAR Joint Workshop on Stellar Astrophysics and Time-domain Astronomy, Kunming, China
04/2024-	Referee for *Physical Review D*
03/2024-	Referee for *The Open Journal of Astrophysics*
12/2023	Mini-symposium convener of the 32nd Texas Symposium on Relativistic Astrophysics, Shanghai, China
09/2021-	Referee for *the Astrophysical Journal*
02/2019	Organizer of Supernova Mini-Workshop in CUHK, Hong Kong, China

Research activities

08/2020 - 09/2020	Visiting scholar, TDLee Institute, Shanghai Jiaotong University, Shanghai, China Collaboration with Prof. Lie-Wen Chen on the impact of neutrino non-standard interaction on supernova
09/2017 - 01/2018	Kavli IPMU, the University of Tokyo, Tokyo, Japan Collaboration with Prof. Ken'ichi Nomoto on Evolution of Super-AGB stars towards Electron-Capture Supernova

Seminar talks

Apr. 2024	Beihang University, Beijing, China
Apr. 2024	Tsinghua University, Beijing, China
Apr. 2024	Nanjing University, Nanjing, China
Nov. 2023	Kavli IPMU, APEC seminar, Tokyo, Japan
Apr. 2023	Yunnan Observatories, Kunming, Yunnan, China
Nov. 2021	Central Normal University, Wuhan, China
Nov. 2021	Huazhong University of Science and Technology, Wuhan, China
Nov. 2020	TDLee Institute, Shanghai, China
Sep. 2020	Yunnan Observatories, Kunming, Yunnan, China
Sep. 2020	TDLee Institute, Shanghai, China
Aug. 2020	CTPU, IBS, South Korea, *via web*
Feb. 2020	OKC, EO meeting, Stockholm, Sweden
Jan. 2020	CUHK Seminar, Hong Kong, China
Oct. 2018	ASIAA, Lunch talk, Taipei, Taiwan, China
Jul. 2018	Kavli IPMU, APEC seminar, Tokyo, Japan
Jul. 2016	Kavli IPMU, APEC seminar, Tokyo, Japan

Conference presentations

Apr. 2024	Oral, 4th JUNO and Supernova Neutrinos, Beijing, China
Apr. 2024	Oral, Dense Matter EoS and Frontiers in Neutron Star Physics, Shanghai, China
Jun. 2023	Oral, Binary Stars, Haikou, China
Apr. 2023	Oral, 2nd JUNO and Supernova Neutrinos, Beijing, China
Nov. 2022	Oral, Supernova 2022 Melbourne, Australia, remote
Apr. 2021	Oral, APS April meeting 2021, remote
Nov. 2020	Oral, Partikeldagarna 2020, Sweden
Feb. 2020	Poster, Compact Objects for All, Lund, Sweden
Nov. 2019	Oral, Oskar Klein Center day, Stockholm, Sweden
May 2019	Oral, Electron-Capture-Initiated Stellar Collapse, Lorentz Center, Leiden, The Netherlands
Feb. 2019	Oral, Supernova Mini-Workshop in CUHK, Hong Kong, China
Nov. 2018	Oral, CoCoNuT Meeting 2018, CEA Saclay, Paris, France
Oct. 2018	Oral, The 8th East Asian Numerical Astrophysics Meeting, NCKU, Tainan, Taiwan, China
Sep. 2018	Poster, Sixth Annual GMT Community Science Meeting, Honolulu, Hawaii, United States
Feb. 2017	Poster, Quarks and Compact Stars, YITP, Kyoto University, Kyoto, Japan
Jul. 2016	Oral, 10th JGX Astrophysics Meeting, Xiamen University, Xiamen, China

Teaching experiences

06/2018	**Mentor** Lectures for summer students on supernovae and hydrodynamical simulations
06/2017	**Mentor** Summer student Soumyadeep Das on supernova simulation
2015-2019	**Teaching assistant**, CUHK, General Physics, Astronomy, exercise class
2012	**Teaching assistant**, Fudan University, University Physics, exercise class

Programming Languages

Fortran, Python, matlab, LaTeX, C