

YIHAN WANG (王艺涵)

Department of Physics
The University of Hong Kong
Pokfulam Road, Hong Kong

Email: wang3697@wisc.edu
[Personal Homepage](#)
[Google Scholar](#) | [ORCID](#)

PROFESSIONAL APPOINTMENTS

Assistant Professor Department of Physics & Hong Kong Institute for Astronomy and Astrophysics The University of Hong Kong	2026–Present
Postdoctoral Research Associate University of Wisconsin–Madison	2025–2026
Fellow, Nevada Center for Astrophysics University of Nevada, Las Vegas	2022–2025

EDUCATION

Ph.D. in Physics Stony Brook University, NY <i>Advisor: Rosalba Perna</i>	2017–2022
M.A. in Physics Stony Brook University, NY	2016–2017
B.S. in Physics (Theoretical Physics) University of Science and Technology of China (USTC)	2011–2015

RESEARCH PROFILE

Galactic Nuclei & AGN Disks | Nuclear Transients | Gravitational-Wave Sources | Scientific Software & Computational Astrophysics

I develop theoretical and computational models linking AGN accretion disks, stellar dynamics, compact-object populations, and electromagnetic/gravitational-wave transients.

- **AGN disk–cluster coupling:** capture, migration, gas-assisted scattering, and binary formation of stars and compact objects in galactic nuclei.
- **Nuclear transients:** disk-assisted tidal disruption events, changing-look AGN, and quasi-periodic eruptions driven by disk–star interactions.
- **Gravitational-wave sources:** formation and evolution of extreme mass-ratio inspirals and binary black holes in dense nuclear environments.
- **Computational infrastructure:** development of open, high-performance tools for few-body dynamics and relativistic transient modeling.

RESEARCH SOFTWARE

VegasAfterglow | *Primary Developer* [\[GitHub\]](#)
Open-source community software for rapid gamma-ray burst afterglow inference.

- Optimized C++ engine generating light curves in milliseconds, enabling real-time MCMC fitting and large-scale population studies.
- Supports diverse jet structures and emission mechanisms (synchrotron & inverse Compton), with a Python interface for seamless integration with standard fitting tools.

- *Publication:* Wang et al. (2025), JHEAp [Paper 30].

SpaceHub | *Primary Developer*

[GitHub]

High-precision few-body gravity integration toolkit.

- Implements algorithmic regularization (AR) and symplectic integrators to handle extreme mass ratios and eccentricities (e.g., SMBHs and chaotic star clusters).
- *Publication:* Wang et al. (2021), MNRAS [Paper 12].

Secular | *Primary Developer*

[GitHub]

Fast solver for hierarchical secular dynamics (long-term Lidov–Kozai oscillations in triples and quadruples).

Code Extensions: custom radiative EoS and accretion-capture logic in **Phantom** (SPH) for TDE simulations; relativistic MHD setups in **Athena++** for short-GRB jets.

PUBLICATIONS

33 refereed publications (20 first-author); 700+ citations, h-index 16 (June 2026). Complete and updated list on [NASA ADS](#) and [Google Scholar](#). Key papers marked with ★; † denotes co-first authorship.

[33] Chen, Liang-Jun, ..., **Wang, Y.**, ..., *Signature of a Magnetar Central Engine from the Multiband Afterglow of GRB 151027A Associated with a Supernova*, 2026, [ApJ](#)

[32] ★ Dai, C.-Y., Quirola-Vásquez, J., **Wang, Y.**[†], ... *An energetic dirty fireball detected in soft X-rays*, 2026, **Science**, in press, [arXiv:2603.26213](#)

[31] Li, Ye, ..., **Wang, Y.**, ..., *Multiwavelength Observations of the Apparently Nonrepeating FRB 20250316A*, 2025, [ApJ](#)

[30] ★ **Wang, Y.**, Chen, C., Zhang, B., *VegasAfterglow: A High-Performance Framework for Gamma-Ray Burst Afterglows*, 2025, [JHEAp](#)

[29] Chen, C., **Wang, Y.**, Zhang, B., *X-ray Emission Signatures of Neutron Star Mergers*, 2025, [ApJ](#)

[28] Li, W.-X., ..., **Wang, Y.**, ..., *An Extremely Soft and Weak Fast X-ray Transient Associated with a Luminous Supernova*, 2025, under review, [arXiv:2504.17034](#)

[27] **Wang, Y.**, Perna, R., Zhu, Z., Lin, D. N. C., *Evolution of Extremely Soft Binaries in Dense Star Clusters: On the Jupiter-Mass Binary Objects*, 2024, submitted to [ApJ](#)

[26] **Wang, Y.**, Graham, M., Ford, S., McKernan, B., Ryu, T., Stern, D., *Conditions for Changing-Look AGNs from Accretion Disk-Induced Tidal Disruption Events*, 2024, under review, [arXiv:2406.12096](#)

[25] ★ **Wang, Y.**, Zhang, B., *Evidence of a Past Merger of the Galactic Center Black Hole*, 2024, **Nature Astronomy**

[24] ★ **Wang, Y.**, Perna, R., Zhu, Z., *Floating Binary Planets from Ejections during Close Stellar Encounters*, 2024, **Nature Astronomy**

[23] ★ **Wang, Y.**, Lin, D. N. C., Zhang, B., Zhu, Z., *Changing-Look AGN Behaviour Induced by Disk-Captured Tidal Disruption Events*, 2023, [ApJL](#), **962**, L7

[22] Prasad, C., **Wang, Y.**, Perna, R., Ford, S., McKernan, B., *Tidal Disruption Events from Three-Body Scatterings in the Disks of Active Galactic Nuclei*, 2024, [MNRAS](#)

[21] **Wang, Y.**, Zhang, B., Zhu, Z., *Anisotropic Energy Injection from Magnetar Central Engines in Short GRBs*, 2023, [MNRAS](#), **528**, 3705

[20] **Wang, Y.**, Zhu, Z., Lin, D. N. C., *Stellar/BH Populations in AGN Disks: Direct Binary Formation from Captured Objects in Nuclear Clusters*, 2023, [MNRAS](#), **528**, 4958

- [19] **Wang, Y.**, Ford, S., Perna, R., McKernan, B., Zhu, Z., Zhang, B., *Effective Two-Body Scatterings around a Massive Object*, 2023, [MNRAS](#), **523**, 2014
- [18] Xin, C., Haiman, Z., Perna, R., **Wang, Y.**, Ryu, T., *Tidal Peeling Events: Low-Eccentricity Tidal Disruption of a Star by a Stellar-Mass Black Hole*, 2023, [ApJ](#), **961**, 149
- [17] **Wang, Y.**, Lazzati, D., Perna, R., *The Emergence of Diffused Gamma-Ray Burst Afterglows from the Disks of Active Galactic Nuclei*, 2022, [MNRAS](#), **516**, 5935
- [16] Ryu, T., Perna, R., **Wang, Y.**, *Close Encounters of Stars with Stellar-Mass Black Hole Binaries*, 2022, [MNRAS](#), **516**, 2204
- [15] Perna, R., Artale, M. C., **Wang, Y.**, et al., *Host Galaxies and Electromagnetic Counterparts to Binary Neutron Star Mergers across Cosmic Time*, 2021, [MNRAS](#), **512**, 2654
- [14] **Wang, Y.**, Perna, R., Leigh, N. W. C., Shara, M. M., *Hot Jupiter Formation in Star Clusters: Secular Chaos*, 2021, [MNRAS](#), **509**, 5253
- [13] **Wang, Y.**, McKernan, B., Ford, S., Perna, R., Leigh, N. W. C., Mac Low, M.-M., *Symmetry Breaking in Dynamical Encounters in the Disks of Active Galactic Nuclei*, 2021, [ApJL](#), **923**, L23
- [12] ★ **Wang, Y.**, Leigh, N. W. C., Liu, B., Perna, R., *SpaceHub: A High-Performance Gravity Integration Toolkit for Few-Body Problems in Astrophysics*, 2021, [MNRAS](#), **505**, 1053
- [11] **Wang, Y.**, Perna, R., Armitage, P. J., *Partial Tidal Disruption Events by Stellar-Mass Black Holes: Gravitational Instability of the Stream and Impact from the Remnant Core*, 2021, [MNRAS](#), **503**, 6005
- [10] **Wang, Y.**, Leigh, N. W. C., Perna, R., Shara, M. M., *Hot Jupiter and Ultra-Cold Saturn Formation in Dense Star Clusters*, 2020, [ApJ](#), **905**, 136
- [9] **Wang, Y.**, Perna, R., Leigh, N. W. C., *Planetary Architectures in Interacting Stellar Environments*, 2020, [MNRAS](#), **496**, 1453
- [8] **Wang, Y.**, Perna, R., Leigh, N. W. C., *Giant Planet Swaps during Close Stellar Encounters*, 2020, [ApJL](#), **891**, L14
- [7] **Wang, Y.**, Leigh, N. W. C., Sesana, A., Perna, R., *The Cosmological Distribution of Compact Object Mergers from Dynamical Interactions with SMBH Binaries*, 2019, [MNRAS](#), **490**, 2627
- [6] Liu, B., Lai, D., **Wang, Y.**, *Binary Mergers near a Supermassive Black Hole: Relativistic Effects in Triples*, 2019, [ApJL](#), **883**, L7
- [5] Liu, B., Lai, D., **Wang, Y.**, *Black Hole and Neutron Star Binary Mergers in Triple Systems. II. Merger Eccentricity and Spin-Orbit Misalignment*, 2019, [ApJ](#), **881**, 41
- [4] Perna, R., **Wang, Y.**, Farr, W. M., Leigh, N., Cantiello, M., *Constraining the Black Hole Initial Mass Function with LIGO/Virgo Observations*, 2019, [ApJL](#), **878**, L1
- [3] **Wang, Y.**, Leigh, N., Sesana, A., Perna, R., *Hypervelocity Binaries from Close Encounters with a SMBH–IMBH Binary: Orbital Properties and Diagnostics*, 2019, [MNRAS](#), **482**, 3206
- [2] **Wang, Y.**, Leigh, N., Yuan, Y.-F., Perna, R., *The Fate of Close Encounters between Binary Stars and Binary Supermassive Black Holes*, 2018, [MNRAS](#), **475**, 4595
- [1] Liu, B., **Wang, Y.**, Yuan, Y.-F., *Modified Evolution of Stellar Binaries from Supermassive Black Hole Binaries*, 2017, [MNRAS](#), **466**, 3376

GRANTS & COMPUTING ALLOCATIONS

ACCESS-SDSC 1.25M CPU hours	2023–2025
Project: <i>Propagation of Fast Radio Bursts</i> (PI)	
ACCESS-SDSC 0.5M CPU hours	2022–2024
Project: <i>Hot Jupiter Formation in Dense Star Clusters</i> (PI)	

HONORS & AWARDS

Gerald Brown Prize	2022
Di Tian Prize for Excellent Research	2020
National Endeavor Scholarship	2014
Outstanding Student Scholarship (USTC)	2012, 2013
Exceptional Prize, Physics Experiment Contest (USTC)	2013

TALKS

Invited Talks & Seminars

• Astronomy Seminar, Tsung-Dao Lee Institute (TDLI)	Apr. 2026
• 4th Seminar on Accretion-modified Stars in Accretion Disks of Active Galactic Nuclei, USTC	Apr. 2026
• Graduate Seminar, HKIAA, The University of Hong Kong	Mar. 2026
• Graduate Seminar, University of Wisconsin–Madison	Oct. 2025
• Transient Phenomena and Physical Processes Around Supermassive Black Holes	Oct. 2024
• Astronomy Seminar, Institute for Advanced Study, Tsinghua University	Sep. 2024
• Astronomy Seminar, Institute of High Energy Physics, Chinese Academy of Sciences	Sep. 2024
• Astronomy Seminar, Fudan University	Aug. 2024
• Astronomy Seminar, University of Science and Technology of China	Aug. 2024
• Astronomy Seminar, Huazhong University of Science and Technology	Aug. 2024
• Graduate Seminar, Zhejiang University	Aug. 2024
• Graduate Seminar, Nanjing University	Jun. 2023
• AGN Santa Fe Conference, Los Alamos National Laboratory	Mar. 2023
• Graduate Seminar, Stony Brook University	Feb. 2023
• Astro-coffee, IAS, Princeton University	Feb. 2023
• Bahcall Lunch Talk, IAS, Princeton University	Feb. 2023
• Graduate Seminar, Georgia Institute of Technology	Sep. 2022
• Astrophysics Seminar, University of the Balearic Islands	Oct. 2021
• Astronomy Seminar, Universidad de Concepción	Sep. 2021
• Astronomy Group Meeting, Cornell University	Jun. 2018

Contributed Talks

• 50 Years of Binaries and Disks: Lubow@75	Apr. 2024
• Anticipating the Rising Tide of Tidal Disruption Events, KITP	Apr. 2024
• 53rd Annual DDA Meeting, CCA, Flatiron Institute	Apr. 2022
• Planet Formation Group Meeting, CCA, Flatiron Institute	Oct. 2021
• Astronomy Seminar, Stony Brook University	Aug. 2021
• Compact Object Group Meeting, CCA, Flatiron Institute	Mar. 2021
• Astronomy Seminar, American Museum of Natural History	Aug. 2018

MENTORING

Graduate Students

Nick Marston, University of Wisconsin–Madison	2025–Present
Connery Chen, University of Nevada, Las Vegas — <i>led first-author ApJ publication [29]; co-developer of VegasAfterglow [30]</i>	2023–Present
Chaitanya Prasad, Stony Brook University — <i>led first-author MNRAS publication [22]</i>	2022–2023
Michael Ray, Stony Brook University	2021–2022

Undergraduate Students

Antonio Frigo, Stony Brook University	2021
Robert Serrano, Stony Brook University	2019–2020

PROFESSIONAL SERVICE & OUTREACH

Collaboration Memberships

• Member, <i>Einstein Probe (EP)</i> Collaboration	2024–Present
• Member, <i>SVOM</i> (Space-based multi-band astronomical Variable Objects Monitor)	2024–Present
• Member, <i>LHAASO</i> (Large High Altitude Air Shower Observatory)	2026–Present

Referee Service: *ApJ*, *ApJL*, *MNRAS*, *A&A*, *JHEAp*.

Leadership:

• Coordinator, NCfA Multi-messenger Meeting	2022–2025
• Mentor, Stony Brook Graduate Mentoring Program	2017–2019

Outreach:

• UNLV Community Engagement Expo	2023
• Astronomy on Tap (Las Vegas): “100 Years of Variable Stars”	2023

TEACHING EXPERIENCE

Teaching Assistant, AST-203: <i>Astronomy</i>	Spring 2019
Teaching Assistant, AST-248: <i>Search for Life in the Universe</i>	Fall 2018
Teaching Assistant, PHY-134: <i>Classical Physics Lab II</i>	Spring 2018
Teaching Assistant, AST-205: <i>Introduction to Planetary Sciences</i>	Fall 2017
Teaching Assistant, <i>Electromagnetism</i>	Fall 2014

SELECTED PRESS COVERAGE

Evidence of a Past Merger of the Galactic Center Black Hole

• <i>CBC</i> : “A cosmic collision 9 billion years ago...”	Sep. 2024
• <i>Phys.org</i> : “Massive merger: Study reveals evidence...”	Sep. 2024

Floating Binary Planets from Ejections during Close Stellar Encounters

• <i>Quanta Magazine</i> : “Rogue Worlds Throw Planetary Ideas Out of Orbit”	Nov. 2023
• <i>Physics World</i> : “Pairs of rogue planets found wandering...”	Oct. 2023

A Planet Could Have Been Stolen from the Solar System as It Formed

• <i>New Scientist</i>	Feb. 2020
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REFERENCES

Rosalba Perna

Stony Brook University

Email: rosalba.perna@stonybrook.edu

Douglas N. C. Lin

University of California, Santa Cruz

Email: lin@ucolick.org

Nicholas Stone

University of Wisconsin–Madison

Email: nstone2@wisc.edu

Ye-Fei Yuan

University of Science and Technology of China

Email: yfyuan@ustc.edu.cn

Bing Zhang

University of Nevada, Las Vegas

Email: bing.zhang@unlv.edu

Zhaohuan Zhu

University of Nevada, Las Vegas

Email: zhaohuan.zhu@unlv.edu

Dong Lai

Cornell University

Email: dong@astro.cornell.edu