

YIHAN WANG

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[Homepage](#)
[Google Scholar](#)

INTERESTS

My research interests span a diverse range of astrophysical topics including exoplanet dynamics, black hole mergers, tidal disruption events and gamma-ray bursts. Recent areas of interest include:

- Black hole mergers in AGN disks.
- Formation of free-floating planets and planet binaries.
- Tidal disruption events associated with AGNs.
- Short GRB and engine-fed kilonova.
- Hot Jupiter formation within star clusters.

POSITIONS

Fellow of Nevada Center for Astrophysics (NCfA) University of Nevada, Las Vegas	2022 - present
Research Associate Department of Astrophysics, American Museum of Natural History	2020 - 2020

EDUCATION

Ph.D. in Physics Stony Brook University, supervisor: Rosalba Perna	2017 - 2022
M.A. in Physics Stony Brook University	2016 - 2017
B.S. in Physics (Theoretical physics) University of Science and Technology of China (USTC)	2011 - 2015

HONORS AND AWARDS

Gerald Brown Prize	2022
Di Tian Prize for ethnic Chinese student with excellent research	2020
National Endeavor Scholarship	2014
Outstanding Student Scholarship in USTC	2013
Exceptional Prize for Physics Experiment Contest of USTC	2013
Outstanding Student Scholarship in USTC	2012

TEACHING

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

MENTORING

<i>Undergraduate</i> Antonio Frigo, Stony Brook University	2021 - 2021
Robert Serrano, Stony Brook University	2019 - 2020

Graduate

Michael Ray, Stony Brook University	2021 - 2022
Chaitanya Prasad, Stony Brook University	2022 - 2023
Jiaming Zhuge, University of Nevada, Las Vegas	2023 - present
Connery Chen, University of Nevada, Las Vegas	2023 - present

TALKS

Graduate Seminar, Nanjing University (invited)	Jun. 2023
AGN SantaFe Conference, Los Alamos National Lab (invited)	Mar. 2023
Graduate Seminar, Stony Brook University (invited)	Feb. 2023
Astro-coffee, IAS, Princeton University (invited)	Feb. 2023
Bahcall lunch talk, IAS, Princeton University (invited)	Feb. 2023
Graduate Seminar, Georgia Institute of Technology (invited)	Sep. 2022
53rd Annual DDA Meeting, CCA, Flatiron Institute	Apr. 2022
Astrophysics seminar, University of the Balearic Islands (invited)	Oct. 2021
Planet formation group meeting, CCA, Flatiron Institute	Oct. 2021
Astronomy Seminar, Universidad de Concepción (invited)	Sep. 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
Astronomy Group meeting, Cornell University (invited)	Jun. 2018

PROFESSIONAL SERVICE AND OUTREACH

Referee for the *Astrophysical Journal*
Coordinator of NcFA multi-messenger group meeting
Stony Brook mentoring program for new graduate students, 2017-2019
Astronomy on Tap at Las Vegas, 100 Years of Variable Stars & Extragalactic Astronomy, 2023
UNLV community engagement expo, 2023

SKILLS

C/C++ (11 years), Fortran (4 years), Python (7 years), \LaTeX , HTML, Markdown
Software I often utilize:
[Spacehub]: self-developed general purpose high precision few-body code, [NASA EMAC link](#). [Paper link](#)
[Secular]: self-developed fast solver for secular dynamics in few-body problems.
[Phantom]: implement radiative EoS module and modify accretion module for TDE projects.
[Athana++]: relativistic MHD simulations for short GRBs.

PRESS

Rogue Worlds Throw Planetary Ideas Out of Orbit - QuantaMagazine	Nov. 2023
Pairs of rogue planets found wandering in the Orion Nebula - PhysicsWorld	Oct. 2023
A planet could have been stolen from the solar system as it formed - NewScientist	Feb. 2020

PUBLICATIONS

A complete list of publications can also be found at the [NASA ADS](#) and [Google Scholar](#).

- [25] **Wang Y.**, Zhang B., *Evidence of a Past Merger of the Galactic Center Black Hole*, 2024, submitted, [arXiv.2403.06416](#)
- [24] **Wang Y.**, Perna R., Zhu Z., *Floating binary planets from ejections during close stellar encounters*, 2024, [Natue 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*, 2023, submitted to MNRAS, [arXiv.2310.00020](#)
- [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 Population in AGN Disks: Direct Binary Formation from Capture Objects in Nuclei 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.-H.**, 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.-H.**, *Close Encounters of Stars with Stellar-mass Black Hole Binaries*, 2022, [MNRAS](#), 516, 2204
- [15] Perna R., Artale M. C., **Wang Y.-H.**, Mapelli M., Lazzati D., Sgalletta C., Santoliquido F., *Host galaxies and electromagnetic counterparts to binary neutron star mergers across the cosmic time: Detectability of GW170817-like events*, 2021, [MNRAS](#), 512, 2654
- [14] **Wang Y.-H.**, Perna R., Leigh N. W. C., Shara M. M., *Hot Jupiter formation in star cluster: Secular chaos*, 2021, [MNRAS](#), 509, 5053.
- [13] **Wang Y.-H.**, 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](#), 932, L23.
- [12] **Wang Y.-H.**, 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.-H.**, Perna R., Armitage P. J., *Partial tidal disruption events by stellar mass black holes: Gravitational instability of stream and impact from remnant core*, 2021, [MNRAS](#), 503, 6005.
- [10] **Wang Y.-H.**, 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.-H.**, Perna R., Leigh N. W. C., *Planetary architectures in interacting stellar environments*, 2020, [MNRAS](#), 496, 1453.
- [8] **Wang Y.-H.**, Perna R., Leigh N. W. C., *Giant Planet Swaps during Close Stellar Encounters*, 2020, [ApJL](#), 891, L14.
- [7] **Wang Y.-H.**, 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.-H.**, *Binary Mergers near a Supermassive Black Hole: Relativistic Effects in Triples*, 2019, [ApJL](#), 883, L7.
- [5] Liu B., Lai D., **Wang Y.-H.**, *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.-H.**, 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.-H.**, 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.-H.**, 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.-H.**, Yuan Y.-F., *Modified evolution of stellar binaries from supermassive black hole binaries*, 2017, [MNRAS](#), 466, 3376.