YIHAN WANG

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Homepage
Google Scholar

INTERESTS

I am a dynamicist interested in a diverse range of topics, including exoplanets, black hole mergers, and tidal disruption events. Recent areas of interest include:

- Stellar dynamics in AGN.
- Formation of free-floating planets and planet binaries.
- Tidal disruption events associated with AGNs.
- Planetary system in star clusters.

POSITIONS

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

EDUCATION

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

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

MENTORING

Undergraduate
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

50 years of Binaries and Disks: Lubow@75 Apr. 2024
Anticipating the Rising Tide of Tidal Disruption Events, KITP Apr. 2024
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.
[Athena++]: 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.

[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, arXiv.2310.00020

[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, submitted to ApJL, 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, 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.

REFERENCES

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