



Yi-Ming Hu

Curriculum Vitae

Education

- 2011–2015 **Ph.D. in Physics and Astronomy**, *The University of Glasgow*, UK.
2007–2011 **Bachelor of Science in Astronomy**, *Nanjing University*, China.

Work experience

- 2017–Present **Associate Professor**, *School of Physics and Astronomy, Sun Yat-sen University*, China.
2016–2017 **Postdoc**, *Research Institute of Information Technology, Tsinghua University*, China.
2015–2016 **Junior Scientist/Postdoc**, *The Max Planck Institute for Gravitational Physics (Albert Einstein Institute)*, Germany.

Research interests

- TianQin** My primary research interest is to explore the astronomy and fundamental physics that could be achieved through the construction of TianQin, a proposed space-based gravitational wave detector. My current affiliation is TianQin research center for gravitational physics.
- GW astronomy** As an astronomer deep down, I'm studying all possible gravitational wave sources for space-based GW missions, ranging from Galactic compact binaries, stellar mass compact binary inspirals, extreme mass-ratio inspirals, massive black hole binary mergers, as well as stochastic gravitational wave background.
- Data Analysis** I'm a Bayesianism, and my previous experience in LIGO equipped me with knowledge to perform GW data analysis related to space-based GW missions. I plan to construct data analysis pipelines for all sorts of potential sources to TianQin, to detect signals out of noise, and to measure parameters upon detected events.

Awards, Honors and Grants

- 2022–2025 NSFC, Grant No. 12173104 (PI, 600K RMB)
2021 Outstanding undergraduate mentor award, SYSU
2021- Member of Gravitation and Relativistic Astrophysics, Chinese Physical Society

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- 2021 Distinguished alumni, Chongming high school
- 2020 TianHe star prize for excellent supercomputer application, rewarded by the TianHe supercomputer (rank 6th fastest supercomputer) to the work on Fan et al. PRD 102 063016
- 2020- Member of Chinese Astronomical Society
- 2019-2024 Guangdong Major Project of Basic and Applied Basic Research (co-I, responsible for 5.5M RMB), Contract No. 2019B030302001
- 2019- Member of Guangdong Association of Young scientists
- 2019 New star award for teaching, SYSU
- 2018-2020 NSFC, Grant No. 11703098 (PI, 290K RMB)
- 2017- Serve as referee for journals like Astron. J., Res. Astron. Astrophys., Acta. Phys. Sin.
- 2017 Physics World Breakthrough of the Year (shared with 1,000+ collaborators)
- 2017 Science Breakthrough of the Year (shared with 1,000+ collaborators)
- 2017 Princess of Asturias Award for Technical and Scientific Research (shared with 1,000+ collaborators)
- 2017 Bruno Rossi Prize awarded by the High Energy Astrophysics Division of the American Astronomical Society (shared with 1,000+ collaborators)
- 2017 UK Royal Astronomical Society Group Achievement Award in Astronomy (shared with 1,000+ collaborators)
- 2017 Special Breakthrough Prize in Fundamental Physics (shared with 1,000+ collaborators)
- 2016 Physics World Breakthrough of the Year (shared with 1,000+ collaborators)
- 2016 Gruber Prize in Cosmology (shared with 1,000+ collaborators)
- 2016 The Intellectual's writers of 2016 (for outreach article related to gravitational wave)
- 2013 Principal's Early Career Mobility Fund
- 2011 China Scholarship Council Scholarship
- 2010 National Aspiration Scholarship

Selected Publication List († means corresponding author)

- 2022 **Constraining the cosmological parameters using gravitational wave observations of massive black hole binaries and statistical redshift information**, *Liang-Gui Zhu*[†], ***Yi-Ming Hu***[†], *Hai-Tian Wang*[†], *Jian-dong Zhang*[†], *Xiao-Dong Li*[†], *Martin Hendry*[†], *Jianwei Mei*[†], *Physical Review Research*, vol. 4, 013247.
- 2022 **Constraining the Hubble constant to a precision of about 1% using multi-band dark standard siren detections**, *Liang-Gui Zhu*, *Ling-Hua Xie*, ***Yi-Ming Hu***[†], *Shuai Liu*[†], *En-Kun Li*[†], *Nicola R. Napolitano*, *Bai-Tian Tang*, *Jian-dong Zhang*[†], *Jianwei Mei*, *Science China Physics, Mechanics & Astronomy*, vol. 65, 259811.

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- 2022 **Detecting Gravitational-waves from Extreme Mass Ratio Inspirals using Convolutional Neural Networks**, Xue-Ting Zhang, Chris Messenger, Natalia Korsakova, Man Leong Chan, **Yi-Ming Hu**[†], Jian-dong Zhang, arXiv, 2202.07158.
- 2022 **Probing chromatic onsets of gravitational wave overtones**, Hai-Tian Wang, **Yi-Ming Hu**, Yi-Zhong Fan[†], Physical Review D, vol. 105, 043012.
- 2022 **The capability for detection of GW190521-like binary black holes with TianQin**, Shuai Liu[†], Liang-Gui Zhu, **Yi-Ming Hu**[†], Jian-dong Zhang, Mu-Jie Ji, Physical Review D, vol. 105, 023019.
- 2022 **Science with the TianQin Observatory: Preliminary Results on Stochastic Gravitational-Wave Background**, Zheng-Cheng Liang[†], **Yi-Ming Hu**[†], Yun Jiang[†], Jun Cheng[†], Jian-dong Zhang[†], Jianwei Mei[†], Physical Review D, vol. 105, 022001.
- 2021 **Lensing by primordial black holes: constraints from gravitational wave observations**, Jie-Shuang Wang[†], Antonio Herrera-Martín[†], **Yi-Ming Hu**[†], Physical Review D, vol. 104, 083515.
- 2021 **Constrains on the electric charges of the binary black holes with GWTC-1 events**, Hai-Tang Wang[†], Peng-Cheng Li, Jin-Liang Jiang, Guan-Wen Yuan, **Yi-Ming Hu**, Yi-Zhong Fan, The European Physical Journal C, vol. 81, 769.
- 2021 **Following up the afterglow: strategy for X-ray observation triggered by gravitational wave events**, Hui Tong, Mu-Xin Liu, **Yi-Ming Hu**[†], Man Leong Chan, Martin Hendry, Zhu Liu, Hui Sun, Research in Astronomy and Astrophysics, vol. 21, 308.
- 2021 **Science with the TianQin Observatory: Preliminary results on testing the no-hair theorem with extreme mass ratio inspirals**, Tie-Guang Zi, Jian-dong Zhang[†], Hui-Min Fan, Xue-Ting Zhang, **Yi-Ming Hu**[†], Changfu Shi[†], Jianwei Mei[†], Physical Review D, vol. 104, 064008.
- 2021 **A Higher Probability of Detecting Lensed Supermassive Black Hole Binaries by LISA**, Zucheng Gao[†], Xian Chen[†], **Yi-Ming Hu**, Jian-Dong Zhang, Shunjia Huang, Monthly Notices of the Royal Astronomical Society, vol. 512, Pages 1–10.
- 2020 **GW19042_6152155: a merger of neutron star-black hole or low mass binary black holes?**, Yin-Jie Li, Ming-Zhe Han, Shao-Peng Tang, Yuan-Zhu Wang, **Yi-Ming Hu**, Qiang Yuan, Yi-Zhong Fan[†], Da-Ming Wei, arXiv, 2012.04978.
- 2020 **The TianQin project: current progress on science and technology**, Jianwei Mei et al., Progress of Theoretical and Experimental Physics, vol. 2021, 05A107.
- 2020 **Science with the TianQin Observatory: Preliminary result on extreme-mass-ratio inspirals**, Hui-Min Fan, **Yi-Ming Hu**[†], Enrico Barausse, Alberto Sesana, Jian-Dong Zhang[†], Xuefeng Zhang, Tie-Guang Zi, Jianwei Mei[†], Physical Review D, vol. 102, 063016.
- 2020 **Science with the TianQin Observatory: Preliminary Results on Galactic Double White Dwarf Binaries**, Shun-Jia Huang, **Yi-Ming Hu**[†], Valeriya Korol, Peng-Cheng Li, Zheng-Cheng Liang, Yang Lu, Hai-Tian Wang, Shenghua Yu, Jianwei Mei[†], Physical Review D, vol. 102, 063021.

- 2020 **Science with the TianQin observatory: Preliminary results on stellar-mass binary black holes**, *Shuai Liu[†], Yi-Ming Hu[†], Jian-dong Zhang[†], Jianwei Mei[†]*, Physical Review D, vol. 101, 103027.
- 2020 **Is GW190425 Consistent with Being a Neutron Star–Black Hole Merger?**, *Ming-Zhe Han, Shao-Peng Tang, Yi-Ming Hu, Yin-Jie Li, Jin-Liang Jiang, Zhi-Ping Jin, Yi-Zhong Fan[†], Da-Ming Wei*, Astrophysical Journal Letters, vol. 891, L5.
This work gets highlighted in astrobites
- 2019 **Constraining modified gravity with ringdown signals: an explicit example**, *Jiahui Bao, Changfu Shi, Haitian Wang, Jian-dong Zhang[†], Yiming Hu, Jianwei Mei, Jun Luo*, Physical Review D, vol. 100, 084024.
- 2019 **TianQin project and international collaboration**, *Yi-Ming Hu, Jianwei Mei, Jun Luo[†]*, Chinese Science Bulletin, vol. 64, no. 24, p. 2475-2483.
- 2019 **Results from an Einstein@Home search for continuous gravitational waves from Cassiopeia A, Vela Jr. and G347.3**, *Jing Ming[†], Maria Alessandra Papa, Avneet Singh, Heinz-Bernd Eggenstein, Sylvia J. Zhu, Vladimir Dergachev, Yi-Ming Hu, Reinhard Prix, Bernd Machenschalk, Christian Beer, Oliver Behnke, Bruce Allen*, Physical Review D, vol. 100, 024063.
- 2019 **Science with TianQin: Preliminary Results on Testing the No-hair Theorem with Ringdown Signals**, *Changfu Shi, Jiahui Bao, Haitian Wang, Jian-dong Zhang[†], Yi-Ming Hu, Alberto Sesana, Enrico Barausse, Jianwei Mei, Jun Luo*, Physical Review D, vol. 100, 044036.
- 2019 **Science with TianQin: Preliminary Results on Massive Black Hole Binaries**, *Hai-Tian Wang, Zhen Jiang, Alberto Sesana, Enrico Barausse, Shun-Jia Huang, Yi-Fan Wang, Wen-Fan Feng, Yan Wang, Yi-Ming Hu[†], Jianwei Mei, Jun Luo*, Physical Review D, vol. 100, 043003.
- 2019 **Preliminary study on parameter estimation accuracy of supermassive black hole binary inspirals for TianQin**, *Wen-Fan Feng, Hai-Tian Wang, Xin-Chun Hu, Yi-Ming Hu[†], Yan Wang[†]*, Physical Review D, vol. 99, 123002.
- 2018 **Gravitational waves induced by the asymmetric jets of gamma-ray bursts**, *Shuang Du, Xiao-Dong Li[†], Yi-Ming Hu, Fang-Kun Peng, Miao Li*, Monthly Notices of the Royal Astronomical Society, vol. 480, no. 1, p. 402-406.
- 2018 **Fundamentals of the orbit and response for TianQin**, *Xin-Chun Hu, Xiao-Hong Li, Yan Wang[†], Wen-Fan Feng, Ming-Yue Zhou, Yi-Ming Hu, Shou-Cun Hu, Jian-Wei Mei, Cheng-Gang Shao*, Classical and Quantum Gravity, vol. 35, no. 9, 095008.
- 2018 **Optimizing searches for electromagnetic counterparts of gravitational wave triggers**, *Michael W Coughlin[†], Duo Tao, Man Leong Chan, Deep Chatterjee, Nelson Christensen, Shaon Ghosh, Giuseppe Greco, Yiming Hu, Shasvath Kapadia, Javed Rana, Om Sharan Salafia, Christopher Stubbs*, Monthly Notices of the Royal Astronomical Society, vol. 478, no.1 p. 692-702.
- 2017 **Science Prospects for Space-borne Gravitational Wave Missions**, *Yi-Ming Hu[†], Jianwei Mei, Jun Luo*, National Science Review, vol. 4, no. 5, p. 683-684.

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- 2017 **Excitation of high frequency voices from intermediate-mass-ratio inspirals with large eccentricity**, *Wen-Biao Han[†], Zhoujian Cao, Yi-Ming Hu[†]*, *Classical and Quantum Gravity*, vol. 34, no. 22, p. 225010.
- 2017 **Neutron Star–Black Hole Coalescence Rate Inferred from Macronova Observations**, *Xiang Li, Yi-Ming Hu[†], Zhi-Ping Jin, Yi-Zhong Fan[†], Da-Ming Wei*, *Astrophysical Journal Letters*, vol. 844, no. 2, p. L22.
- 2017 **Systematic errors in estimation of gravitational-wave candidate significance**, *Collin Capano, Thomas Dent, Chad Hanna, Martin Hendry, Yi-Ming Hu[†], Chris Messenger, John Veitch*, *Physical Review D*, vol. 96, p. 082002.
- 2017 **Maximising the detection probability of kilonovae associated with gravitational wave observations**, *Man Leong Chan, Yi-Ming Hu[†], Chris Messenger, Martin Hendry, Ik Siong Heng*, *Astrophysical Journal*, vol. 834, no. 1, p. 84.
- 2016 **Long-short GRBs within the horizon of the advanced LIGO/VIRGO network and Time lag between compact object coalescence and GRB onset**, *Xiang Li, Yi-Ming Hu, Yi-Zhong Fan[†], Da-Ming Wei*, *Astrophysical Journal*, vol. 827, no. 1, p. 75.
- 2015 **Global Optimisation for Future Gravitational Wave Detectors' Sites**, *Yi-Ming Hu[†], Peter Raffai, Laszlo Gondan, Ik Siong Heng, Nandor Kelecsenyi, Martin Hendry, Zsuzsa Marka, Szabolcs Marka*, *Classical and Quantum Gravity*, vol. 32, no. 10, p. 105010.
- 2014 **Glitch or anti-glitch: a Bayesian view**, *Yi-Ming Hu[†], Matthew Pitkin, Ik Siong Heng, and Martin A. Hendry*, *Astrophysical Journal Letters*, vol. 784, no. 2, p. L41.

Conference and invited talks

- March 2022 **The 1st Meeting of the 1st Academic Committee Frontiers Science Center for TianQin, Zoom**, *Progress of the TianQin scientific objective and data processing.*
- March 2022 **Annual meeting of the Frontiers Science Center for TianQin, Zoom**, *Progress of gravitational wave data processing.*
- March 2022 **Invited talk at the KIAA, PKU, through Zoom**, *Gravitational Universe with the TianQin observatory.*
- January 2022 **Annual meeting of TianQin center, Zhuhai**, *Detection of Galactic ultra-compact binaries from gravitational wave data.*
- November 2021 **Invited lecture of the "modern astronomy frontier" series by the Purple Mountain Observatory, TencentMeeting**, *Gravitational wave astronomy in mHz band.*
- November 2021 **ACAMAR 7: Australia-China Workshop on Astrophysics, Zoom**, *Gravitational wave astronomy with the TianQin observatory.*
- October 2021 **Annual meeting of Chinese astronomical society, Tencent meeting**, *Science with the TianQin Observatory: Massive Black Hole Binaries and Implications to Cosmology.*

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- October 2021 **Planery talk at the AAPPs-DACG Workshop 2021 on Astrophysics, Cosmology and Gravitation, Zoom**, *Gravitational wave astronomy with the TianQin observatory.*
- July 2021 **Planery talk at the 15th TeV Physics Working Group Symposium, Beijing**, *Science with the TianQin observatory.*
- July 2021 **Amaldi14 conference, Zoom**, *GW astronomy with the TianQin observatory.*
- July 2021 **Amaldi14 conference, Zoom**, *Constraining the cosmological parameters using gravitational wave observations of massive black hole binaries and statistical redshift information.*
- July 2021 **Invited talk at the Astro-GR@Lanzhou 2021, Lanzhou**, *Gravitational waves from compact objects.*
- July 2021 **Invited talk at Ningbo Science Exploration Center, Ningbo**, *Who is playing the TianQin*, Media reports.
- June 2021 **Invited talk at Chongming High School, Shanghai**, *Who is playing the TianQin.*
- June 2021 **Planery talk at Gravitational Wave Astrophysics Conference 2021, Hefei**, *Science with the TianQin Observatory.*
- May 2021 **Invited talk at Xiamen Shuangshi Middle School of Fujian, Xiamen**, *Who is playing the TianQin.*
- May 2021 **Invited talk at the 2021 international big data industry expo, Guiyang**, *Who is playing the TianQin.*
- April 2021 **2020/2021 Academic Annual Conference and National Representatives for Gravitation and Relativistic Astrophysics, Chinese Physical Society, Shenyang**, *Science with the TianQin Observatory.*
- April 2021 **2021 CQU & USTC JuniorSymposium on "New perspectives on physical cosmology", Chongqing**, *Science with the TianQin Observatory.*
- December 2020 **4th Seminar on TianQin science case, Zhuhai**, *Update on Astronomy Objective Study with TianQin.*
- November 2020 **SELF Forum (bay area)**, *Who is playing the TianQin*, streamed public talk.
- November 2020 **Invited talk at Tsung-Dao Lee Institute, Zoom**, *Science with the TianQin Observatory.*
- September 2020 **LISA XIII Symposium, YouTube/Bilibili**, *Science with the TianQin Observatory.*
- August 2020 **Series talks for GW physics summer school, Zoom**, *Science cases study for TianQin I/II.*
- August 2020 **SYSU summer camp, Guangzhou**, *History of GW astronomy and the TianQin project.*
- July 2020 **GrEAT network webinar, Zoom**, *Science with the TianQin Observatory.*
- May 2020 **Fronterier talk for undergraduate, VooV meeting**, *Science with the TianQin Observatory.*

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- December 2019 **Invited talk at Guangzhou University, Guangzhou**, *Science with the TianQin Observatory.*
- December 2019 **The Sixth Workshop of TianQin Space Science Mission, Zhuhai**, *Progress on Studies of TianQin Scientific Objectives.*
- November 2019 **KIAA Forum 2019: The Future of Gravitational Wave Astrophysics, Beijing**, *Science with TianQin: Prospects and applications of massive black hole binaries detections.*
- November 2019 **3rd Seminar on TianQin science case, Zhuhai**, 1. *Prospect of TianQin on Massive Black Hole Binaries and EMRI*; 2. *Prospect of TianQin on Stellar-mass Black Hole Binary.*
- July 2019 **GR22 – Amaldi13 conference, Valencia**, *Science with TianQin: Preliminary Results on Massive Black Hole Binaries.*
- May 2019 **2nd Seminar on TianQin science case, Wuhan**, *Science with TianQin: Preliminary Results on Massive Black Hole Binaries.*
- May 2019 **2nd GrEAT meeting, Glasgow**, *Science with TianQin: Preliminary Results on Massive Black Hole Binaries.*
- April 2019 **2019 CCNU-USTC Junior Cosmology Symposium, Wuhan**, *Science with TianQin: Preliminary Results on Massive Black Hole Binaries.*
- April 2019 **Invited talk at SYSU, Guangzhou**, *Science with TianQin: Preliminary Results on Massive Black Hole Binaries.*
- March 2019 **RESCEU Workshop on Space Gravitational-Wave Detection, Tokyo**, *Analysis of TianQin Scientific Objectives.*
- January 2019 **Seminar on Simulation Technology of Space-based Gravitational Wave Detection, Zhuhai**, *Data analysis pipeline for space-based gravitational wave detections.*
- January 2019 **Invited talk at KIAA, Beijing**, *Analysis of TianQin Scientific Objectives.*
- December 2018 **The Fifth Workshop of TianQin Space Science Mission, Zhuhai**, *Analysis of TianQin Scientific Objectives.*
- September 2018 **Advanced seminar of gravitational wave physics, Changsha**, *Analysis of TianQin scientific targets.*
- July 2018 **12th International LISA Symposium, Chicago**, *The Effect of the Earth Gravity Field Measurement Uncertainty on Gravitational Waves Detection with TianQin*, poster.
- May 2018 **2nd workshop on GW astrophysics, Xiamen**, *Introduction of TianQin mission.*
- April 2018 **Zhuhai Workshop on GW detection and Nucleosynthesis, Zhuhai**, *Introduction of TianQin mission.*
- March 2018 **Junior Cosmology Symposium: Gravitational Waves and Early Universe, Hefei**, *Impact of Earth Multiple Moments on TianQin Gravitational Wave Detection.*
- March 2018 **1st Seminar on TianQin science case, Zhuhai**, *Analysis of TianQin Science Cases.*

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- December 2017 **Invited talk at USTC, Hefei**, *Maximising the detection probability of kilonovae associated with gravitational wave observations.*
- December 2017 **Workshop on GW detection and Nucleosynthesis, Xinglong**, *Earth Gravity field effect on TianQin.*
- November 2017 **ACGRG9, Perth**, *Earth Gravity field effect on TianQin.*
- October 2017 **The 6th Beijing GW workshop, Beijing**, *Multiband Gravitational Wave astronomy.*
- August 2017 **The 1st Youth GW workshop, Anji**, *NS-BH rate from macronovae observation.*
- June 2017 **Invited talk at Guangzhou University, Guangzhou**, *Progress of the TianQin project.*
- May 2017 **Invited talk at Yunnan Observatory, Kunming**, *Maximising the detection probability of kilonovae associated with gravitational wave observations.*
- April 2017 **The 5th Beijing GW workshop, Beijing**, *NS-BH rate from macronovae observation.*
- August 2016, Glasgow **LVC meeting**, *Improvements of the line-robust statistic.*
- June 2016 **GPPAW, Boston**, *Constructing a more physical Line-Robust Statistic*, poster.
- March 2016 **LVC meeting, Pasadena**, *Tuning of Bayesian statistics in Einstein@Home for O1.*
- April 2015 **BritGrav meeting, Birmingham**, *Estimation of gravitational wave event statistical significance.*
- September 2014 **Invited talk at Caltech, Pasadena**, *Determine the optimal sites for Gravitational Wave Detectors.*
- August 2014 **LVC meeting, Stanford**, *Significance MDC progress and discussion – the Hamlet test.*