



# 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– Member of Gravitation and Relativistic Astrophysics, Chinese Physical Society  
2021 Distinguished alumni, Chongming high school

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- 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 10M 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)

- 2021 **The capability for detection of GW190521-like binary black holes with TianQin**, Shuai Liu<sup>†</sup>, Liang-Gui Zhu, **Yi-Ming Hu<sup>†</sup>**, Jian-dong Zhang, Mu-Jie Ji, arXiv, 2110.05248.
- 2021 **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<sup>†</sup>**, Shuai Liu<sup>†</sup>, En-Kun Li<sup>†</sup>, Nicola R. Napolitano, Bai-Tian Tang, Jian-dong Zhang<sup>†</sup>, Jianwei Mei, arXiv, 2110.05224.
- 2021 **Probing chromatic onsets of gravitational wave overtones**, Hai-Tian Wang, **Yi-Ming Hu**, Yi-Zhong Fan<sup>†</sup>, arXiv, 2109.03113.
- 2021 **Lensing by primordial black holes: constraints from gravitational wave observations**, Jie-Shuang Wang<sup>†</sup>, Antonio Herrera-Martín<sup>†</sup>, **Yi-Ming Hu<sup>†</sup>**, Physical Review D, vol. 104, 083515.

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- 2021 **Constrains on the electric charges of the binary black holes with GWTC-1 events**, *Hai-Tang Wang<sup>†</sup>, Peng-Cheng Li, Jin-Liang Jiang, Guan-Wen Yuan, Yi-Ming Hu, Yi-Zhong Fan*, The European Physical Journal C, vol. 81, 769.
- 2021 **Science with the TianQin Observatory: Preliminary Results on Stochastic Gravitational-Wave Background**, *Zheng-Cheng Liang<sup>†</sup>, Yi-Ming Hu<sup>†</sup>, Yun Jiang<sup>†</sup>, Jun Cheng<sup>†</sup>, Jian-dong Zhang<sup>†</sup>, Jianwei Mei<sup>†</sup>*, arXiv, 2107.08643.
- 2021 **Constraining the cosmological parameters using gravitational wave observations of massive black hole binaries and statistical redshift information**, *Liang-Gui Zhu<sup>†</sup>, Yi-Ming Hu<sup>†</sup>, Hai-Tian Wang<sup>†</sup>, Jian-dong Zhang<sup>†</sup>, Xiao-Dong Li<sup>†</sup>, Martin Hendry<sup>†</sup>, Jianwei Mei<sup>†</sup>*, arXiv, 2104.11956.
- 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<sup>†</sup>, Hui-Min Fan, Xue-Ting Zhang, Yi-Ming Hu<sup>†</sup>, Changfu Shi<sup>†</sup>, Jianwei Mei<sup>†</sup>*, Physical Review D, vol. 104, 064008.
- 2021 **High Probability of Detecting Lensed Supermassive Black Hole Binaries by LISA**, *Zucheng Gao<sup>†</sup>, Xian Chen<sup>†</sup>, Yi-Ming Hu, Jian-Dong Zhang, Shunjia Huang*, arXiv, 2102.10295.
- 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<sup>†</sup>, 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 **Following up the afterglow: strategy for X-ray observation triggered by gravitational wave events**, *Hui Tong, Mu-Xin Liu, Yi-Ming Hu<sup>†</sup>, Man Leong Chan, Martin Hendry, Zhu Liu, Hui Sun*, Research in Astronomy and Astrophysics, In press.
- 2020 **Science with the TianQin Observatory: Preliminary result on extreme-mass-ratio inspirals**, *Hui-Min Fan, Yi-Ming Hu<sup>†</sup>, Enrico Barausse, Alberto Sesana, Jian-Dong Zhang<sup>†</sup>, Xuefeng Zhang, Tie-Guang Zi, Jianwei Mei<sup>†</sup>*, 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<sup>†</sup>, Valeriya Korol, Peng-Cheng Li, Zheng-Cheng Liang, Yang Lu, Hai-Tian Wang, Shenghua Yu, Jianwei Mei<sup>†</sup>*, Physical Review D, vol. 102, 063021.
- 2020 **Science with the TianQin observatory: Preliminary results on stellar-mass binary black holes**, *Shuai Liu<sup>†</sup>, Yi-Ming Hu<sup>†</sup>, Jian-dong Zhang<sup>†</sup>, Jianwei Mei<sup>†</sup>*, 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<sup>†</sup>, 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<sup>†</sup>, **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<sup>†</sup>, *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<sup>†</sup>, 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<sup>†</sup>, **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**<sup>†</sup>, 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**<sup>†</sup>, Yan Wang<sup>†</sup>, *Physical Review D*, vol. 99, 123002.
- 2018 **Gravitational waves induced by the asymmetric jets of gamma-ray bursts**, Shuang Du, Xiao-Dong Li<sup>†</sup>, **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<sup>†</sup>, 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<sup>†</sup>, 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**<sup>†</sup>, Jianwei Mei, Jun Luo, *National Science Review*, vol. 4, no. 5, p. 683-684.
- 2017 **Excitation of high frequency voices from intermediate-mass-ratio inspirals with large eccentricity**, Wen-Biao Han<sup>†</sup>, Zhoujian Cao, **Yi-Ming Hu**<sup>†</sup>, *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**<sup>†</sup>, Zhi-Ping Jin, Yi-Zhong Fan<sup>†</sup>, 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**<sup>†</sup>, 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**<sup>†</sup>, 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<sup>†</sup>, Da-Ming Wei, *Astrophysical Journal*, vol. 827, no. 1, p. 75.
- 2015 **Global Optimisation for Future Gravitational Wave Detectors' Sites**, **Yi-Ming Hu**<sup>†</sup>, 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**<sup>†</sup>, Matthew Pitkin, Ik Siong Heng, and Martin A. Hendry, *Astrophysical Journal Letters*, vol. 784, no. 2, p. L41.

## Conference and invited talks

- 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 **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*.

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- 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.**
- 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.**

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- 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.*
- 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, **LVC meeting**, *Improvements of the line-robust statistic.*  
Glasgow

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- June 2016 **GWPAW, 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*.