

CONTACT	Professor Yin-Zhe Ma (MASSAf) Department of Physics Stellenbosch University Room 1003, Merensky Building 111 Merriman Ave Matieland Western Cape, South Africa	Tel : +27 21 808 3372 Email-1: mayinzhe@sun.ac.za Email-2: mayinzhe.pi@gmail.com ORCID: 0000-0001-8108-0986 URL: https://physics.sun.ac.za/astro/ Google Scholar: https://tinyurl.com/3ptzxbj4
EDUCATION	B.S. in Physics, Nanjing University, China (Top 3% of the ranking) 2002-2006 M.S. in Theoretical Physics, Chinese Academy of Sciences, China Advisors: Profs. Rong-Gen Cai (Academician) and Xuelel Chen 2006-2008 Ph.D. in Astronomy, University of Cambridge, United Kingdom Institute of Astronomy (IoA) and Trinity College Cambridge Advisors: Profs. George Efstathiou F.R.S. and Anthony Challinor Thesis: Cosmology with CMB and Large-Scale Structure 2008-2011	
POSITIONS (MAJOR)	CITA National Fellow, Department of Physics and Astronomy University of British Columbia, Vancouver, Canada 2011-2014 Research Associate, Jodrell Bank Center for Astrophysics The University of Manchester, Manchester, United Kingdom 2014-2015 Senior Lecturer, School of Chemistry and Physics 2015-2017 Associate Professor, School of Chemistry and Physics 2018-2021 Full Professor, School of Chemistry and Physics 2021-2023 University of KwaZulu-Natal, Durban, South Africa Full Professor & (Founding) Head of Astrophysics Division 2023- Stellenbosch-Groningen Research Chair on Computational Astronomy 2024- Department of Physics, Stellenbosch University, South Africa	
POSITIONS (ADJUNCT & VISITING)	Guest Research Professorship, Shanghai Astronomical Observatory 2015-2016 Visiting Fellow, University of Manchester 2015-2019 Senior Overseas Visiting Fellow, Tsinghua University 2018 Adjunct Professor, Purple Mountain Observatory, China 2017-2022 Adjunct Professor, National Astronomical Observatory of China 2019-2021 2025- Peng HuanWu Visiting Professorship, Institute of Theoretical Physics, CAS 2022 Honorary Full Professor, University of KwaZulu-Natal 2023-2026	
BIBLIOGRAPHIC DATA	145 refereed publications (70 Leading and Corresponding authors) Total citation: 34654 (ADS/NASA; most accurate), 41743 (GoogleScholar) h-index: 49 (ADS/NASA), 55 (GoogleScholar) Post-PhD m-factor 3.0 (Distinguished individual in R1 University/Laboratory)	
FELLOWSHIPS AND GRANTS	PI, Cambridge Overseas Trust, Uni. of Cambridge (GBP 9k/yr for 3 yrs) 2008-2011 PI, Rouse Ball/Eddington Fund, University of Cambridge (GBP 1000) 2009, 2010 PI, CITA National Research Fellowship (CAD 52,500/yr for 3 yrs) 2011-2013 PI, Postdoctoral Travel Award, University of British Columbia (CAD 1.5k) 2013 PI, University of KwaZulu-Natal Start-Up funds (ZAR 500k) 2015 PI, NRF/Knowledge, Interchange and Collaboration grant (ZAR 25k) 2016 PI, NRF/South Africa-China bilateral workshop grant (ZAR 400k) 2016 PI, University of KwaZulu-Natal Publication grant (~ZAR 180k/yr) 2016-2023 PI, NRF/Competitive Support for Unrated Researcher (ZAR 618k/401k/459k) 2017-2019 Co-I, South Africa-Switzerland Bilateral grant (ZAR 650k/yr for 5 yrs) 2017-2021	

FELLOWSHIPS AND GRANTS cont.	PI, CAS/SKA Strategic Funding (CNY 800k/yr for 5 yrs)	2017-2021
	PI, NRF/Incentive Funding for Rated Researcher (ZAR 40k/yr for 5 yrs)	2017-2022
	PI, NRF/Blue Skies Concept Research Grant (ZAR 200k)	2018
	PI, NRF/BRICS Astrophysics Conference (ZAR 307k)	2018
	PI, NSFC/Oversea Chinese scholar collaboration fund (CNY 180k)	2019-2020
	Co-I, UKZN/Research Flagship project (ZAR 2,110k/yr for 3 yrs)	2019-2021
	PI, NRF/South Africa-China flagship program (ZAR 500k/444k)	2020-2021
	PI, NRF/Blue Skies Full Research Program (ZAR 820k/764k/445k)	2020-2022
	PI, NRF/NltheCS Research Program for Cosmology (ZAR 386k)	2022
	PI, CAS/Peng HuanWu Visiting Professorship (CNY 90k)	2022
	PI, NRF/SARAO Group Research Grant (ZAR 536k/467k/467k)	2023-2025
	PI, NRF/NltheCS Research Program for Cosmology (ZAR 250k)	2023
	PI, NRF/Competitive Program for Rated Researcher (ZAR 432k/225k/336k)	2023-2025
	PI, NRF/Incentive Funding for Rated Researchers (ZAR 50k)	2024
	PI, Stellenbosch University Establishment Fund (ZAR 1500k)	2024-2026
	PI, NRF/MOST Joint Research Program (ZAR 300k)	2024-2025
	PI, NRF/European Research Council (ERC) Partnership (ZAR 150k)	2024-2025
	PI, Stellenbosch University Subcommittee-B Fund (ZAR 240k)	2024-2025

“NRF”-National Research Foundation of South Africa; “SARAO”-South Africa Radio Astronomy Observatory; “NSFC”-National Science Foundation of China; “CAS”-Chinese Academy of Sciences

“GBP”-British Pounds (£); “CNY”-Chinese Yuan (¥), “ZAR”-South Africa Rands (R); “CAD”-Canadian dollars (C\$)

AWARDS AND HONORS	Guang-Hua Scholarship, Nanjing University (CNY 1,000)	2003
	Yao-Liang Elite Scholarship, Nanjing University (CNY 8k)	2004
	–award to only 8 students for entire University undergrads	
	First Class Scholarship (top 3% students), Nanjing University (CNY 3k)	2005
	Best Popular Science Article, “Nature and Sci& Tech” Magazine, China	2010
	Excellent Overseas Student, Ministry of Education of China (USD 5k)	2011
	–award to distinctive overseas Chinese students	
	Grand Prize and Most Engaging Prize of 3-minute Competition, UBC	2012
	Most Engaging Speech, Graduate Union, University of British Columbia	2012
	National Research Foundation Researcher Rating	
	–C1 (Established Researcher)	2017-2022
	–B3 (International Acclaimed Researcher)	2023-2028
	Gruber Cosmology Prize, The Peter and Patricia Gruber Foundation	2018
	–award to ESA Planck team which I am a core-team member	
	Vice-Chancellor Research Award, UKZN (ZAR 15k)	2018
	–award to distinctive faculty member below age 40	
	Elected as a Member of Academy of Sciences of South Africa (MASSAf)	2022
	–for distinguished research achievement and international impact	
	UKZN Top 5 most cited researchers award	2022
	Elected to the Council of Royal Society of South Africa (RSSAf)	2022
	Elected as a Fellow of Royal Society of South Africa (FRSSAf)	2023
	South Africa National Science and Technology Forum Researcher Award	2025

RESEARCH INTERESTS	Radio Astronomy: 21-cm Intensity Mapping (single-dish and interferometer), Dark Matter searches, HI galaxy survey	
	Cosmology: Cosmic Microwave Background Radiation, Epoch of Reionization, Sunyaev-Zeldovich effect, Large-Scale Structure	
	Multi-wavelength Astronomy: Intergalactic and Circumgalactic Medium (IGM, CGM)	

LEADERSHIP ROLE IN ASTRONOMY PROJECTS	Leadership Roles in Institutional Collaboration	
	Chair of UKZN-NAOC Computational Astrophysics Centre	2016-2021
	–establish strategic partnership with NAOC with joint postdoc program	

Stellenbosch-Groningen Research Chair on Computational Astronomy	2024-2029
–establish strategic partnership with Kapteyn Astronomy Institute, and recruit 10 PhD students jointly supervised by the two sides	

Leadership Roles in Astronomy Collaborations

Planck satellite (International) core team member	2013-2019
–Co-leading kinetic Sunyaev-Zeldovich project and Inflation project	
Six-Degree-Field(6dF) and TAIPAN (Australia) galaxy survey	2013-2022
–Co-leading velocity field power spectrum project	
SKA <i>Cosmology</i> , <i>EoR</i> and <i>HI</i> Science Working Group member	2015-present
Hydrogen Epoch Reionization Array (HERA): “Builder”(Significant PI)	2018-present
–Leading Quasi-redundant Calibration and cross-correlation projects	
Rubin Observatory (Large Synoptic Survey Telescope) South Africa PI	2019-present
–involving in Dark Energy Science Collaboration team	
CMB-Stage 4 member	2021-present

Leadership Roles in Telescope Proposals

PI: FAST, <i>Filament between galaxy clusters</i> (3-hrs)	2019
PI: MeerKAT, <i>Searching for axion dark matter with MeerKAT</i> (10-hrs)	2021
I have also participated more than 10 proposals as Co-I.	

**RESEARCH
SKILLS**

Programming: Fortran 90/77, C, Python, Parallel program, HPC, Mathematica, Maple
 Software Package: Matlab, CAMB, CosmoMC, HEALPix, MultiNest, 21cmFAST
 Statistical Tools: Bayesian Parameter estimation, Maximum Likelihood, Machine Learning

**ACADEMIC
EDITORSHIP AND
REFEREESHIP****Journal Editor:**

Research in Astronomy and Astrophysics (IOPscience, IF: 1.8)	since 2019
Fundamental Research (ScienceDirect, IF: 6.2)	since 2024

Journal Referee:

Physica Scripta (IF: 1.194)	since 2011
Research in Astronomy and Astrophysics (IF:1.8)	since 2012
Journal of Cosmology and Astro-particle Physics (IF:4.734)	since 2013
Science China Physics, Mechanics and Astronomy (IF:2.237)	since 2014
Monthly Notices of the Royal Astronomical Society (IF:4.961)	since 2014
The Astrophysical Journal (IF:5.533)	since 2014
International Journal of Modern Physics D (IF:2.476)	since 2015
Progress in Astronomy (in Chinese)	since 2016
New Astronomy (IF:0.938)	since 2016
Nuclear Physics B (IF:3.678)	since 2017
Scientific Reports (IF:4.259)	since 2017
Physical Review D (IF: 4.4)	since 2019
Astrophysics and Space Science (IF: 1.89)	since 2020
International Journal of Modern Physics A (IF: 1.153)	since 2020
European Physical Journal C (IF: 4.843)	since 2020
Physical Review Letters (IF: 8.385)	since 2020
Physics of the Dark Universe (IF: 4.473)	since 2021
Communications Physics (Springer Nature, IF: 6.497)	since 2023
Astronomy & Astrophysics (EDP Sciences, IF: 5.4)	since 2024

Telescope Proposal Assessor:

Giant Metrewave Radio Telescope (GMRT) proposal	since 2024
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**KEYNOTE/
INVITED TALKS IN
CONFERENCES**

“Puzzles in Modern Cosmology”	
–China Overseas Postdoctoral Conference, Shanghai	2013
“Puzzles in Modern Cosmology”	
–“Intrinsic Decoherence in Nature” International conference, Vancouver	2013

KEYNOTE/ INVITED TALKS cont.	<i>"Anthropic Principle"</i>	
	–"Time and Life in the Universe" International panel, Peter Wall Inst. Canada	2013
	<i>"How much cosmological information can be measured?"</i>	
	–China-SA bilateral conference on radio astronomy, Guizhou/China	2017
	<i>"Cosmology Now"</i> , High Energy Astrophysics in Southern Africa, Johannesburg/SA	2017
	<i>"Testing quantum effect with pulsar-BH system"</i>	
	–"Quantum Black Holes in the Sky" Conference, Perimeter Institute	2017
	<i>"Fundamental Physics with South Africa SKA"</i>	
	–SKA Annual conference, Shanghai	2018
	<i>"The kinematic Sunyaev-Zeldovich effect: New window for the Universe"</i>	
	–Cosmic Flows conference, Stellenbosch, South Africa	2020
	<i>"Cosmological uses of Fast Radio Bursts"</i>	
	–The 369th Symposium of IAU General Assembly, South Korea	2022
	<i>"Cosmology: A Golden Era"</i>	
	–African Astronomical Society (AfAS) Annual Meeting, South Africa	2023
CONFERENCES & COLLOQUIA	<i>"An introduction to HERA and its current upper limits from Phase I observations"</i>	
	–21-cm Cosmology Workshop, Shenyang, China	2023
	<i>"Machine Learning in Cosmology"</i>	
SUPERVISION	–Centre for High-Performance Computing Annual Conference, South Africa	2023
	<i>"Dark Matter in Radio Astronomy"</i> –Symposium on Science at PAUL	2024
	I have given more than 200 oral presentations in conferences and meetings. I have also given more than 100 invited seminars and colloquia in USA, United Kingdom, Germany, France, Belgium, Canada, Israel, South Korea, Australia, South Africa, Spain, India, Vietnam, Mauritius, Switzerland, Austria, Italy, Singapore, Malaysia, Hong Kong SAR of China, and mainland China.	
	Completed Primary Supervision of Graduate Students	
	Simon Mulokoshi (Honours, University of KwaZulu-Natal)	2016
	Floyd Asa (Honours, University of KwaZulu-Natal)	2017
	Nondumiso Khumalo (Honours, University of KwaZulu-Natal)	2018
	–moved to a masters program	
	Phumlani Phakathi (Honours & Masters, University of KwaZulu-Natal)	2016-2019
	–moved to do a PhD program	
	ZhenXing Fu (Masters, Purple Mountain Observatory)	2018-2020
	–one publication	
	–PMO Excellent Student (2020), USTC Outstanding graduate (2021)	
	Elimboto Yohana (PhD, University of KwaZulu-Natal)	2016-2019
	–two publications, moved to a lecturer at Dar Es Salaam University	
	Ayodeji Ibitoye (PhD, University of KwaZulu-Natal)	2017-2021
	–one publication, moved to a postdoc position	
	Mthokosizi Mdlalose (PhD, University of KwaZulu-Natal)	2018-2022
	–moved to a lecturer position	
	Tamirat Gobo (PhD, University of KwaZulu-Natal)	2019-2021
	–one publication, moved to a SKA postdoc position at UWC	
	Tashvir Sithapersad (Honours, University of KwaZulu-Natal)	2020
	–moved to a masters program	
	Yun-Fan Zhou (Masters, Purple Mountain Observatory)	2020-2022
	–two publications, went to do a PhD at NAOC/China	
	–PMO Excellent student (2020, 2021), PMO First-class student (2022)	
	Hong-Gang Yang (Masters, Purple Mountain Observatory, China)	2021-2023
	–moved to a PhD program at the University of Edinburgh	
	Gang Li (PhD, Purple Mountain Observatory, China)	2019-2023
	–moved to a Postdoc at Zhejiang University	
	Siyabonga Zungu (masters, University of KwaZulu-Natal)	2020-2023
	Chandan G. Nagarajappa (PhD, University of KwaZulu-Natal)	2019-2023
	Xin Tang (maters student, Purple Mountain Observatory, China)	2021-2024
	–moved to a PhD program at the University of Sussex	

SUPERVISION cont. Completed Co-Supervision of Graduate Students

Zhong-Liang Tuo (PhD, Institute of Theoretical Physics, Beijing)	2011-2013
–one publication	
Bo Tang (PhD, Institute of Theoretical Physics, Beijing)	2011-2013
–one publication	
Xiao-Dong Li (PhD, Institute of Theoretical Physics, Beijing)	2011-2013
–two publications, moved to a postdoc position and then faculty	
Cheng Cheng (PhD, Institute of Theoretical Physics, Beijing)	2011-2013
–two publications, moved to a postdoc position	
Yang Liu (Master, Simon Fraser U), Master Thesis	2012-2013
Michael Sitwell (PhD, U of British Columbia, one publication)	2012-2013
Yue Liu (PhD, University of Massachusetts)	2013-2014
Lucas Olivari (PhD, University of Manchester)	2014-2017
–five publications, moved to a postdoc position at Sao Paulo	
Tianyue Chen (PhD, University of Manchester)	2015-2019
–five publications, moved to a postdoc at MIT, EPFL, then staff	
Charles Walker (PhD, University of Manchester)	2015-2019
–two publications, moved to a postdoc at Max Planck Inst., then staff	
Junsong Cang (PhD student, Institute of High-Energy Physics)	2018-2022
–completed four publications	
–moved to a postdoc@Scuola Normale Superiore di Pisa	

Current Primary Supervision of Graduate Students

Chang-Xiang Mao (PhD student, Purple Mountain Observatory, China)	2020-2024
Brandon Bisschoff (PhD student, University of KwaZulu-Natal)	2022-2026
Phillip Badenhorst (PhD student, Stellenbosch University)	2024-2026
Guifan Pan (PhD student, Stellenbosch University)	2024-2026
Hemant Potluri (PhD student, Stellenbosch U. & Groningen U.)	2025-2028
Fatima Saiyed (PhD student, Stellenbosch U. & Groningen U.)	2025-2028
Koustav Konar (PhD student, Stellenbosch U. & Groningen U.)	2025-2028
Bram Alferink (PhD student, Stellenbosch U. & Groningen U.)	2025-2028
Jelte Bottema (PhD student, Stellenbosch U. & Groningen U.)	2025-2028
Jaymie van der Merwe (PhD student, Stellenbosch U.)	2025-2028

Mentoring Postdoctoral Fellows

Dr. Yi-Chao Li (University of KwaZulu-Natal)	2016-2018
–(current) Associate Professor of Physics, North East Uni. of China	
Dr. Di-Fu Shi (University of KwaZulu-Natal)	2017-2018
Dr. Cheng Cheng (Tsinghua University & University of KwaZulu-Natal)	2017-2021
–(current) Full Research Professor at Xinjiang Observatory, China	
Dr. Prabhkar Tiwari (National Astronomical Observatory China)	2017-2021
Dr. Denis Tramonte (University of KwaZulu-Natal & Purple Mountain Obs.)	2017-2022
–(current) Assistant Professor at Xi'an JiaoTong-Liverpool Uni. (XJTLU)	
Dr. Anthony Walters (University of KwaZulu-Natal)	2018-2020
Dr. Wei-Ming Dai (University of KwaZulu-Natal)	2018-2022
–(current) Lecturer of Physics at Ningbo University, China	
Dr. Piyanat Kittiwist (University of KwaZulu-Natal)	2019-2021
Dr. Yogesh Chandola (Purple Mountain Observatory China)	2019-2024
Dr. Hao Chen (Purple Mountain Observatory)	2021
–(current) Permanent Staff Scientist at Zhijiang Laboratory, China	
Dr. Guo-Jian Wang (U. of KwaZulu-Natal & Stellenbosch U.)	2021-2025
Dr. Ayodeji Ibitoye (University of KwaZulu-Natal)	2022-2023
Dr. Heba Abdulrahman (University of KwaZulu-Natal)	2022-2023
Dr. Michael Sarkis (Stellenbosch University)	2024-2025
Dr. Sheean Jolicoeur (Stellenbosch University)	2024-2025
Dr. Wen-Qing Guo (Stellenbosch University)	2024-2027

MENTORING OTHERS ON GRANT APPLICATION	Mentored masters and PhD students to obtain competitive scholarships	
	Mr. Elimboto Yohana, DAAD Scholarship, ZAR 130k/yr for 3 yrs	2016
	Mr. Phumlani Phakathi, NASSP master bursary, ZAR 150k/yr for 2 yrs	2017
	Mr. Mthokozisi Mdlalose	
	–SKA Bursary, ZAR 200k/yr for 3 yrs	2018-2020
	–UKZN Talent and Equity Scholarship, ZAR 150k	2021
	Mr. Brandon Bisschoff	
	–NITheP PhD bursary, ZAR 100k/yr for 3 yrs	2019
	–EPFL 100 Africa PhD Program, 80k Swiss Francs for 5 yrs	2021
	Ms. Nondumiso Khumalo, SAAO Masters bursary, ZAR 200k/yr for 2 yrs	2020-2021
	Mr. Siyabonga Zungu, NASSP Masters bursary, ZAR 150k/yr for 2 yrs	2020-2021
	Mentored postdoctoral fellows to obtain prestigious fellowship	
	Dr. Denis Tramonte	
	–South Africa Claude Leon Fellowship, ZAR 275k/yr for 2 years	2017
	–CAS Presential International Fellowship, ZAR 250k/yr for 2 yrs	2021
	–NSFC Research Fund for International Scholar, CNY 200k	2022
	–Ministry of Sci. & Tech. China Foreign Expert grant, CNY 150k	2022
	Dr. Yogesh Chandola	
	–FAST Research Fellowship, CNY 200k/yr for 3 yrs	2019
	–NSFC Research Fund for International Scholar, CNY 200k	2020
	–Ministry of Sci. & Tech. China Foreign Expert grant, CNY 300k	2021
	Dr. Anthony Walters	
	–NRF Young Scientist Exchange Program, CNY 100k	2019
	–NRF free-standing fellowship, ZAR 250k/yr for 2 yrs	2020
	Dr. Zi-ang Yan	
	–German Center for Cosmological Lensing Fellowship, EUR 50k/yr for 3 yrs	2020
	Dr. Ayodeji Ibitoye	
	–CAS/ANSO Fellowship for early career scientist, CNY 240k for 1 yr	2022
TEACHING EXPERIENCE	Physics Honours Program Coordinator	
	–coordinate the program including offering, student registration, project selection, advice of module, and individual consultation	2022-
	Module Developer and Lecturer	
	–develop the whole module, lecture, mark the tests and exams	
	“Astrophysics” 4th-yr physics major at University of KwaZulu-Natal	2015-2016
	“Advanced Astrophysics” 4th-yr physics major at University of KwaZulu-Natal	2017-2022
	Lecturer	
	–lecture the module, do the tutorials, mark the tests and exams	
	1st-yr undergraduate “Modern Physics” for non-physics majors at UKZN	2016-2021
	2nd-yr undergraduate “Quantum Physics” for physics major at UKZN	2016-2018
	1st-yr undergraduate “Mechanics” for physics and non-phys. majors at UKZN	2017-2022
	1st-yr undergraduate “Thermophysics” for physics major at UKZN	2023
	3rd-yr undergraduate “Electromagnetism” for physics major at Stellenbosch	2024
	Example Class Teacher	
	3rd-yr undergraduate “Cosmology” for physics major at Manchester U.	2015
	–instruct students to solve problems in cosmology lectures	
	Laboratory Supervisor	
	1st-yr undergraduate physics and non-physics majors at U. of KwaZulu-Natal	2016
	–supervise students to conduct 1st-yr physics experiment	
	Guest Lecturer	
	Graduate lectures “IGM and 21-cm Cosmology” at Tsinghua University	2018
	–develope and lecture the whole graduate course for 12 hrs	
	Graduate lectures “21-cm Physics” in Brazil National Institute of Space	2018
	–lecture 4-sessions for the “2018-INPE Summer School”	

**ACADEMIC
SERVICE****University Service**

Organizer of astronomy lunch discussion in University of British Columbia	2013-2014
Organizer of weekly astronomy colloquium in University of British Columbia	2012-2014
Organizer of weekly astrophysics seminar at University of KwaZulu-Natal	2018-present
Faculty PI of "Big Data in Science and Society" project at UKZN	2019-2021
–organized cross-discipline people to work on machine learning	
Judge of UKZN annual postgraduate students research symposium (PRIS)	2020-2021
Founding Head of Astrophysics Division, Stellenbosch University	2023-present
– I established the Astrophysics Division in Physics department, recruited new faculty and structured the graduate research program	

Academic Community Service

BRICS country "21-cm Cosmology" collaboration	2017-present
Chair of NRF Chinese-South African Forum of Astronomy	2017-present
Council Member, BRICS Association of Gravity and Astrophysics	2019-2024
Panel member for Physics, Astronomy, Mathematics and ICT of NRF	2020-2023
Science Committee Member of African Astronomical Society (AfAS)	2023-present
Several (external) Universities faculty hire committee	2023-present
Several (external) Universities faculty promotion committee	2023-present
MeerKAT Large Area Synoptic Survey (MeerKLASS) Advisory Committee	2023-present
Academy of Sciences of South Africa (ASSAf) Membership Committee	2023

Grant Review for ...

National Research Foundation (South Africa)	
– Bilateral and Multi-lateral Grants	2017, 2024
– Researcher Rating	2017
– Research Chair Initiative	2020
Dutch Research Council Innovational Research Incentives Scheme(Vidi)	2019

Conference Organization

LOC member, Canadian Astronomy 2013 Annual Meeting (CASCA)	2013
Chair, South Africa-China bilateral on Cosmology	2016
SOC member, "Cosmology on Safari" International Conference	2017, 2019 & 2023
Chair, Second BRICS Symposium on Astrophysics	2018
SOC member, Ninth International Fermi Symposium	2020
SOC member and Outreach Program Coordinator of the 183th- Nobel Symposium "Predictability of Science in the Age of AI"	2022
Chair, China-South Africa 21-cm cosmology online Forum	2022
SOC member, African Astronomical Society (AfAS) Annual Meeting	2023-2024

Membership of Professional Society

Royal Astronomical Society (RAS)	since 2009
American Astronomical Society (AAS)	since 2010
Canadian Astronomical Society (CASCA)	since 2012
South Africa Institute of Physics (SAIP)	since 2015
International Astronomical Union (IAU)	since 2020
Member of Royal Society of South Africa (RSSAf)	since 2022

I have also been an external examiner for 10 masters and 5 PhD students' thesis.

**PUBLIC
ENGAGEMENT****Public speeches for general audiences:**

"Inflation after WMAP 2008 results", Cambridge Astronomical Society	2009
"Doing a PhD in Astronomy", UK Space Conference	2009
"Cosmology: from observable to invisible Universe", UK Space Conference	2009
"The large scale nature of the Universe", Cambridge Astronomy Evening	2010
"Two roads to modern cosmology", Trinity College Cambridge	2011
"Life in the Universe", St. John's college, University of British Columbia	2012

**PUBLIC
ENGAGEMENT
cont.**

"Higgs Particle and the Universe", St. John's college, UBC/Canada	2012
"Life in the Universe", UBC postdoctoral symposium	2013
"Our Cosmic Environment", St. John's College, University of British Columbia	2013
"Two roads to Modern Cosmology-with Planck 2015 results", Manchester U.	2015
"Life in the Universe", QianNan Normal College/China	2018
"The Hubble conundrum: A Physical Solution", University of KwaZulu-Natal	2021
Several high-school talks & Campus open day in Durban, South Africa	2017-
"Cosmology: A Golden Era", University of the Western Cape	2022
Organising the 183rd Nobel Symposium Outreach Event in South Africa	2022
"What we will never know?" Science Cafe at Toyota US Woodfees Festival	2023

Press Release & Media Interview:

Media Interview on weighting mass of Milky Way and Andromeda –e.g. "New Scientists", "Metro News", "VICE" (Canada), CCTV (China)	2014
SouthAfrica BroadCast (SABC) Interview on Missing baryons https://www.youtube.com/watch?v=WpXLicYnFFw	2015
People's Daily Online interview for China-South Africa Astronomy Bridge	2018
Broadcast Brazil Interview on 21-cm cosmology	2018
Press Release on HERA leadership and milestone limit for EoR epoch	2021
Magazine Interview for South Africa Institute of Physics	2022
Nature (Journal) Interview for Fast Radio Bursts during 369th IAU Symposium	2022
Press release for "Excellence in Africa" 100 Africa's PhD program	2022
CGTN Interview for "Nobel in Africa" Outreach seminar at Western Cape/SA https://www.youtube.com/watch?v=p9CZIDbHE7s&t=32s	2022
Press release on being elected to Academy of Science of South Africa (ASSAf) https://tinyurl.com/5x2d9y9r	2022
Trinity Colleg Cambridge "The Fountain" Issue 32, Summer 2023 coverage https://www.trin.cam.ac.uk/alumni/publications/the-fountain/	2023
CGTN Movie on "Faces of Africa–Echoes of the Skies" https://www.youtube.com/watch?v=mUrcHMmd_qE&t=498s	2023
Press Release of Strengthening Stellenbosch University Astronomy Research http://www.sun.ac.za/english/Lists/news/DispForm.aspx?ID=10142	2023

REFEREES**Lord Martin Rees(OM, FRS)**

(Long-term senior mentor)
Astronomer Royal
ex-President of Royal Society
ex-Master of Trinity College, Cambridge
University of Cambridge
Institute of Astronomy, Madingley Road
Cambridge, United Kingdom, CB3 0HA
Email: mjr36@cam.ac.uk
Phone: +44(0)-122-333-7520
Fax: +44-(0)1223-337523
Web: <https://people.ast.cam.ac.uk/~mjr/>

Dr. Rob Adam (MASSAf)

(Senior colleague and career mentor)
Strategic Advisor to the director of South Africa Radio Astronomy Observatory
ex-Director of South Africa Radio Astronomy Observatory
ex-Director General of Department of Science and Technology of South Africa
South Africa Radio Astronomy Observatory
2 Fir Street, Black River Park
Observatory, 7925
Cape Town, South Africa
Email: Rob.Adam@skao.int
Phone: +27(0)82 572 7178
Web: https://en.wikipedia.org/wiki/Rob_Adam

REFEREES cont.

Professor Clive Dickinson

(Postdoctoral mentor & long-term research collaborator)
 Head of the Sun, Stars and Galaxies (SSG) Group
 University of Manchester
 Jodrell Bank Centre for Astrophysics
 School of Physics and Astronomy
 Oxford Road
 Manchester, United Kingdom, M13 9PL
 Email: Clive.Dickinson@manchester.ac.uk
 Phone: +44(0)161-275-4232
 Fax: +44(0)161-275-4247
 Web: <http://www.jb.man.ac.uk/~cdickins/>

Professor Patricia Whitelock (Fellow of TWAS, MASSAf)

(Senior colleague and career mentor)
 Staff Scientist and ex-Director of SAAO
 South Africa Astronomical Observatory (SAAO)
 Honorary Professor at the University of Cape Town
 PO Box 9
 Observatory Road, 7935 Observatory
 Cape Town, South Africa
 Email: paw@sao.ac.za
 Phone: +27(0)21 460 9318
 Web: <http://www.ast.uct.ac.za/ast/staff/patricia-whitelock>

Professor Ludovic Van Waerbeke

(Long-term research collaborator)
 University of British Columbia
 Department of Physics and Astronomy
 6224 Agricultural Road
 Vancouver, V6T 1Z1, BC, Canada
 Email: waerbeke@phas.ubc.ca
 Phone: 1-(604) 822-5515
 Fax: 1-(604)822-5324
 Web: <https://phas.ubc.ca/~waerbeke/index.html>

Professor Rene Breton

(Long-term research collaborator)
 University of Manchester
 Jodrell Bank Centre for Astrophysics
 School of Physics and Astronomy
 Oxford Road
 Manchester, United Kingdom, M13 9PL
 Email: rene.breton@manchester.ac.uk
 Phone: +44(0)-161-275-4195
 Fax: +44(0)161-275-4247
 Web: <https://www.renebreton.org>

Professor Douglas Scott

(Postdoctoral mentor and long-term research collaborator)
 University of British Columbia
 Department of Physics and Astronomy
 6224 Agricultural Road
 Vancouver, V6T 1Z1, BC, Canada
 Email: dscott@phas.ubc.ca
 Phone: 1- (604) 822-2802, 1-(604)822-3853
 Fax: 1-(604)822-5324
 Web: <https://phas.ubc.ca/users/douglas-scott>

1 Summary of Publication (by August 13, 2025)

1.1 Statistics

- **145** peer-reviewed journal publications (**70+34+41**)
A list: **70** **Leading-author** and **corresponding-author** publications. (The **corresponding-author** paper is usually my student's or postdoc's project which I initialised the idea, supervised them to conduct the research, and guided through each step of calculation and wrapped up with scientific writing)
B list: **34** **small-group** (≤ 15 authors) collaborative publications
C list: **41** **large-group** (> 15 authors) collaborative publications (e.g. Planck, HERA, SKA)
- **7** conference proceedings
- **11** Astro2020 Decadal Survey Science White papers
- h-index: **49** (NASA/ADS metric (most accurate): <https://tinyurl.com/yyl18dpo>)
55 (Google Scholar metric: <https://tinyurl.com/2zxtpcu>)
- Total citation. NASS/ADS: 34654; Google Scholar: 39672
- Normalised citation: 936.4

1.2 Major Research Impact¹

1. **The single-dish and interferometer radio astronomy technique for 21-cm intensity mapping:** A1, A9, A10, A13, A14, A17, A18, A21, A27, A28, A34, B6, B7, B8, B9, B7, B13, B22, B25, B31, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C14, C15, C16.
2. **Exquisite large-scale structure cross-correlation methods:** A4, A5, A6, A12, A16, A19, A26, A30, A35, A39, A40, A44, A53, B5, B10, B18, B19, B20, B24, B26, B29, B32.
3. **Estimators of peculiar velocity and kinematic Sunyaev-Zeldoviche effects:** A32, A33, A41, A45, A46, A47, A48, A51, A54, A57, A59, A60, A63, B28, B30, B34.
4. **Examining theories of cosmology with cosmic microwave background and large-scale structure data:** A2, A3, A10, A11, A20, A22, A23, A29, A31, A38, A42, A43, A49, A50, A52, A55, A56, A58, A61, A62, A64, A65, A66, A67, A68, A69, A70, B11, B12, B14, B15, B16, B21, B23, B33, C13, C20, C21, C24, C41.

1.3 14 most significant papers

- A7 **Solar gamma ray probe of local cosmic ray electrons.** Hong-Gang Yang, Yu Gao, **Yin-Zhe Ma**, Roland M. Crocker, **2023**, Physical Review D (Letter) 108, L061304
 Proposed a novel and generic way of testing cosmic ray electron spectra with Solar inverse-Compton scattering effect
- A13 **Searching for axion dark matter with MeerKAT Radio Telescope.** Yun-Fan Zhou, Nick Houston, Gyula I. G. Jozsa, Hao Chen, **Yin-Zhe Ma**, Qiang Yuan, Tao An, Yogesh Chandola, Ran Ding, Fujun Du, Shao-Guang Guo, Xiaoyuan Huang, Mengtian Li, Chandreyee Sengupta, **2022**, Physical Review D, 106, 083006
 The very first work of using interferometric mode of MeerKAT telescope to search for potential radio signal from Axion dark matter and place unique constraint on Axion decay rate in mass range $4.20\text{--}4.35\mu\text{eV}$. The first author is a master student of mine, and I supervised this research for his master thesis.

¹The number refer to entry in the complete list (Sec. 2).

- A17 **The Correlation Calibration of PAPER-64 data.** Tamirat G. Gogo, **Yin-Zhe Ma**, Piyanat Kittiwisit, Jonathan L. Sievers, Aaron R. Parsons, Jonathan C. Pober, Daniel C. Jacobs et al., **2022**, Monthly Notices of the Royal Astronomical Society, 510, 1680-1696
Invented a completely new method to calibrate radio interferometers, and applied it to the “Precision Array for Probing the Epoch of Reionization” (PAPER) data.
- A20 **Reconciling Hubble Constant Discrepancy from Holographic Dark Energy.** Wei-Ming Dai, **Yin-Zhe Ma**, Hong-Jian He, **2020**, Physical Review D (Rapid Communication), 102, 121302
Proposed a novel way to reconcile the local distance ladder measurements and CMB measurement of H_0 by using holographic principle. The model beautifully resolves the tension and is verifiable and falsifiable by future data.
- A21 **The neutral hydrogen distribution in large-scale haloes from 21-cm intensity maps.** Denis Tramonte, **Yin-Zhe Ma**, **2020**, Monthly Notices of the Royal Astronomical Society, 498, 5916-5935
The first paper detected the 21-cm emission of neutral hydrogen in stacked dark matter halo at high significance, directly constrained HI profile.
- B20 **A Search for Warm/Hot Gas Filaments Between Pairs of SDSS Luminous Red Galaxies.** Hideki Tanimura, Gary Hinshaw, Ian G. McCarthy, Ludovic Van Waerbeke, **Yin-Zhe Ma**, Alexander Mead, Alireza Hojjati, Tilman Troster, **2019**, Monthly Notices of the Royal Astronomical Society, 483, 223-234
The first paper detected the warm-hot ionised gas signal (10^5 – 10^7 K) in cosmic filaments.
- A30 **Planck intermediate results. LIII. Detection of velocity dispersion from the kinetic Sunyaev-Zeldovich effect.** N. Aghanim et al., **2018**, Astronomy and Astrophysics, 617, A48
The first detection of temperature dispersion of kinetic Sunyaev-Zeldovich effect caused by galaxy clusters. I led a team of 80 people for this project.
- C41 **Planck 2015 results. XX. Constraints on inflation.** P. A. R. Ade et al., Planck Collaboration, **2016**, Astronomy and Astrophysics, 594, 20P
A crucial paper of Planck scientific result. I heavily contributed to Section 12 (statistical anisotropy).
- A40 **Probing the diffuse baryon distribution with the lensing-tSZ cross-correlation.** **Yin-Zhe Ma**, Ludovic Van Waerbeke, Gary Hinshaw, Alireza Hojjati, Douglas Scott, and Joe Zuntz, **2015**, Journal of Cosmology and Astroparticle Physics, 09, 046 (14 pages)
Showed a strong and pioneer observational evidence that a significant fraction of ionised baryons (>30%) lies outside virial radii of dark matter halo.
- B29 **Evidence of the missing baryons from the kinetic Sunyaev-Zeldovich effect in Planck data.** Carlos Hernandez-Monteagudo, **Yin-Zhe Ma**, Francisco-Shu Kitaura, Wenting Wang, Ricardo Genova-Santos, Juan Macias-Perez, Diego Herranz, **2015**, Physical Review Letters, 115, 191301
The first reconstruction of cosmic baryon fraction from kinetic Sunyaev-Zeldovich effect. The paper is highlighted in the front cover of Physical Review Letters.
- A54 **Cosmic bulk flows on $50h^{-1}$ Mpc scales: A Bayesian hyper-parameter method and multishells likelihood analysis.** **Yin-Zhe Ma**, and Douglas Scott, **2013**, Monthly Notices of the Royal Astronomical Society, 428, 2017-2029 (13 pages)
A critical paper to resolve large bulk flow puzzle.

- A62 **Testing a direction-dependent power spectrum with observations of cosmic microwave background.** Yin-Zhe Ma, George Efstathiou and Anthony Challinor, **2011**, Physical Review D, 83, 083005 (8 pages)
The first paper to define an unbiased, minimal-variance direction-dependent estimator for all quadrupolar primordial anisotropy for CMB sky. The formalism is latter heavily used by *Planck* and many other studies.
- A63 **Peculiar velocity field: constraining the tilt of the Universe.** Yin-Zhe Ma, Christopher Gordon and Hume Feldman, **2011**, Physical Review D, 83, 103002 (7 pages)
A conceptually novel idea to connect large bulk flow with “incompleteness” of cosmic inflation, and to put a limit for number of e -folds of inflation (duration).
- A68 **Features of holographic dark energy under the combined cosmological constraints.** Yin-Zhe Ma, Yan Gong and Xuelei Chen, **2009**, European Journal of Physics C, 60, 303-315 (13 pages)
The first comprehensive constraints on holographic dark energy with the latest observational data, gained 98 citations by August 13, 2025.

2 Complete Journal Publication List (reverse chronological)

A: Leading-author and Corresponding-author papers

Contribution: For leading author papers, I initialized the idea, carried out the research, communicated with collaborators for their opinions, wrote up the draft and corresponded with the journal. The corresponding author papers are the students’ or junior postdoc’s research projects under my supervision. I am responsible for proposing the idea, laying out critical steps, guiding their computation to the end, and editing the paper draft.

- A1 Wei-Ming Dai, **Yin-Zhe Ma**, **2025**, The Astrophysical Journal Supplement Series, 276, 33, arXiv: 2411.16899
Expanded Generalized Needlet Internal Linear Combination (eGNILC) Framework for the 21-cm Foreground Removal
<https://doi.org/10.3847/1538-4365/ad9604>
- A2 Xin Tang, **Yin-Zhe Ma**, Wei-Ming Dai, Hong-Jian He, **2024**, Physics of the Dark Universe, 46, 101568, arXiv: 2407.08427
Constraining holographic dark energy and analyzing cosmological tensions
<https://doi.org/10.1016/j.dark.2024.101568>
- A3 Chandan G. Nagarajappa, & **Yin-Zhe Ma**, **2024**, Monthly Notices of the Royal Astronomical Society, 529, 3289-3300, arXiv: 2403.02115
Constraining primordial non-Gaussianity using Neural Networks
<https://doi.org/10.1093/mnras/stae679>
- A4 Gang Li, **Yin-Zhe Ma**, Denis Tramonte, Guo-Liang Li, **2024**, Monthly Notices of the Royal Astronomical Society, 27, 2663-2671, arXiv: 2311.00826
Cross-correlation of cosmic voids with thermal Sunyaev-Zel’dovich data
<https://doi.org/10.1093/mnras/stad3396>
- A5 Ayodeji Ibitoye, Wei-Ming Dai, **Yin-Zhe Ma**, Patricio Vielva, Denis Tramonte, Amare Abebe, Aroonkumar Beesham, Xuelei Chen, **2024**, The Astrophysical Journal Supplement Series (ApJS),

- 270, 16, arXiv: 2310.18478
Cross-correlation between the thermal Sunyaev-Zeldovich effect and the Integrated Sachs-Wolfe effect
<https://doi.org/10.3847/1538-4365/ad08c5>
- A6 Charles R. H. Walker, Laura G. Spitler, **Yin-Zhe Ma**, Cheng Cheng, M. Celeste Artale, & Cameron Hummels, **2024**, *Astronomy and Astrophysics*, 683, A71, arXiv: 2309.08268
The Dispersion Measure Contributions of the Cosmic Web
<https://doi.org/10.1051/0004-6361/202347139>
- A7 Hong-Gang Yang, Yu Gao, **Yin-Zhe Ma**, Roland M. Crocker, **2023**, *Physical Review D (Letter)* 108, L061304, arXiv: 2309.04784
Solar gamma ray probe of local cosmic ray electrons
<https://journals.aps.org/prd/pdf/10.1103/PhysRevD.108.L061304>
- A8 Guo-Jian Wang, Cheng Cheng, **Yin-Zhe Ma** Jun-Qing Xia, Amare Abebe, and Aroonkumar Beesham, **2023**, *The Astrophysical Journal Supplement Series*, 268, 7, arXiv: 2306.11102
CoLFI: Cosmological Likelihood-free Inference with Neural Density Estimators
<https://doi.org/10.3847/1538-4365/ace113>
- A9 Yogesh Chandola, Chao-Wei Tsai, Di Li, Chandreyee Sengupta, **Yin-Zhe Ma**, Pei Zuo, **2023**, *Monthly Notices of the Royal Astronomical Society*, 523, 3848-3862, arXiv: 2305.16786
GMRT HI mapping of mid-infrared bright Blue Compact Dwarf Galaxies W1016+3754 & W2326+0608
<https://doi.org/10.1093/mnras/stad1618>
- A10 Wen-Qing Guo, Yichao Li, Xiaoyuan Huang, **Yin-Zhe Ma**, Geoff Beck, Yogesh Chandola, Feng Huang, **2023**, *Physical Review D*, 107, 103011, arXiv: 2209.15590
Constraints on dark matter annihilation from the FAST observation of the Coma Berenices dwarf galaxy
<https://journals.aps.org/prd/pdf/10.1103/PhysRevD.107.103011>
- A11 Junsong Cang, **Yin-Zhe Ma**, Yu Gao, **2023**, *The Astrophysical Journal*, 949, 64 (6 pages), arXiv: 2210.03476
Implications for primordial black holes from cosmological constraints on scalar-induced gravitational wave
<https://iopscience.iop.org/article/10.3847/1538-4357/acc949/pdf>
- A12 Denis Tramonte, **Yin-Zhe Ma**, Ziang Yan, Matteo Maturi, Gianluca Castignani, Mauro Sereno, Sandro Bardelli, Carlo Giocoli, Federico Marulli, Lauro Moscardini, Emanuella Puddu, Mario Radovich, Ludovic Van Waerbeke, and Angus H. Wright, **2023**, *The Astrophysical Journal Supplement Series*, 265, 55 (31 pages), arXiv: 2302.06266
Exploring the mass and redshift dependence of the cluster pressure profile with stacks on thermal SZ maps
<https://iopscience.iop.org/article/10.3847/1538-4365/acbcca/pdf>
- A13 Yun-Fan Zhou, Nick Houston, Gyula I. G. Jozsa, Hao Chen, **Yin-Zhe Ma**, Qiang Yuan, Tao An, Yogesh Chandola, Ran Ding, Fujun Du, Shao-Guang Guo, Xiaoyuan Huang, Mengtian Li, Chandreyee Sengupta, **2022**, *Physical Review D*, 106, 083006, arXiv: 2209.09695
Searching for axion dark matter with the MeerKAT radio telescope
<https://journals.aps.org/prd/pdf/10.1103/PhysRevD.106.083006>

- A14 Yun-Fan Zhou, Chandreyee Sengupta, Yogesh Chandola, Ivy Wong, Tom C. Scott, **Yin-Zhe Ma** and Hao Chen, **2022**, Monthly Notices of the Royal Astronomical Society, 516, 1781-1787 (7 pages)
HIPASS detections of southern ultradiffuse galaxies and low surface brightness galaxies
<https://doi.org/10.1093/mnras/stac2344>
- A15 Guo-Jian Wang, Cheng Cheng, **Yin-Zhe Ma**, Jun-Qing Xia, **2022**, The Astrophysical Journal Supplement Series, 262, 24 (14 pages); arXiv: 2207.00185
Likelihood-free Inference with Mixture Density Network
<https://iopscience.iop.org/article/10.3847/1538-4365/ac7da1/pdf>
- A16 Ayodeji Ibitoye, Denis Tramonte, **Yin-Zhe Ma**, Wei-Ming Dai, **2022**, The Astrophysical Journal, 935, 18 (18 pages), arXiv: 2206.05689
Cross Correlation between the Thermal Sunyaev-Zel'dovich Effect and Projected Galaxy Density Field
<https://iopscience.iop.org/article/10.3847/1538-4357/ac7b8c/pdf>
- A17 Tamirat G. Gogo, **Yin-Zhe Ma**, Piyanat Kittiwisit, Jonathan L. Sievers, Aaron R. Parsons, Jonathan C. Pober, Daniel C. Jacobs et al., **2022**, Monthly Notices of the Royal Astronomical Society, 510, 1680-1696
The Correlation Calibration of PAPER-64 data
<https://doi.org/10.1093/mnras/stab3516>
- A18 Elimboto Yohana, **Yin-Zhe Ma**, Di Li, Xuele Chen, Wei-Ming Dai, **2021**, Monthly Notices of the Royal Astronomical Society, 504, 5231-5243
Recovering 21-cm signal from simulated FAST intensity maps
<https://doi.org/10.1093/mnras/stab1197>
- A19 **Yin-Zhe Ma**, Yan Gong, Tilman Troster, Ludovic Van Waerbeke, **2021**, Monthly Notices of the Royal Astronomical Society, 500, 1806-1816
Probing the cluster pressure profile with thermal Sunyaev-Zeldovich effect and weak lensing cross-correlation
<https://tinyurl.com/y2vkwpm>
- A20 Wei-Ming Dai, **Yin-Zhe Ma**, Hong-Jian He, **2020**, Physical Review D, 102, 121302 (Rapid Communication)
Reconciling Hubble Constant Discrepancy from Holographic Dark Energy
<https://tinyurl.com/y4wnso72>
- A21 Denis Tramonte, **Yin-Zhe Ma**, **2020**, Monthly Notices of Royal Astronomical Society, 498, 5916-5935
The neutral hydrogen distribution in large-scale haloes from 21-cm intensity maps
<https://tinyurl.com/y5k6yjkx>
- A22 Gong Cheng, **Yin-Zhe Ma**, Fengquan Wu, Jiajun Zhang, Xuele Chen, **2020**, Physical Review D, 102, 043517
Testing interacting dark matter and dark energy model with cosmological data
<https://tinyurl.com/yymnqvr6>
- A23 Moumita Aich, **Yin-Zhe Ma**, Wei-Ming Dai, Jun-Qing Xia, **2020**, Physical Review D, 101, 063536
How much primordial tensor mode is allowed?
<https://tinyurl.com/sfozpqm>

- A24 Charles Walker, **Yin-Zhe Ma**, Rene Breton, **2020**, Astronomy and Astrophysics, 638, A37
Constraining redshifts of unlocalised fast radio bursts
<https://tinyurl.com/y95nhedf>
- A25 Yu Gao, **Yin-Zhe Ma**, **2020**, Monthly Notices of Royal Astronomical Society, 491, 965–971
Implications of dark matter cascade decay from DAMPE, HESS, Fermi-LAT and AMS02 data
<https://tinyurl.com/v3s79xw>
- A26 Anthony Walters, **Yin-Zhe Ma**, Jonathan Sievers, Amanda Weltman, **2019**, Physical Review D, 100, 103519
Probing Diffuse Gas with Fast Radio Bursts
<https://tinyurl.com/uwlyxr7>
- A27 Elimboto Yohana, Yi-Chao Li, **Yin-Zhe Ma**, **2019**, Research in Astronomy and Astrophysics, 19, 186 (18 pages)
Forecasts of cosmological constraints from HI intensity mapping with FAST, BINGO & SKA-I
<https://tinyurl.com/qoktfw4>
- A28 Denis Tramonte, **Yin-Zhe Ma**, Yi-Chao Li, Lister Staveley-Smith, **2019**, Monthly Notices of the Royal Astronomical Society, 489, 385-400
Searching for HI imprints in cosmic web filaments with 21-cm intensity mapping
<https://tinyurl.com/sfreeqz>
- A29 Wei-Ming Dai, **Yin-Zhe Ma**, Zong-Kuan Guo, Rong-Gen Cai, **2019**, Physical Review D, 99, 043524
Constraining the reionization history with CMB and spectroscopic observations
<https://tinyurl.com/uht3hnn>
- A30 N. Aghanim et al., Planck Collaboration **2018**, Astronomy and Astrophysics, 617, A48
Planck intermediate results. LIII. Detection of velocity dispersion from the kinetic Sunyaev-Zeldovich effect
<https://tinyurl.com/y8n5782m>
- A31 Xiaodong Xu, **Yin-Zhe Ma**, Amanda Weltman, **2018**, Physical Review D, 97, 083504
Constraining the interaction between dark sectors with future HI intensity mapping observations
<https://tinyurl.com/ycmvor78>
- A32 **Yin-Zhe Ma**, Guo-Dong Gong, Ning Sui, Ping He, **2018**, Monthly Notices of the Royal Astronomical Society, 475, 379-390
Constraining the optical depth of galaxies and velocity bias with cross-correlation between kinetic Sunyaev-Zeldovich effect and peculiar velocity field
<https://tinyurl.com/yan2tbcx>
- A33 Yi-Chao Li, **Yin-Zhe Ma**, Mathieu Remazeilles, Kavilan Moodley, **2018**, Physical Review D, 97, 023514
Measurement of the pairwise kinematic Sunyaev-Zeldovich effect with Planck and BOSS data
<https://tinyurl.com/y8ylop2m>
- A34 Yi-Chao Li, **Yin-Zhe Ma**, **2017**, Physical Review D, 96, 063525
Constraints on Primordial non-Gaussianity from Future HI Intensity Mapping Experiments
<https://tinyurl.com/yam2tzqs>

- A35 **Yin-Zhe Ma, 2017**, Nuclear Physics B, 920, 402-418
Constraining the ionized gas evolution with CMB-spectroscopic survey cross-correlation
<https://tinyurl.com/ydggo97a>
- A36 **Yin-Zhe Ma, & Shuang-nan Zhang, 2016**, Physics Education (IOP), 51, 065011 (6 pages)
Hubble Expansion is not a Velocity
<https://tinyurl.com/zb4mabb>
- A37 **Yin-Zhe Ma, Douglas Scott, 2016**, Physical Review D, 93, 083510 (8 pages)
How much cosmological information can be measured?
<http://tinyurl.com/z2qveke>
- A38 **Yi Wang, & Yin-Zhe Ma, 2016**, Nuclear Physics B, 906, 367-380 (5 pages)
CMB Cold Spot from Inflationary Feature Scattering
<http://tinyurl.com/ha9j3gj>
- A39 **P. A. R. Ade et al., Planck Collaboration, 2016**, Astronomy and Astrophysics, 586, 140 (14 pages)
Planck intermediate results. XXXVII. Evidence of unbound gas from the kinetic Sunyaev-Zeldovich effect
<https://tinyurl.com/jm6wg4k>
- A40 **Yin-Zhe Ma, Ludovic Van Waerbeke, Gary Hinshaw, Alireza Hojjati, Douglas Scott, and Joe Zuntz, 2015**, Journal of Cosmology and Astroparticle Physics, 09, 046 (14 pages)
Probing the diffuse baryon distribution with the lensing-tSZ cross-correlation
<http://tinyurl.com/ovyakmd>
- A41 **Yin-Zhe Ma, Min Li, and Ping He, 2015**, Astronomy and Astrophysics, 583, 52 (7 pages)
Constraining cosmology with pairwise velocity estimator
<http://tinyurl.com/q2jpvq2>
- A42 **Yan Gong, Yin-Zhe Ma, Shuang-nan Zhang, and Xuelei Chen, 2015**, Physical Review D, 92, 063523 (11 pages)
Consistency test on the cosmic evolution
<http://tinyurl.com/ppdozqm>
- A43 **Yin-Zhe Ma and Yi Wang, 2014**, Journal of Cosmology and Astroparticle Physics, 09, 041 (14 pages)
Reconstructing the Local Potential of Inflation with BICEP2 data
<http://tinyurl.com/psevjdn>
- A44 **Yin-Zhe Ma and Aaron Berendsen, 2014**, Astronomy and Computing, 5, 45-56 (12 pages)
How to combine correlated data sets – A Bayesian hyperparameter matrix method
<http://tinyurl.com/plh9clg>
- A45 **Yin-Zhe Ma and Jun Pan, 2014**, Monthly Notices of the Royal Astronomical Society, 437, 1996-2004 (9 pages)
An estimation of local bulk flow with maximum likelihood method
<http://tinyurl.com/py97es5>
- A46 **Yin-Zhe Ma, Douglas Scott, 2014**, Astronomy and Geophysics, 55 (3): 3.33-3.36 (4 pages)
Velocities hasten to tell us about the Universe
 Editor's highlight as the front cover of the June issue 2014
<http://tinyurl.com/owjmhat>

- A47 **Yin-Zhe Ma** and Gong-Bo Zhao, **2014**, Physics Letters B, 735, 402-411 (10 pages)
Dark energy imprints on the kinematic Sunyaev-Zel'dovich signal
<http://tinyurl.com/obwz46q>
- A48 Andrew Johnson, Chris Blake, Jun Koda, **Yin-Zhe Ma**, Matthew Colless, Matthew Colless, Martin Crocce, Tamara M. Davis, Heath Jones, John R. Lucey, Christina Magoulas, Jeremy Mould, Morag Scrimgeour, Christopher M. Springob, **2014**, Monthly Notices of the Royal Astronomical Society, 444, 3926-3947 (22 pages)
The 6dF Galaxy Survey: Cosmological constraints from the velocity power spectrum
<http://tinyurl.com/qfh763f>
- A49 Yi Wang and **Yin-Zhe Ma**, **2014**, SCIENCE CHINA, Physics, Mechanics & Astronomy, 57(8): 1466-1470 (5 pages)
Precision of Future Experiments Measuring Primordial Tensor Fluctuation
<http://tinyurl.com/o4mfrfe>
- A50 Michael Sitwell, Andrei Mesinger, **Yin-Zhe Ma**, Kris Sigurdson, **2014**, Monthly Notices of the Royal Astronomical Society, 438, 2664-2671 (8 pages)
The Imprint of Warm Dark Matter on the Cosmological 21-cm Signal
<http://tinyurl.com/qbsbz6l>
- A51 **Yin-Zhe Ma**, James E. Taylor and Douglas Scott, **2013**, Monthly Notices of the Royal Astronomical Society, 436, 2029-2037 (9 pages)
Independent constraints on local non-Gaussianity from the peculiar velocity and density fields
<http://tinyurl.com/ofblmyr>
- A52 **Yin-Zhe Ma**, Qing-Guo Huang and Xin Zhang, **2013**, Physical Review D, 87, 103516 (10 pages)
Confronting Brane Inflation with Planck and pre-Planck data
<http://tinyurl.com/oyx9daw>
- A53 **Yin-Zhe Ma**, Gary Hinshaw and Douglas Scott, **2013**, The Astrophysical Journal, 771, 137 (11 pages)
WMAP Observations of Planck SZ clusters
<http://tinyurl.com/qgp58kl>
- A54 **Yin-Zhe Ma**, and Douglas Scott, **2013**, Monthly Notices of the Royal Astronomical Society, 428, 2017-2029 (13 pages)
Cosmic bulk flows on $50h^{-1}$ Mpc scales: A Bayesian hyper-parameter method and multishells likelihood analysis
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- A55 Miao Li, Xiao-Dong Li, **Yin-Zhe Ma**, Xin Zhang, Zhenhui Zhang, **2013**, Journal of Cosmology and Astroparticle Physics, 09, 021 (26 pages)
Planck Constraints on Holographic Dark Energy
<http://tinyurl.com/pk26kzu>
- A56 Cheng Cheng, Qing-Guo Huang, **Yin-Zhe Ma**, **2013**, Journal of Cosmology and Astroparticle Physics, 07, 018 (13 pages)
Constraints on single-field inflation with WMAP, SPT and ACT data – A last-minute stand before Planck
<http://tinyurl.com/oxj7bl7>

- A57 Rong-Gen Cai, **Yin-Zhe Ma**, Bo Tang, Zhong-Liang Tuo, **2013**, Physical Review D, 87, 123522 (9 pages)
Constraining the Anisotropic Expansion of Universe
<http://tinyurl.com/paew8bl>
- A58 J.Alberto Vazquez, M. Bridges, **Yin-Zhe Ma**, M.P. Hobson, **2013**, Journal of Cosmology and Astroparticle Physics, 08, 001 (15 pages)
Constraints on the Tensor-to-Scalar ratio for non-power-law models
<http://tinyurl.com/ntn3mun>
- A59 **Yin-Zhe Ma**, Enzo Branchini and Douglas Scott, **2012**, Monthly Notices of the Royal Astronomical Society, 425, 2880-2891 (12 pages)
A comparison of galaxy peculiar velocities filed with the PSCz gravity field-A hyper-parameter method
<http://tinyurl.com/qbjn8fj>
- A60 **Yin-Zhe Ma**, Jeremiah P. Ostriker and Gongbo Zhao, **2012**, Journal of Cosmology and Astroparticle Physics, 06, 026 (9 pages)
Cosmic Mach Number as a sensitive test of growth of structure
<http://tinyurl.com/pv2vqoe>
- A61 Cheng Cheng, Qing-Guo Huang, Xiao-Dong Li, **Yin-Zhe Ma**, **2012**, Physical Review D, 86, 123512 (9 pages)
Constraints on the primordial gravitational waves with variable sound speed from current CMB data
<http://tinyurl.com/nalbc39>
- A62 **Yin-Zhe Ma**, George Efstathiou and Anthony Challinor, **2011**, Physical Review D, 83, 083005 (8 pages)
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Contribution: I initialized the idea, collaborated with researchers to carry out the research, and edit the paper draft.

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Contribution: I collaborated with the project group to carry out research.

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²The Astro2020 decadal survey is a survey from the National Academies of Sciences, Engineering, and Medicine identifies scientific priorities, opportunities, and funding recommendations for the next 10 years of astronomy and astrophysics in the US. These papers discuss the pathways to discoveries in Astronomy and Astrophysics for the 2020s drew from the astronomical community.

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4.2 Snowmass 2021 White Papers

1. Clarence L. Chang et al.³, **2021**, arXiv:2203.07638
Snowmass2021 Cosmic Frontier: Cosmic Microwave Background Measurements White Paper
<https://ui.adsabs.harvard.edu/abs/2022arXiv220307638C/abstract>
2. Kevork Abazajian et al., **2021**, arXiv: 2203.08024
Snowmass 2021 CMB-S4 White Paper
<https://ui.adsabs.harvard.edu/abs/2022arXiv220307638C/abstract>

³The Snowmass Process is a particle physics community planning exercise sponsored by the Division of Particles and Fields of the American Physical Society. During this process, scientists develop a collective vision for the next seven to ten years for particle physics research in the US. These papers summarise the ideas and discussions.