The 10th China Australia Symposium on Science & Technology:

Astronomy and Astrophysics

10-12 November 2013

Australian Government
Department of Industry

Australian Academy of Science

ATSE
Australian Academy of Technological Sciences and Engineering (ATSE)

Welcome Message

Prof. Chunli Bai, President, Chinese Academy of Sciences

On behalf of the Chinese Academy of Sciences (CAS), I would like to extend warmest welcome to our Australian guests who have come from afar to participate in the 10th China-Australia Symposium on Astronomy and Astrophysics in Nanjing, 10-12 November 2013.

The Australian delegation is led by Professor Suzanne Cory, President of the Australian Academy of Science (AAS) and Dr Alan Finkel, President of the Australian Academy of Technological Sciences and Engineering (ATSE).

CAS values the strong commitment and continuous support to the joint Academy symposia from AAS, ATSE and the Australian Government Department of Industry. The Symposium has been held annually since 2004 in China and Australia on topics of mutual interest and strategic importance to China and Australia's sustainable development, such as energy, water, biotechnology, nanotechnology, ecosystem, coastal research, remote sensing technology, health and aging, etc. This year's symposium on Astronomy and Astrophysics presents another exciting collaborative area where Chinese and Australian astronomers could interact, collaborate and deliver.

Five featured themes of this year's Symposium are: Antarctic Astronomy, Radio Astronomy, Dark energy, Cosmology, and Detection of Dark matter, Galactic Structure and Big Data.

These workshops will lead to better and clearer understandings of the interests and capabilities of both sides in Astronomy and Astrophysics. It is expected that discussions and conclusions will in turn generate opportunities for collaboration & cooperation in critical areas of common interests.

CAS would like to thank the Australian Government, particularly the Department of Industry and the Australian Embassy in China, for their continuous support to the joint initiatives and collaborations between the scientific communities of the two countries. Our special appreciation also goes to AAS and ATSE, for their strong commitment to China-Australia S&T partnership by making sure this wonderful platform and networking opportunity is continuously supported and emphasized. I also wish to acknowledge the involvement and support of CAS Purple Mountain Observatory in this important meeting.

I wish the Symposium a great success and each of the participants an enjoyable stay in Nanjing.

Chunli Bai

President, CAS

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Sunday, 10 November 2013

1300-1500 **Registration** (Lobby of Grand Trustel Mandarin Garden Hotel)

1530-1630 **CAS/AAS/ATSE/AGDI Academies Leadership Meeting**
(Tongwen hall on the second floor)

Opening Ceremony (Palladio hall on the first floor)

Host: Prof. Ji Yang (Director, Purple Mountain Observatory, CAS)

1645-1655 **Prof. Jinghai Li**
Vice President, Chinese Academy of Sciences

1655-1705 **Prof. Suzanne Cory** AC PresAA FRS
President, Australian Academy of Science

1705-1715 **Dr Alan Simon Finkel** AM FTSE
President, Australian Academy of Technological Sciences and Engineering

1715-1725 **Ms Patricia Kelly**
Deputy Secretary, Department of Industry, Australia

Plenary address

1725-1745 **Prof. Cheng Fang**
Nanjing University
Fast Development of Astronomy in China

1745-1805 **Dr Brian Boyle**
Department of Industry, Australia
100 years of China-Australia collaboration in astronomy

1805-1810 **Photo opportunity**

1830-2000 **Welcome banquet** (Galaxy Restaurant on the second floor)
Host: Mr Jinghua Cao (Deputy Director, Bureau of International Co-operation, CAS)

Program

Monday, 11 November 2013

Session 1: Antarctic Astronomy (Palladio hall on the first floor)

Co-Chair: Prof. Prof. Suzanne Cory / Prof. Xiangqun Cui

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0815-0840 **Prof. Huigen Yang**
Polar Research Institute of China
CHINARE and its Cooperation with Australia: Past, Present, and Future

0840-0905 **Prof. John Storey**
University of New South Wales
Dome A and the future of Antarctic astronomy

0905-0930 **Prof. Ji Yang**
Purple Mountain Observatory, CAS
Dome A Observatory at Chinese Antarctic Kunlun Station

0930-0955 **Dr Julia Bryant**
University of Sydney
Applications of astrophotonics to astronomy in Antarctica

0955-1020 **Prof. Lifan Wang**
Purple Mountain Observatory, CAS
Optical and NIR Astronomy from Dome A, Antarctica

1020-1045 **Dr Jon Lawrence**
Australian Astronomical Observatory
Next generation Antarctic telescopes and instrumentation

1045-1050 **Summing up by Chair**

1050-1110 **Morning tea**

Program

Session 2: Radio Astronomy (Palladio hall on the first floor)

Co-Chair: Dr Alan Simon Finkel / Prof. Na Wang

1110-1135 **Prof. Di Li**
National Astronomical Observatories, CAS
The Status of the Five-hundred-meter Aperture Spherical radio Telescope and related China-Australia Collaborations in Radio Astronomy

1135-1200 **Prof. Bryan Gaensler FAA**
ARC Centre of Excellence for All Sky Astro Physics/Usyd
A new way of Looking at The Sky: Radio Astronomy in the Wide-Field Era

1200-1225 **Prof. Xiaoyu Hong**
Shanghai Astronomical Observatory, CAS
Shanghai 65m radio telescope and Chinese VLBI network(CVN)

1225-1250 **Mr Antony Schinckel**
CSIRO Astronomy and Space Science
The Australian SKA Pathfinder

1250-1315 **Prof. Shengcai Shi**
Purple Mountain Observatory, CAS
Development of a Terahertz Superconducting Imaging Array (TeSIA)

1315-1340 **Dr Lisa Harvey-Smith**
CSIRO Astronomy and Space Science
The Australian SKA Pathfinder: Panoramic imaging technology for radio astronomy

1340-1345 **Summing up by Chair**

1345-1445 **Lunch** (Venice restaurant on the first floor)

Program

Session 3: Dark energy, Cosmology, and Detection of Dark matter

(Palladio hall on the first floor)

Co-Chair: Dr Alan Simon Finkel / Prof. Xiangping Wu

1445-1510 **Prof. Yueliang Wu**
Institute of Theoretical Physics, CAS
University of Chinese Academy of Sciences
Theoretical and Experimental Studies on Dark Matter in China

1510-1535 **Prof. Matthew Colless** FAA
The Australian National University
Dark matter from redshift and velocity surveys

1535-1600 **Prof. Gongbo Zhao**
National Astronomical Observatories, CAS
Understanding the Accelerating Universe

1600-1625 **Prof. Warrick Couch** FAA
Australian Astronomical Observatory
Nature Versus Nurture on a Cosmic Scale: Future Advancements with Integral Field Spectroscopy

1625-1650 **Prof. Yipeng Jing**
Shanghai Jiaotong University
Probing the Cosmic Expansion with Redshift Distribution: Prospects and Theoretical Challenges

1650-1715 **Prof. Karl Glazebrook**
Swinburne University of Technology
Australian Wide Field Cosmology Surveys with the AAT

1715-1720 **Summing up by Chair**

1800-1900 **Dinner** (Venice restaurant on the first floor)

1930-2130 **The First Meeting of the Working Group** (YaYuan hall on the third floor)

Program

Tuesday, 12 November 2013

Session 4: Galactic Structure (Palladio hall on the first floor)

Co-Chair: Prof. Prof. Suzanne Cory / Prof. Juntai Shen

0800-0840 **Prof. Xiaowei Liu**
Kavli Institute for Astronomy and Astrophysics, Peking University
The LAMOST Galactic Surveys

0840-0905 **Dr Barbara Cantinella**
Centre for Astrophysics and Supercomputing
Cold gas in massive galaxies

0905-0930 **Prof. Ye Xu**
Purple Mountain Observatory, CAS
Mapping the Milky Way structure with masers

0930-0955 **Prof. Joss Bland-Hawthorn** FAA
The University of Sydney
The HERMES project – reconstructing the ancient Galaxy

0955-1020 **Dr Elizabeth Wylie de Boer**
The Australian National University
The Power of Galactic Archaeology in Understanding the Structure of the Milky Way

1020-1025 **Summing up by Chair**

1025-1045 **Morning tea**

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Session 5: Big Data (Palladio hall on the first floor)

Co-Chair: Dr Alan Simon Finkel / Prof. Jianhui Li

1045-1110 **Prof. Steven Tingay**
International Centre for Radio Astronomy Research/Curtin University
Big Data concepts enable the next generation in radio astronomy

1110-1135 **Dr Xi Kang**
Purple Mountain Observatory, CAS
Data challenge in cosmological N-body simulation

1135-1200 **A/Prof. Darren Croton**
Swinburne University of Technology
Astronomy in the era of big data

1200-1225 **Prof. Chenzhou Cui**
National Astronomical Observatories, CAS
Virtual observatory, an e-science environment for astronomy

1225-1250 **Prof. Peter Quinn**
University of Western Australia/International Centre for Radio Astronomy Research
SKA and the challenge of big data in 21st century astronomy

1250-1315 **Dr. Huaiming Song**
Research Fellow of R&D Center, Sugon Information Industry Ltd.
XData: Sugon all-in-one Big Data Machine

1315-1320 **Summing up by Chair**

1320-1340 **Formal close of Symposium**

1340-1440 **Lunch** (Venice restaurant on the first floor)

1500-1730 **Visit** (Purple Mountain Observatory, CAS and Nanjing Institute of Astronomical Optics & Technology, CAS)
Departure point: Lobby of Hotel, at 15:00PM

1800-1900 **Dinner** (Venice restaurant on the first floor)

Wednesday, 13 November 2013

0900-1030	**Visit** Nanjing Institute of Geology and Palaeontology, CAS Departure point: Lobby of Grand Trustel Mandarin Garden Hotel, at 09:00AM
1100-1130	**Lunch** (YanLi hall on the first floor)
1140	**Depart for airport**

Presidents

Prof. Chunli Bai

President, Chinese Academy of Sciences

Prof. BAI Chunli, a well-known chemist and leading scientist in nanoscience, is the President of the Chinese Academy of Sciences (CAS).

He is also the President of University of Chinese Academy of Sciences (UCAS) and the President of the Presidium of the Academic Divisions of CAS, and has been newly elected as the President of the Academy of Sciences for the Developing World (TWAS) in Sept. 2012, and will start his term from Jan.1, 2013.

Prof. BAI graduated from the Department of Chemistry, Peking University in 1978 and received his M.Sc. and Ph.D. degrees from the CAS Institute of Chemistry in 1981 and 1985 respectively. From 1985 to 1987, he worked with the US California Institute of Technology in the field of physical chemistry as a post-doctoral associate and visiting scholar. After back to China in 1987, he continued his research at the CAS Institute of Chemistry. From 1991 to 1992, he worked as a visiting professor at Tohoku University in Japan.

His research areas include the structure and properties of polymer catalysts, X-ray crystallography of organic compounds, molecular mechanics and EXAFS research on electro-conducting polymers. In the mid-1980s, he shifted his research to the fields of scanning tunneling microscopy and molecular nanotechnology.

Prof. BAI has a long list of scientific publications and has won more than twenty prestigious awards and prizes for his academic achievements. He was elected Member of CAS and Fellow of TWAS in 1997. He is also Member or Foreign Member of ten world-known academies of science or engineering, including Foreign Associate of the US National Academy of Sciences (NAS) and Foreign Member of the Russian Academy of Sciences (RAS), Honorary Fellow of the Royal Society of Chemistry, honorary membership of the Chemical society of Japan(CSJ), corresponding Member of the Australian Academy of Science (AAS), Member of the German Academy of Science and Engineering (acatech) and Honorary Fellow of the Indian Academy of Sciences (IAS), Foreign Member of the Royal Danish Academy of Sciences and Letters, and honorary director or professor of several foreign universities.

He also serves as the Chief Scientist for the National Steering Committee for Nanoscience and Technology and was the Founding Director of China National Center for Nanoscience and Technology.

Moreover, he was Member of the Executive Committee of IUPAC (2008-2009), and Member of the International Editorial Advisory Board of JACS, Angewandte Chemie, Advanced Materials and Chemical Physics Letters.

Prof. Suzanne Cory AC PresAA FRS

President, Australian Academy of Science

Prof. Suzanne Cory is one of Australia's most distinguished molecular biologists. She was born in Melbourne, Australia and graduated in biochemistry from The University of Melbourne. She gained her PhD from the University of Cambridge, England and then continued studies at the University of Geneva before returning to Melbourne in 1971, to a research position at The Walter and Eliza Hall Institute of Medical Research. From 1996 to 2009 she was Director of The Walter and Eliza Hall Institute and Professor of Medical Biology of The University of Melbourne. She is currently a Vice-Chancellor's Fellow at the University of Melbourne and Honorary Distinguished Professorial Fellow at the Walter and Eliza Hall Institute, Her research has had a major impact in the fields of immunology and cancer and her scientific achievements have attracted numerous honours and awards. In 2010 she was elected President of the Australian Academy of Science.

Dr Alan Finkel AM FTSE

President, Australian Academy of Technological Sciences and Engineering

Dr Alan Finkel AM FTSE *is an engineer, entrepreneur and philanthropist and has served as Chancellor of Monash University since January 2008.*

Alan received his Bachelor of Engineering in 1976 and Doctorate in Electrical Engineering from Monash University in 1981, following which he served for two years as a neuroscience research fellow at the John Curtin School of Medical Research, located at the Australian National University.

In addition to his role as Chancellor, Dr Finkel was also the Chief Technology Officer of Better Place Australia, a company that will provide clean energy to run Australia's future fleet of electric cars.

Previously, for 20 years Alan ran Axon Instruments, an American company that made electronic instruments used by pharmaceutical companies in the discovery of new medicines.

Between running Axon Instruments and joining Better Place Australia, Dr Finkel established two magazines. The first, Cosmos magazine, promotes science awareness and the second, G magazine, promotes environmental sustainability.

Alan has a passionate interest in education. He established the Australian Course in Advanced Neuroscience to provide advanced training to young scientists. He also established a secondary school science program named STELR, administered by ATSE, which is currently running in nearly 300 secondary schools around Australia.

Dr Finkel currently serves as the Chairman of the Australian Centre of Excellence for All-Sky Astrophysics, a research consortium that is preparing to analyse the data from the world's largest radio telescope that will be built by the end of this decade.

Plenary Speakers

Prof. Cheng Fang

Nanjing University

Email: fangc@nju.edu.cn

Professor Cheng Fang graduated from Nanjing University in 1959. He was elected an academician of the Chinese Academy of Sciences in 1995, and elected a Fellow of the Academy of Science for the Developing World (TWAS) in 2005. He successively served as the director of the Department of Astronomy of Nanjing University, the president of the Chinese Astronomical Society, and the vice-president of the International Astronomical Union (IAU). He was in charge of the design and the construction of the Solar Tower Telescope of Nanjing University. Using non-LTE theory, he and his collaborators have successfully developed a set of practical methods and programs that have achieved important results. He has published more than 270 papers and won several national and ministerial major scientific research achievement awards.

Fast Development of Astronomy in China

Benefiting from the fast development of Chinese economy, the research in astronomy in China has made remarkable progress in recent years. The number of astronomers has doubled in the past ten years, and the number of graduate students has grown over 1200. The current budget for astronomy research is ten times larger than ten years ago. The research covers all fields in astronomy, from galaxies to the Sun. The recent progress in both the instruments, such as the Guo Shoujing's telescope (LAMOST), and the theoretical research will be briefly presented. The ongoing and future projects on the space- and ground-based facilities will be described.

Relevant publications

1. Fang, C.: Past, Present and Future of Chinese Astronomy, *IAU Highlights of Astronomy*, Vol. 15, 2013 (in press)
2. Fang , C. : Recent progress of solar physics research in China, 2011, *RAA*, 11, 1377-1402
3. Jiang, R. L., Fang, C., Chen, P. F.: Numerical Simulation of Solar Microflares in a Canopy-type Magnetic Configuration, 2012, *ApJ,* 751, 152-162
4. Jiang, R. L., Fang, C., Chen, P. F.: Numerical Simulations of Chromospheric Microflares, 2010, *ApJ*, 710, 1387-1394
5. Fang, C., Tang, Y. H., Xu, Z., Ding, M. D., Chen, P. F.: Spectral Analysis of Ellerman Bombs, 2006, *ApJ*, 643, 1325-1336

Dr Brian Boyle

Director of the Australian SKA Project

Department of Industry, Australian

Email: brian.boyle@industry.gov.au

Dr Brian Boyle has been the Director of Australia's two premier astronomical observatories; the Anglo-Australian Observatory (from 1996-2003) and CSIRO Australia Telescope National Facility (from 2003-2009) and is currently the Australian SKA Project Director, leading efforts to implement the SKA in Australia.

Dr Boyle's research interests include quasars, active galaxies and cosmology. He has published over 300 research papers in astronomy with a total of over 13000 citations to date. As part of the Supernova Cosmology Project Team, Professor Boyle shared in the 2007 Gruber Prize for Cosmology for the discovery of Dark Energy.

Dr Boyle was elected a fellow of the Australian Academy of Science in 2006 and an Honorary Fellow of the UK's Royal Astronomical Society in 2007. He was awarded a Centenary Medal for services to Australian Astronomy in 2003 and the Public Service Medal for outstanding public service to Australian astronomy in 2013.

During his tenure as Director of the Anglo-Australian Observatory (Australia's premier national optical observatory), he oversaw the successful commissioning of the 2-degree field instrument and the implementation of the 2-degree-field galaxy and QSO redshift surveys. He also led the AAO into an era that saw the observatory design and build instrumentation for numerous international telescopes.

As Director of CSIRO Australia Telescope National Facility (Australia's premier national radio observatory), Dr Boyle led the development of the Australia SKA Pathfinder (ASKAP) telescope program to build the world's fastest cm-wavelength survey radio telescope, which is currently being commissioned at the Australian SKA site, the Murchison Radio-astronomy Observatory (MRO).

As chair of the Academy of Science's National Committee for Astronomy he led the development of the Decadal Plan for Australian Astronomy 2006-15 and was subsequently engaged to be the facilitator for the development of the successful NCRIS investment plan for Optical and Radio Astronomy. The strategies and priorities outlined by the community in the Decadal Pan has led to over $400M of Government investment in astronomy over the past five years.

In his current role as Australian SKA Project Director, he is leading the Australian Square Kilometer Array Office within the Department of Industry. The Australian SKA Office is tasked with implementing the SKA's survey telescope and low frequency aperture array antennas in Australia, and all ancillary SKA tasks including SKA pre-construction, land matters and international relations. Australia will co-host the SKA telescope with South Africa.

100 years of China-Australia collaboration in astronomy

Fifty years ago, Prof Chris Christiansen's FAA visit to China began marked the start of half a century of highly successful astronomy collaboration between China and Australia. I will review some of the highlights of the past 50 years and look forward to the next 50 years.

Symposium Convenors

Prof. Xiangqun Cui

Nanjing Institute of Astronomical Optics and Technology, CAS

Email: xcui@niaot.ac.cn

Cui Xiangqun is the president of Chinese Astronomical Society, and the former director of NIAOT. She got her MSC and PhD in Purple Mountain Observatory, CAS in China. During the years of 1985 to 1994 she visited and worked in Jodrell Bank Observatory in England for radio telescope and in European Southern Observatory (ESO) in Germany for VLT project. From 1994 to now, she worked for Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST). She is one of the initiator for Chinese Antarctic astronomy at Dome A. She successfully led LAMOST project to be built, which is an innovative telescope configuration in the world with the both wide field of view and the large aperture, and there are 4000 optical fibers, 16 spectrographs equipped. LAMOST is with the capability to observe and obtain tens of millions of spectra of celestial objects such as stellar, galaxies, and quasars. Cui resolved a series of the technical challenge problems in LAMOST especially in active optics: This effort not only made innovative concept of the LAMOST project realized, but also made a new progress in active optics and large optical telescope.

Publications

1. Xiang-Qun Cui, Yong-Heng Zhao, Yao-Quan Chu et al., The Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST), (INVITED REVIEWS), Research in Astron. Astrophys. 2012 Vol. 12 No. 9, 1197–1242

2. Xiangqun Cui, Ding-qiang Su, Guoping Li, Ya-nan Wang , Genrong Liu, Yong Zhang and Yeping Li, The optical performance of LAMOST telescope (invited paper) , Ground-based and Airborne Telescopes III, edited by Larry M. Stepp, Roberto Gilmozzi, Helen J. Hall , Proc. of SPIE Vol. 7733, 773309-1-8 , （2010）

3. Xiangqun Cui, Ding-qiang Su, Ya-nan Wang, Dehua Yang and Guoping Li, A 30-m sub-millimeter telescope with active reflector, Ground-based and Airborne Telescopes II, edited by Larry M. Stepp, Roberto Gilmozzi, Proc. of SPIE Vol. 7012, 701228-1 ~13, (2008)

Prof. Na Wang

Xinjiang Astronomical Observatory, CAS

Email: na.wang@xao.ac.cn

Education and Research Experience

1983.09-1987.07: undergraduate, Astronomy Department, Nanjing University

1987.07-2011.02: Research fellow, Urumqi Observatory, CAS

1996.10-1997.10: Visiting scholar, Australia Telescope National Facility, CSIRO

1998.09-2001.06: PhD, Astronomy Department, Peking University

2003.03-2004.08: Postdoc, Physics School, Sydney University

2005.02-2011.02: Director, Urumqi Observatory

2011.02-present: Director, Xinjiang Astronomical Observatory

I am an astronomer. My research interests are on pulsar observational features, including pulsar timing, pulsar nulling and scintillation studies. Recent years I also work on propelling project on building a large aperture fully steerable radio telescope.

Publications

1. Wang, N.; Yan, Z.; Manchester, R. N.; Wang, H. X., "Daily observations of interstellar scintillation in PSR B0329+54", 2008, MNRAS, 385, 1393-1401
2. Wang, N.; Manchester, R. N.; Johnston S., "Pulsar nulling and mode changing", 2007, MNRAS, 377, 1383-1392
3. Wang, N.; Johnston, S.; Manchester, R. N., "13 years of timing of PSR B1259-63", 2004, MNRAS, 315, 599-606
4. Wang, N.; Manchester, R. N.; Zhang, J.; Wu, X. J.; Yusup, A.; Lyne A. G.; Cheng, K. S.; Chen, M. Z., "Pulsar timing at Urumqi Astronomical Observatory: system and results", 2001, MNRAS, 328, 855-866
5. Wang Na, R. N. Manchester, R. Pace et. al., "Glitches in Southern Pulsars", 2000, MNRAS, 317, 843-860

Prof. Xiangping Wu

National Astronomical Observatories, CAS

Email: wxp@bao.ac.cn

Education & Research Experience

1989, PhD of Astrophysics, Graduate School, Chinese Academy of Sciences.

1990-1994, Post-doc at Observatoire de Paris-Meudon, France

1995-1996, Visiting Scientist, University of Arizona, USA.

1996-present, National Astronomical Observatories, Chinese Academy of Sciences

Research Interests:

(1) Cosmology: Theory

(2) Gravitational Lensing: Theory and Observation

(3)Clusters of Galaxies: Theory and Observation

(4)Epoch of Reionization: Theory and Experiment

(5)Radio Interferometry: Technology and Data Reduction

Publications

1. Zheng, Q, Wu, X.-P., Gu, J.-H., Wang, J., & Xu, H., A method to extract the angular power spectrum of the epoch of reionization from low-frequency radio interferometers, 2012, ApJ, 758, L24
2. Zheng, Q, Wu, X.-P.,,Gu, J.-H., Wang, J., & Xu, H., Influence of synchrotron self-absorption on 21-cm experiments, 2012, MNRAS, 424, 2562
3. Ardouin, D., Cârloganu, C., Charrier, D., Gou, Q., Hu, H., Kai, L., Lautridou, P., Martineau-Huynh, O., Niess, V., Ravel, O., Saugrin, T., Wu, X., Zhang, J., Zhang, Y., Zhao, M., Zheng, Y., First detection of extensive air showers by the TREND self-triggering radio experiment, 2011, 34, 717

Prof. Juntai Shen

Shanghai Astronomical Observatory, CAS

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Dr. Shen obtained his PhD in Astronomy from Rutgers University in USA in 2005, and then he worked as a Harlan J. Smith Postdoctoral Fellow at the University of Texas at Austin from 2005 to 2009. He has been working at Shanghai Astronomical Observatory, CAS since 2009. His main research interests are galactic dynamics, dynamical structure and evolution of galaxies, their formation and interaction with dark matter and super-massive black holes. His most recent work is modeling the Galactic bulge and its exotic X-shaped structure. Many of his papers have been cited by internationally renowned textbooks, such as the "Galactic Dynamics" (Binney & Tremaine 2008), "Formation and Evolution of Galaxies" (Mo et al. 2010), and by the latest encyclopedia "Planets, Stars, and Stellar Systems" (Published by Springer). He was also invited to serve as an expert reviewer on the "Galactic Structure" panel for the National Science Foundation of USA.

Publications

1. Li, Z.-Y., & Shen, J., "The Vertical X-shaped Structure in the Milky Way: Evidence from a Simple Boxy Bulge Model", 2012, ApJL, 757, L7
2. Shen, J. et al., "Our Milky Way as a Pure-disk Galaxy -- A Challenge for Galaxy Formation", 2010, ApJL, 720, L72
3. Shen, J., & Gebhardt, K., "The Supermassive Black Hole and Dark Matter Halo of NGC 4649 (M60)", 2010, ApJ, 711, 484
4. Shen, J., & Debattista, V. P., "Observable Properties of Double-Barred Galaxies in N-Body Simulations", 2009, ApJ, 690, 758
5. Shen, J., & Sellwood, J. A., "The destruction of bars by central mass concentrations", 2004, ApJ, 604, 614

Prof. Jianhui Li

Computer Network Information Center, CAS

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Dr. Jianhui LI is the assistant director general of Computer Network information Center (CNIC), Chinese Academy of Sciences (CAS), the director of scientific data center of CNIC. He is also the Secretary-General of China Committee of CODATA. Dr. LI was born in 1973, and obtained his Ph.D. degree from Institute of Computing Technology of CAS in 2007. He mainly engaged in the research of scientific data curation and sharing, data-intensive computing and applications, big data analysis and cloud service. He is leading and pushing scientific databases development and sharing in CAS. He designed and lead to develop the scientific data infrastructure and its application environment of CAS. He was also Co-PI in development of the national basic research data sharing network, which coordinated scientific research data sharing among universities, institutions and other research organizations as well. He is now leading design and constructs the Scientific Data Cloud of CAS. Dr. LI has published more than 50 papers, applied 8 patents and 1 national standard.

Dr Brian Boyle

Director of the Australian SKA Project

Department of Industry, Australian

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As chair of the Academy of Science's National Committee for Astronomy he led the development of the Decadal Plan for Australian Astronomy 2006-15 and was subsequently engaged to be the facilitator for the development of the successful NCRIS investment plan for Optical and Radio Astronomy. The strategies and priorities outlined by the community in the Decadal Pan has led to over $400M of Government investment in astronomy over the past five years.

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Dr John O'Sullivan

CSIRO Astronomy and Space Science

John has had an extensive career in wireless, signal processing and radiophysics in both research and commercial contexts. At CSIRO he led research projects in signal processing and wireless communications which, among other outcomes, led to key technologies underpinning the now Wi-Fi wireless networking. His career has extended also to roles in various companies ranging from large (News Corp and Cisco) to several technology startups (Radiata, G2, Taggle). He returned to technology research for radio astronomy with CSIRO on the Australian pathfinder for the next generation international Square Kilometer Array radiotelescope. He is the winner of the 2009 Australian Prime Ministers Prize for Science, the 2012 European Inventors Award, the 2010 Clunies-Ross medal, the 2009 CSIRO Chairman's medal and 1992 CSIRO Medal and the 2013 MA Sargent award. He is a Fellow of the IEAust, Australian Academy of Science and Australian Academy of Technological Science and Engineering.

Speakers

Prof. Huigen Yang

Director General, Polar Research Institute of China

Email:yanghuigen@pric.gov.cn

Education and Degrees

B. S. *Radio Physics, Wuhan University, China, July, 1986.*

M. S. *Radio Physics, Wuhan University, China, July, 1989.*

Ph. D. *Space Physics, Wuhan University, China, July, 1992.*

Research Areas and International Cooperation

Dr. Huigen Yang has long involved in upper atmospheric physics research and polar research expedition. He spent one year to carry out Aurora observations at Syowa Station in the Antarctic and established a conjugate observation of dayside aurora at Zhongshan Station in the Antarctic and Yellow River Station on Svalbard in the Arctic. Dr. Yang has been responsible for the establishment of the Kulun Station on Dome A in the Antarctic and during the 2007-2008 International Polar Year (IPY), he acted as the chief scientist of the IPY China Program.

Dedicated on international cooperation, Dr. Yang is the national representative and council member of the Science Committee of Antarctic Research (SCAR), International Arctic Science Committee (IASC) and International Council for Science (ICSU). He has built up intensive cooperation with Japan, Korea, Norway, Chile, the United States, UK, Canada, Australia, Belgium, Iceland and many countries in polar sciences, logistic cooperation, and education & outreach.

CHINARE and its Cooperation with Australia: Past, Present, and Future

Huigen Yang and Hongyan Zhou

The Antarctic provides a unique place for geoscience investigation and a vantage platform of astronomical observation. The Chinese National Arctic/Antarctic Research Expedition (CHINARE) is the main instrument of polar research of China. An overview on CHINARE developments will be presented in this talk, especially on new progresses and plans of its capacity building. Some scientific highlights of CHINARE will be given in fields of glaciology, oceanography, solar-terrestrial physics and astronomy etc. Antarctic astronomy has been an important and productive field of China-Australia scientific cooperation and we shall strive for a more bright and promising future for it.

Prof. John Storey

University of New South Wales

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John Storey is an Emeritus Professor of Physics at the University of New South Wales in Sydney. He received a BSc (hons) in Physics from La Trobe University in 1972, and a PhD in chemistry from Monash University in 1976. Prior to his appointment at UNSW in 1982 he was a postdoc at the University of California, Berkeley, then a staff astronomer at the Anglo-Australian Observatory. Storey won the Pawsey medal in 1987, and was awarded a von Humboldt fellowship in 1989. During the past decade Storey and the UNSW research group have been characterising the high Antarctic plateau as a potential site for future astronomical telescopes. Storey has been a member of 12 research expeditions to Antarctica, most recently to Ridge A in 2013. He is currently Chief Officer of the Astronomy and Astrophysics from Antarctica SRP of SCAR, and is the IAU representative on SCAR.

Dome A and the future of Antarctic astronomy

Antarctica offers new opportunities for astronomers to conduct science that would be very difficult or impossible from other sites. Dome A, the highest point on the Antarctic plateau, is the driest site on earth, allowing observations at wavelengths inaccessible from other sites. In addition, the clear skies and stable atmosphere above Dome A permit observations over wide fields of view at a resolution and photometric precision not possible elsewhere. The establishment of the Chinese station, Kunlun, at Dome A represents a major development in international Antarctic astronomy.

Prof. Ji Yang

Director, Purple Mountain Observatory, CAS

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Ji Yang, received PhD from Nagoya University in 1990, experienced post-doc researches at Purple Mountain Observatory during 1991-1993, received Center of Excellence (COE) fellowship from Ministry of Education, Japan, and conducted researches at Nobeyama Radio Observatory, National Astronomical Observatory, Japan during 1994-1996. During 1988-1993, he focused on observational studies of interstellar molecular clouds and star formation, discovered a number of molecular clouds and molecular outflow sources. He was in charge of the collaboration with NRO in designing and developing the Portable Submillimeter Telescope (POST) and in application of the telescope to Delingha and other sites for measurements of submillimeter atmospheric opacity, together with SMA collaborations between PMO and ASIAA. He was responsible for the operation and upgrade of the 14m millimeter-wave radio telescope during 2002-2008 and conducted a series of R&D, such as the 3mm multi-line systems and the Superconducting Spectroscopic Array Receiver. He was involved in Dome A observatory program, especially on the 5m THz telescope, DATE5 since 2008.

Dome A Observatory at Chinese Antarctic Kunlun Station

The Antarctic Astronomical Observatory has been recommended as one the major goals of development for Chinese astronomy over the next decade. A 5m THz telescope (5m Dome A THz Explorer, DATE5) and 2.5m optical/infrared telescope (Kunlun Dark Universe Survey Telescope, KDUST) are the main targets of construction for the observatory. Besides the telescopes, there will be on-site supporting and infrastructures. The THz telescope provides capability to explore the new observing windows in THz wavelengths, and the optical/infrared telescope is characterized by wide field and high-resolution. All the facility will be self-supported and under remote operation. We will outline the basic specifications of the instruments and introduce the recent progress on the development.

Relevant publications

1. Yang, H.; Kulesa, C. A.; Walker, C. K, Tothill, N.F., Yang, J. et al. 2010, PASP, 122, 490 "Exceptional Terahertz Transparency and Stability above Dome A, Antarctica"
2. Su, Yang; et l., 2011, ApJ, 727, 43 "Molecular Environment and Thermal X-ray Spectroscopy of the Semicircular Young Composite Supernova Remnant 3C 396"
3. Shan, W.; et al. 2012, IEEE Trans. THz Science & Technology, 2, 593 " Development of Superconducting Spectroscopic Array Receiver: A Multibeam 2SB SIS Receiver for Millimeter-Wave Radio Astronomy"
4. Jiang, Z. et al. 2013, RAA, 13, 695 "AFGL 5157 NH3: a new stellar cluster in the forming process"

Dr. Julia Bryant

Research Fellow

Sydney Institute for Astronomy (SIfA) & CAASTRO

School of Physics

The University of Sydney

Email: jbryant@physics.usyd.edu.au

Dr Bryant received her PhD in astrophysics from the University of Sydney in 2001. She has since held research positions in the University of Sydney in areas of high redshift radio galaxies, galaxy evolution and astrophotonic developments for astronomical instrumentation. She is currently a member of the ARC Centre of Excellence for All-sky Astrophysics (CAASTRO).

Bryant has led the team that developed new optical imaging fibre bundles (hexabundles) for the SAMI instrument on the Anglo-Australian Telescope. This new technology has enabled the largest integral field spectroscopy survey of nearby galaxies. Using this SAMI galaxy survey, she is studying the nearby AGN population and kinematic disturbance as a function of galaxy environment. In parallel, she is developing further astrophotonic devices for future astronomical instruments, in both the optical and infrared, with direct Antarctic applications.

Applications of astrophotonics to astronomy in Antarctica

Recent advances in astrophotonics in Australia offer great potential for Antarctic astronomical instrumentation. I will show how fibre Bragg gratings, developed at the University of Sydney, act as very high resolution filters to chop out narrow OH sky lines and auroral lines before they are broadened by scattering in a spectrograph. The resulting reduction in the inter-line continuum will give a substantial decrease in the background light contamination, allowing detection of faint lines, particularly in the infrared. These filtering fibres can then be coupled with new IFU imaging devices called hexabundles and fed into miniature photonic spectrographs, to give spatially resolved, high resolution spectroscopy, forming a compact transportable system. The application of these new astrophotonic devices in Antarctica will capitalise on the excellent seeing, and give advantages over 8m class telescope at temperate sites for many science cases.

Prof. Lifan Wang

Purple Mountain Observatory, CAS

Email: wang@physics.tamu.edu

Education:

Bachelor of Engineering (1981-1986),

PhD (1993), USTC.

Employment:

University of Texas at Austin, Post-dco, Research Scientist (1994-2000); Physicist, Lawrence Berkeley National Laboratory (2000-2006); Adjunct Professor, Lawrence Livermore National Laboratory (2006-2008); Associate Prof. (2006-), Cynthia and George Mitchell Career Enhancement Chair on Astronomy (2006-2009), Texas A&M University; Researcher, Purple Mountain Observatory (2006-).

Research: *Observations of SN 1987A, especially on the discovery and study of the circumstellar rings; Spectroplarimetry of Supernovae; The supernovae and gamma-ray burst association; The Color MAGnitude Intercept Calibration (CMAGIC) of Type Ia supernovae; The Accelerating Expansion of the Universe through observations of supernovae; The circumstellar matter around Type Ia supernovae.*

Optical and NIR Astronomy from Dome A, Antarctica

Dome A, Antarctica, being the coldest point on earth, boasts the best atmospheric conditions for astronomical observations. I will present recent efforts on site survey, the Antarctic Survey Telescopes, and the Kunlun Dark Universe Survey Telescope. Scientific areas that can benefit from the site are: 1) early discoveries and continuous monitoring of supernovae; 2) near-IR observations; 3) high spatial resolution wide field surveys; and 4) exoplanet observations.

Relevant publications

1. Evidence for Two Distinct Populations of Type Ia Supernovae, Wang, Xiaofeng; Wang, Lifan; Filippenko, Alexei V.; Zhang, Tianmeng; Zhao, Xulin, 2013Sci...340..170W
2. Evidence for Type Ia Supernova Diversity from Ultraviolet Observations with the Hubble Space Telescope, Wang, Xiaofeng; Wang, Lifan; Filippenko, Alexei V.; Baron, Eddie; Kromer, Markus; Jack, Dennis; Zhang, Tianmeng; Aldering, Greg; Antilogus, Pierre; Arnett, W. David; and 86 coauthors, 2012ApJ...749..126W
3. Spectropolarimetry of Supernovae, Wang, Lifan; Wheeler, J. Craig, 2008ARA&A..46..433W,
4. Photometry of Variable Stars from Dome A, Antarctica, Wang, Lingzhi; Macri, Lucas M.; Krisciunas, Kevin; Wang, Lifan; Ashley, Michael C. B.; Cui, Xiangqun; Feng, Long-Long; Gong, Xuefei; Lawrence, Jon S.; Liu, Qiang; and 11 coauthors, 2011AJ....142..155W
5. Photometry of Variable Stars from Dome A, Antarctica: Results from the 2010 Observing Season, Wang, Lingzhi; Macri, Lucas M.; Wang, Lifan; Ashley, Michael C. B.; Cui, Xiangqun; Feng, Long-Long; Gong, Xuefei; Lawrence, Jon S.; Liu, Qiang; Luong-Van, Daniel; and 10 coauthors, 2013arXiv1309.3325W

Dr Jon Lawrence

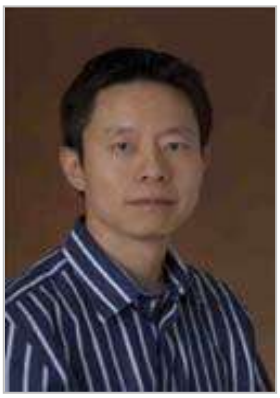
Australian Astronomical Observatory

Email: jl@aao.gov.au

Jon Lawrence is the Head of Instrument Science at the Australian Astronomical Observatory. Prior to this, he was a faculty academic at Macquarie University after spending close to a decade at the University of New South Wales as a Postdoctoral Fellow in the field of Antarctic astronomy. His PhD (at Macquarie University) was in the field of photonics. Jon has extensive experience in the development and implementation of instrumentation for astronomy (including telescope facility instruments, Antarctic site testing, and astrophotonics R&D), in the leadership of research groups, and the management of instrument projects. He has published over 200 papers.

Next generation Antarctic telescopes and instrumentation

Building upon the success of site testing campaigns and moderate-sized aperture science experiments at Antarctic plateau locations such as Dome A, we are now moving towards the next generation of optical/infrared Antarctic telescopes that will have larger apertures and state-of-the-art instruments. These new facilities will require significant investment and must therefore be carefully considered. Key questions include: what telescope configurations are most appropriate, what instruments should be prioritised, how will these facilities be powered, how will they operate remotely; and foremost: what science will be accomplished. Many partnership opportunities also exist for these facilities between Australian and Chinese researchers, institutes, and government agencies.



Prof. Di Li

Chief Scientist of Radio Astronomy Division,

National Astronomical Observatories (NAOC), CAS

Email: dili@nao.cas.cn

EDUCATION

Ph.D.*: Astrophysics, Cornell University, Ithaca, NY 2002*

Master*: Astronomy and Astrophysics, Cornell University, Ithaca, NY 2000*

Bachelor of Science*: Nuclear Physics, Beijing University, Beijing, China 1995*

Graduation Certificate*: Computer Science, Beijing University, Beijing, China 1995*

EMPLOYMENT

Chief Scientist *Jan 2012 –Present Radio Astronomy Department,NAOC*

Research Scientist *Jan 2007- Dec 2011*

Physics, Mathematics and Astronomy Division, California Institute of Technology

National Research Council Resident Research Associate *May 2005 – Dec 2006*

Jet Propulsion Laboratory/California Institute of Technology

Astronomer *Feb 2002 – May 2005 Harvard-Smithsonian Center for Astrophysics*

Dr. Li has led many research programs, including spectroscopic and mapping projects on Arecibo, FCRAO, SWAS, Spitzer, Herschel, and SOFIA. He has pioneered several observing and data analysis techniques, including HI narrow self-absorption technique and a new inversion solution to the dust temperature distribution. These techniques lead to important measurements of star forming regions, such as the formation time scale. He is the key member of the team who first discovered molecular oxygen in space and then confirmed it with Herschel. His works have been highlighted on Nature magazine as one of the Astronomy highlights of 2010 and have been cited by numerous review articles.

The Status of the Five-hundred-meter Aperture Spherical radio Telescope and related China-Australia Collaborations in Radio Astronomy

China is building the largest radio telescope in the world, namely, the Five-hundred-meter Aperture Spherical radio Telescope (FAST). FAST will be the most sensitive radio instruments in bands between 70 MHz and 3 GHz, thus holds the potential to make significant contribution in many fields of astrophysics and astrochemistry, e.g., pulsar, maser, and etc. I will report the status of the project. Multiple collaborative agreements and programs exist between NAOC and Australian Astronomical communities. I will focus on the progress in the collaborative efforts to build the focal plane array for FAST and to better define key science programs for FAST.

Relevant publications

1. Li, D, J. Kauffmann, Q.Zhang & W. Chen, "Massive quiescent cores in Orion. Dynamical state revealed by high resolution ammonia maps", 2013, ApJL, 768 (1) , L5
2. Li, D., Nan, R. & Pan, Z., "The Five-hundred-meter Aperture Spherical radio Telescope project and its early science opportunities", 2013IAUS..291..325L
3. Li, D & Goldsmith, Paul F., "Is the Taurus B213 Region a True Filament?: Observations of Multiple Cyanoacetylene Transitions", 2012, ApJ, 756,12L
4. Qian, L., Li, D.*, & Goldsmith, P. 2012, "13CO Cores in Taurus Molecular Cloud", 2012, ApJ, 760, 147

Prof. Bryan Gaensler FAA

ARC Centre of Excellence for All Sky Astro Physics/Usyd

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Professor Bryan Gaensler is an Australian Laureate Fellow at The University of Sydney and is Director of the Centre of Excellence for All-sky Astrophysics (CAASTRO). He received his PhD from The University of Sydney in 1998, and subsequently held positions at MIT, the Smithsonian and Harvard University before returning home to Australia in 2006. He has authored over 230 refereed papers on cosmic magnetism, neutron stars, supernovae and the interstellar medium, while his popular astronomy book "Extreme Cosmos" was published worldwide by Penguin in July 2012 and is now being translated into nine other languages. He was the 1999 Young Australian of the Year, gave the 2001 Australia Day Address to the nation, was awarded Australia's 2011 Pawsey Medal for outstanding research by a physicist aged under 40, and in 2013 was elected to the Australian Academy of Science.

A New Way of Looking At the Sky: Radio Astronomy in the Wide-Field Era

The key unsolved questions in astronomy demand entirely new approaches that require enormous data sets covering the entire sky. Professor Gaensler will describe a set of transformational wide-field radio surveys that Australian astronomers are now beginning to undertake, aimed at providing ground-breaking advances in our understanding of the Universe. These large and complex data-sets will lead to dramatic new insights on the evolution of galaxies and their supermassive black holes, on the origin and structure of cosmic magnetism, and on the properties of variable and transient radio sources. While pursuing these activities, we are also developing a strong focus on training the next generation of scientists, and on highlighting Australian innovation to the general public.

Prof. Xiaoyu Hong

Director

Shanghai Astronomical Observatory, CAS

Email: xhong@shao.ac.cn

***Education and Research Experience**:*

1978 – 1982 Xiamen University Bechelor

1982 – 1987 Department of Education Chongqing Yangtze River Shipping Company Teacher

1987 – 1990 Peking University Master

1990 – 1993 Shanghai Astronomical Observatory, CAS PHD

1993 – Now Working in Shanghai Astronomical Observatory, CAS

Hong Xiaoyu is the director in Shanghai Astronomical Observatory, CAS, where he works on the study of radio astronomy, specially the studies on the radio jet of AGN with VLBI, on the development of the Chinese VLBI network and Chang'e National Project and on the construction and management of the Shanghai 65m radio telescope.

Shanghai 65m radio telescope and Chinese VLBI network (CVN)

This paper will present a new 65m radio telescope near Shanghai and Chinese VLBI network (CVN). Shanghai 65m radio telescope was found in 2008 by Chinese Academy of Sciences, Shanghai government, and Chinese Lunar Explore Project. It is a fully steerable radio telescope with diameter of 65 meters. It will cover 1.4 – 46 GHz with 8 bands (L, S/X, C, Ku, K, Ka and Q). An active surface system was designed to obtain high efficiency at the higher frequencies. The general-purpose of the telescope is for radio astronomy, geodynamics, single-dish, VLBI, as well as for the tracking for Chinese Lunar missions. The main structure of the antenna with active surface system was completed in 2012. The receivers of L, S/X, and C bands have been installed and the other four receivers are plan to install in 2015. The first light was detected on 26th October, 2012. The telescope will start its regular operation in next year.

The Chinese VLBI Network takes 30 years for the establishment. Nowadays, CVN contains 5 VLBI stations and one correlation center, which has started performing the astronomical、geodetic and Chang'E observations. A project for previous studies for Space VLBI array will be also introduced in this paper.

Relevant publications

1. Periodic radio variabilities in NRAO 530: a jet-disc connection? An, Tao; Baan, Willem A.; Wang, Jun-Yi; Wang, Yu; Hong, Xiao-Yu, 2013MNRAS.434
2. Kinematics of the compact symmetric object OQ 208 revisited Wu, F.; An, T.; Baan, W. A.; Hong, X.-Y.; Stanghellini, C.; Frey, S.; Xu, H.-G.; Liu, X.; Wang, J.-Y. 2013A&A...550A.113

Mr Antony Schinckel

CSIRO Astronomy and Space Science

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Mr Antony Schinckel *is Director of the Australian Square Kilometre Array Pathfinder (ASKAP) radio telescope at Australia's national science agency, CSIRO.*

Mr Schinckel oversees design, construction and commissioning of ASKAP and its new site in a remote part of Western Australia, the Murchison Radio-astronomy Observatory (MRO). He is also heavily involved in Australia's SKA activities.

Prior to joining CSIRO, Mr Schinckel spent nine years as Director of Operations for the Smithsonian's Submillimetre Array (SMA) in Hawaii where he was responsible for the construction and operation of this major interferometer which is on a mountain some 4200m high. He also spent eight years commissioning and operating Caltech's Submillimetre Observatory (CSO), also in Hawaii. Before that he worked on instrumentation for optical and infra-red telescopes in Antarctica, on the 100m Effelsberg radio telescope in Germany, the 64m Parkes radio telescope in Australia and at the Anglo-Australian Observatory.

The Australian SKA Pathfinder

The Australian Square Kilometer Array Pathfinder (ASKAP) will be the fastest cm-wave survey instrument in radio astronomy. ASKAP, a $188 million facility, will consist of 36 12-meter 3-axis steerable antennas, each with a large 192 element chequerboard phased array feed (PAF) operating from 0.7 to 1.8 GHz, and digital beamformer preceding the correlator. The phased array feed receiver system on each antenna will provide the first ever major "radio camera", with a 30 square degree field-of-view, allowing rapid, deep spectral and continuum surveys of the entire visible sky. The large data-rates involved (~ 100 Tb/sec) require a massive fibre based data transmission system followed by a powerful custom supercomputer (correlator).

The site of ASKAP is the Murchison Radio Observatory, 315 kilometres north east of Geraldton, Western Australia, a new radio-observatory being developed as an SKA-ready site. The primary infrastructure construction is complete, including installation of the fiber connection from the MRO site to Perth and a unique geothermally cooled, RFI control compliant processing and control building.

CSIRO is now in the process of installing the receiver and support electronic systems and has commenced early commissioning. A description of the ASKAP system, future planned developments and SKA implications will be presented, along with early commissioning results.

Prof. Shengcai Shi

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Key Lab of Radio Astronomy, CAS

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Sheng-Cai Shi *was born in Nanjing, China, in 1965. He received the B.S. degree in electronic engineering from Southeast University, Nanjing, China, in 1985, the M.S. degree in electronic engineering from the Graduate School of Chinese Academy of Sciences (CAS), Nanjing, China, in 1988, and the Ph.D degree in radio astronomy from the Graduate University for Advanced Studies, Tokyo, Japan, in 1996. From 1988 to 1992, he was a Research Associate with Purple Mountain Observatory (PMO), CAS. From 1992 to 1998, he was a NRO/COE researcher with the Nobeyama Radio Observatory of NAOJ, Nobeyama, Japan. In 1998, he rejoined the PMO, where he is currently a Professor of radio astronomy, the head of the Millimeter- and Submillimeter-Wave Laboratory, and the director of Key Lab of Radio Astronomy of CAS. His research interests include physics and technologies of superconducting devices and detectors, THz technologies and applications, Gaussian optics and quasi-optical systems, and three-dimensional (3-D) electromagnetic problems.*

Development of a Terahertz Superconducting Imaging Array (TeSIA)

The terahertz (THz) regime is the frequency window to be fully explored in astronomy. Dome A in Antarctic, with an altitude of 4093 m and temperature below -80 Celsius degree in winter, is regarded as the best site on earth for astronomical observations in this frequency regime. Currently, China is proposing to build an observatory there, in which Dome A 5m Terahertz Telescope (DATE5) is one of two major telescopes. This talk will present the development of next generation instrument for DATE5, namely terahertz superconducting imaging array (TeSIA).

Dr Lisa Harvey-Smith

CSIRO Astronomy and Space Science

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Dr. Lisa Harvey-Smith is a research astronomer at the CSIRO in Sydney. Lisa uses radio telescopes to study cosmic magnetic fields, the birth of massive stars and the formation of supernova remnants. Her current research examines how stars transform at the end of their lives to become planetary nebulae.

Lisa is the project scientist for the Australian Square Kilometre Array Pathfinder (ASKAP) telescope. Her responsibilities include ensuring that science goals and engineering developments remain aligned, taking part in commissioning activities and planning ASKAP's early science program.

Dr. Harvey-Smith played a key scientific role in securing Australia's position as a host nation for the $2bn Square Kilometre Array radio telescope. Since then she has contributed to science-engineering tradeoff studies as part of the International SKA Science Working Group.

Lisa is Chair of the Chapter for Women in Astronomy for the Astronomical Society for Australia. She is a former Chair of the ATNF Time Assignment Committee, which assigns observing time on Australia's five national radio telescopes. She is a member of the Astronomical Society of Australia, The International Astronomical Union and a Fellow of the Royal Astronomical Society.

Lisa regularly speaks at national and international scientific meetings and is a passionate advocate for the Square Kilometre Array. She regularly contributes to the public understanding of science via radio, television and the printed media. She also gives public lectures at universities, research institutes, schools, colleges, museums and astronomical societies.

The Australian SKA Pathfinder: Panoramic imaging technology for radio astronomy

Both China and Australia are major partners in the Square Kilometre Array (SKA) project, which will be the world's largest and most powerful telescope. The SKA will enable us to study the origins and evolution of the universe as well as understanding its most mysterious components, known as Dark Matter and Dark Energy. Ahead of designing and building the SKA, which is slated to begin construction towards the end of this decade, a technology revolution is taking place. One of the novel technologies being developed is CSIRO's radio camera, or phased array receiver, which is a key part of the Australian SKA Pathfinder (ASKAP) telescope. This technology will produce a 30x increase in the efficiency of sky surveys, allowing astronomers to study the history and evolution of galaxies over the last 1-2 billion years of cosmic history. In this talk, the ASKAP project scientist will describe this new technology and its likely impact on astronomy.

Prof. Yueliang Wu

Institute of Theoretical Physics

University of Chinese Academy of Sciences

Email: ylwu@itp.ac.cn;

ylwu@ucas.ac.cn;

Yue-Liang Wu graduated in 1982 from Nanjing University. He received his Ph.D degree in 1987 at the Institute of Theoretical Physics (ITP), Chinese Academy of Sciences (CAS). From 1987 to 1996, he worked on particle physics and quantum field theory in Dortmund University, Mainz University, Carnegie-Mellon University and Ohio State University. In 1996, he returned to ITP-CAS as professor of theoretical physics, and served as the leader of Division I , deputy director and director of the Institute. He has also served as the director of Kavli Institute for Theoretical Physics China since 2006 and the director of State Key Laboratory of Theoretical Physics since 2011. He is now the executive vice president of University of Chinese Academy of Science.

Yue-Liang Wu is working on the elementary particle physics, quantum field theory and cosmology. His work on CP violation and quark-lepton flavor physics has been recognized widely and won the state award. He has developed an infinity-free loop regularization/renormalization method to understand the quantum structure of field theory and standard model. As the chief scientist of the national key project (973 program), his recent studies are focused on the dark matter and dark energy.

Theoretical and Experimental Studies on Dark Matter in China

I will briefly report the recent progresses on the theoretical and experimental studies of dark matter in China.

Relevant publications

1. Enhancement of Dark Matter Annihilation via Breit-Wigner Resonance. W.L. Guo, Y.L. Wu, Phys. Rev. D79 (2009) 055012, arXiv:0901.1450
2. The Real singlet scalar dark matter model. W.L. Guo, Y.L. Wu, JHEP 1010 (2010) 083 , arXiv:1006.2518
3. Implications of the first AMS-02 measurement for dark matter annihilation and decay. H.B. Jin, Y.L. Wu, Y.F. Zhou, to appear in JCAP, arXiv:1304.1997
4. Sommerfeld enhancements with vector, scalar and pseudoscalar force-carriers. Z.P. Liu, Y.L. Wu, Y.F. Zhou, to appear in PRD, arXiv:1305.5438
5. Holographic Dark Energy Characterized by the Total Comoving Horizon and Insights to Cosmological Constant and Coincidence Problem. Z. P. Huang, Y.L. Wu, Phys. Rev. D85 (2012) 103007 , arXiv:1202.4228 [gr-qc]

Prof. Matthew Colless FAA

The Australian National University

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Professor Matthew Colless is the Director of the Research School of Astronomy and Astrophysics (RSAA) at the Australian National University (ANU). He was for nine years previously the Director of the Australian Astronomical Observatory (AAO), Australia's national optical observatory. He obtained his BSc at Sydney, his PhD at Cambridge, and has held positions at Durham, Kitt Peak and Cambridge as well as at AAO and ANU. Prof. Colless led the 2dF Galaxy Redshift Survey and is currently leading the 6dF Galaxy Survey. Prof. Colless is a Fellow of the Australian Academy of Science, an Honorary Fellow of the Royal Astronomical Society, an ISI Citation Laureate and Highly-Cited Researcher, a Vice-President of the International Astronomical Union, and Vice-Chair of the Board of the Giant Magellan Telescope (GMT), a next-generation 25-metre optical telescope.

Dark matter from redshift and velocity surveys

Redshift and peculiar velocity surveys are effective ways to probe the nature and distribution of dark matter. Australia has a strong history in this field, starting with the 2-degree Field Galaxy Redshift Survey, (2dFGRS) which provided the first precise measurements of the total matter density of the universe as well as the relative amounts of dark matter, atomic matter and neutrinos. More recently the 6-degree Field Galaxy Survey (6dFGS) has combined a redshift survey with a peculiar velocity survey to map the density and velocity fields of the local universe. I will report some of the key results from the 6dFGS, including a precise, model-independent measurement of the Hubble constant, determinations of the bulk motion of galaxies on various scales, and complementary constraints on cosmological parameters from the redshift and peculiar velocity surveys. I will also discuss future peculiar velocity projects using Australian facilities - the TAIPAN Fundamental Plane survey on the UK Schmidt Telescope and the WALLABY HI Tully-Fisher survey on the Australian SKA Pathfinder - and opportunities for Chinese involvement in such projects.

Prof. Gong-Bo Zhao

National Astronomical Observatories, CAS

Email: gbzhao@nao.cas.cn

***Education and Research Experience**:*

2012- : Professor, NAOC

2009-2012: Senior research associate, Research Fellow at Institute of Cosmology and Gravitation, University of Portsmouth, UK

2007-2009: Postdoctoral researcher, Simon Fraser University, Canada

2004-2007: PhD student, IHEP, Chinese Academy of Sciences

Mainly work on cosmological tests of gravity. Performed the highest-resolution N-body simulations of modified gravity models, and proposed various new gravity tests on cosmological scales.

Understanding the accelerating universe

Universe is undergoing an accelerating expansion as first discovered by the supernova observations in 1998, which was awarded the Nobel prize in 2011. However, according to Einstein's gravity theory, which has been proved to be accurate within the solar system, the expansion of the universe should slow down instead. In my talk, I will seek solutions to the challenging cosmic acceleration problem by modified gravity or introducing dark energy, and propose novel cosmological tests of gravity and dark energy using latest observations.

Relevant publications

1. Examining the evidence for dynamical dark energy. Gong-Bo Zhao, Robert G. Crittenden, Levon Pogosian, Xinmin Zhang. Published in Phys.Rev.Lett 109, 171301 (2012). DOI:10.1103/PhysRevLett.109.171301. e-Print: arXiv: 1207.3804

2. Testing Gravity using the Environmental Dependence of Dark Matter Halos. Gong-Bo Zhao, Baojiu Li, Kazuya Koyama. Published in Phys.Rev.Lett. 107:071303 (2011). DOI:10.1103/PhysRevLett.107.071303. e-Print: arXiv: 1105.0922

3. N-body Simulations for f(R) Gravity using a Self-adaptive Particle-Mesh Code. Gong-Bo Zhao, Baojiu Li, Kazuya Koyama. Published in Phys.Rev.D83:044007 (2011). DOI: 10.1103/PhysRevD.83.044007. e-print: arXiv: 1011.1257

4. Cosmological Tests of General Relativity with Future Tomographic Surveys. Gong-Bo Zhao, Levon Pogosian, Alessandra Silvestri, Joel Zylberberg. Published in Phys.Rev.Lett.103:241301 (2009). DOI:10.1103/PhysRevLett.103.241301. e-Print: arXiv: 0905.1326

5. Searching for Modified Growth Patterns with Tomographic Surveys. Gong-Bo Zhao, Levon Pogosian, Alessandra Silvestri, Joel Zylberberg. Published in Phys.Rev.D79:083513 (2009). DOI: 10.1103/PhysRevD.79.083513. e-print: arXiv: 0809.3791

Prof. Warrick Couch FAA

Australian Astronomical Observatory

Email: warrick.couch@aao.gov.au

Warrick Couch is the Director of the Australian Astronomical Observatory (AAO). Prior to taking up this position just 5 months ago, he was Director of the Centre for Astrophysics and Supercomputing at Swinburne University of Technology in Melbourne. Warrick is also a founding non-executive director of Astronomy Australia Limited, and was its Chair from 2010-2012. He has also been Chair of the Anglo-Australian Telescope Board, Chair of the AAO Advisory Committee, and is currently the Vice-President of the Australian Institute of Physics. He has 35 years research experience in the fields of observational cosmology and galaxy evolution, and was a member of the Supernova Cosmology Project whose leader was a joint winner of the 2011 Nobel Prize in Physics for the discovery of the accelerating universe.

Nature versus nurture on a cosmic scale: future advancements with integral field spectroscopy

One of the most fundamental questions in modern cosmology is the extent to which the detailed properties of galaxies are determined by the conditions that prevailed at the time of their birth (i.e. "nature"), as opposed to environmental influences that have been at play throughout their lifetime (i.e. "nurture"). Spatially mapping the internal kinematics and the stellar and gaseous content of galaxies as a function of environment and cosmic time provides a powerful path to addressing this key question in a definitive way. Due to recent technological advances, we are now at the dawn of an exciting era where such information can be obtained for large galaxy samples via integral field spectroscopy. This talk will focus on the *SAMI Galaxy Survey*, which is using a new multiplexed integral field unit system on the 3.9m Anglo-Australian Telescope to obtain spatially resolved spectroscopy of a sample of ~3,000 galaxies in the local universe. In particular, it will highlight how this pioneering survey will, amongst other things, significantly advance our understanding of how galaxies are transformed both morphologically and in their star-forming patterns within groups, the most common environment in which galaxies reside.

Prof. Yipeng Jing

Shanghai Jiaotong University

Email: ypjing@sjtu.edu.cn

***Education and Research Experience**:*

1990---1992: International School for Advanced Studies, Italy ; PhD, Astrophysics ; PhD Thesis: The large scale structures in the Univers

1992-2000: postdocs in Italy, US, Gemnay, Japan

2000 – 2012: Shanghai Astronomical Observatory , Professor

2012—present: Shanghai Jiaotong University, Professor

Main Research Interest: use theories, computer simulations and galaxy surveys to study galaxy formation and cosmology

Probing the cosmic expansion with redshift distribution: prospects and theoretical challenges

Expansion of the Universe is found to be accelerating. Mysterious dark energy is one possible solution to explain the acceleration, and modifying the gravity theory is another. In order to find out what is driving the cosmic accelerating expansion, astronomers are carrying out huge observational projects. One powerful probe is the redshift distribution of galaxies on large scales. I will introduce the basic information of this observation and summarize the current status. Then I will introduce the future observations, especially the MS-DESI project, and outline theoretical challenges.

Relevant publications

1. Zheng, Y., Zhang, P., Jing, Y., Lin, W., Pan, J. 2013. Peculiar Velocity Decomposition, Redshift Space Distortion and Velocity Reconstruction in Redshift Surveys II. Dark Matter Velocity Statistics. ArXiv e-prints arXiv:1308.0886.
2. Okumura, T., Jing, Y.~P. 2011. Systematic Effects on Determination of the Growth Factor from Redshift-space Distortions. The Astrophysical Journal 726, 5.
3. Zhao, D.~H., Jing, Y.~P., Mo, H.~J., B{"o}rner, G. 2009. Accurate Universal Models for the Mass Accretion Histories and Concentrations of Dark Matter Halos. The Astrophysical Journal 707, 354-369.
4. Okumura, T., Jing, Y.~P., Li, C. 2009. Intrinsic Ellipticity Correlation of SDSS Luminous Red Galaxies and Misalignment with Their Host Dark Matter Halos. The Astrophysical Journal 694, 214-221.
5. Jing, Y.~P., Suto, Y. 2002. Triaxial Modeling of Halo Density Profiles with High-Resolution N-Body Simulations. The Astrophysical Journal 574, 538-553.

Prof. Karl Glazebrook

Swinburne University of Technology

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Karl Glazebrook is a Distinguished Professor at the Swinburne University of Technology. His career has spanned the U.K., U.S. and Australia including Professorships at Johns Hopkins University and Swinburne. His most notable scientific accomplishments are the development of the 'nod and shuffle' spectroscopic technique, characterising the bimodal colour and environmental distributions of local galaxies, the study of the morphological and spectroscopic evolution of galaxies at high-redshift using Gemini, HST and Keck and the development of innovative cosmological techniques such as 'Baryonic Acoustic Oscillations'. His most notable current service roles are Chair of the International Facilities Working Group of the Australian Astronomy Decadal 2016-2025 Plan and member of the Australian Research Council College of Experts.

Australian Wide Field Cosmology surveys with the AAT

Australia has a long tradition of using wide field spectroscopy to undertake cutting edge cosmology. I will review the highlights of the 2dF Galaxy Redshift Survey and the WiggleZ Dark Energy Survey and give a preview of our latest survey "OzDES".

Prof. Xiaowei Liu

Kavli Institute for Astronomy and Astrophysics, Peking University

Email: x.liu@pku.edu.cn

Xiaowei Liu is a Cheung Kong Scholar and professor of astronomy at Peking University. He received college education at Peking University in Astrophysics and received his PhD degree in 1992 from the Beijing Astronomical Observatory (now the National Astronomical Observatories), Chinese Academy of Sciences, after completing his PhD thesis at the European Southern Observatory in Munich, Germany. He then joined the Department of Physics and Astronomy, University College London, first as a postdoctoral, then as a senior research fellow. He joined the faculty of Department of Astronomy of Peking University in 2000. He is currently serving as the Acting Director of the Kavli Institute for Astronomy and Astrophysics at Peking University, and a Vice President of the International Astronomical Union (IAU).

Professor Liu's main research interest is in spectroscopic observations and theoretical analyses of emission line nebulae (planetary nebulae, H II regions), with an emphasis on the physical processes and radiative mechanisms governing photoionized low-density astrophysical plasmas. Studies of emission line nebulae yield information of stellar nucleosynthesis and the enrichment of the interstellar medium, and of the chemical evolution of galaxies. Currently, Prof. Liu is leading a large spectroscopic survey towards the Galactic anticenter with the newly built Chinese Large Sky Area Multi-object Spectroscopic Telescope (LAMOST). The survey shall yield spectra for several million Galactic stars, thus providing a unique data base to study the structure and probe the dynamical and chemical evolution of the Milky Way.

The LAMOST Galactic surveys

LAMOST (The Large Sky Area Multi-Object Fiber Spectroscopic Telescope; also known as the Guoshoujing Telescope) is an innovative quasi-median reflective Schmidt Telescope with an equivalent light collecting area of approximately 4 meter in diameter. It can simultaneously target 4,000 celestial objects in a field of view of 20 squared degree, the highest in the world at the moment. The construction was completed in 2009. Following two years' commissioning which successfully solved the fiber positioning problem and one year's pilot survey, the formal LAMOST Galactic surveys, expected to last five years, were initiated in the fall of 2012. The surveys are expected to yield optical spectra for millions of Galactic stars, sampling a significant volume of the Milky Way, in particular the disk, the defining structure that contains more than 90% of the baryonic matter and essentially all the angular momentum of the Galaxy. The spectra will deliver classification, radial velocity and and stellar parameters (effective temperature, surface gravity and metallicity for millions of stars. Together with Gaia which will provide accurate distances and tangential velocities for a billion stars, the LAMOST Galactic spectroscopic surveys will yield a unique dataset to study the stellar populations, chemical composition, kinematics and structure of the disks and their interface with the halo, identify streams of debris of tidally disrupted dwarf galaxies and clusters, probe the gravitational potential and dark matter distribution, map the 3D distribution of interstellar dust extinction, search for rare objects (e.g. extremely metal-poor or hyper-velocity stars), and ultimately advance our understanding of the assemblage of the Milky Way and other galaxies and the origin of regularity and diversity of their properties.

The LAMOST DR0 and DR1 data releases were released to the community in August 2012 and September 2013, and contained respectively 0.48 and 1.8 million quality spectra and the associated radial velocities and stellar parameters derived from the them. In this talk, I will present the scientific motivations, the current status of data collection and reduction and the preliminary scientific results of this ambitious survey program.

Dr. Barbara Cantinella

Centre for Astrophysics and Supercomputing

Email: bcatinella@swin.edu.au

Dr. Barbara Catinella is a researcher working in the area of extragalactic observational astronomy. After obtaining her PhD in Astronomy at Cornell University in 2005, she spent three years as a postdoctoral associate at the Arecibo Observatory in Puerto Rico, working on observations of atomic hydrogen gas in galaxies. Her next postdoctoral appointment brought her to the Max Planck Institute for Astrophysics in Garching, Germany, where she assumed a leadership role in the GALEX Arecibo SDSS Survey. This survey was a large, multi-wavelength effort designed to gain insights into the physical processes that transform massive star-forming galaxies into passive systems. In 2012, she was awarded a prestigious Future Fellowship by the Australian Research Council, and recently moved to Australia to join the staff of the Centre for Astrophysics and Supercomputing at the Swinburne University of Technology.

Cold gas in massive galaxies

Cold atomic hydrogen (HI) is a key component of galaxies, because it provides the fuel for future star formation. However, because of observational challenges and limitations of existing samples, we are still missing a clear picture of the role played by cold gas in the star formation cycle of galaxies. In particular, quantifying how the gas content varies with star formation and structural properties of galaxies, as well as with the environment that they inhabit, is of paramount importance for constraining models of galaxy formation. Equally important is to perform such studies on large and unbiased samples of galaxies, in order to obtain results that are truly representative of the local population. I will present results based on the recently completed GALEX Arecibo SDSS Survey, which was designed to provide such a representative sample for massive galaxies. I will discuss how the HI content of massive systems depends on other galaxy properties, and will point out the relevance of these findings for the future surveys that will be carried out with the Square Kilometer Array and its pathfinders.

Prof. Ye Xu

Purple Mountain Observatory, CAS

Email : xuye@pmo.ac.cn

Education

1999- 2002 Shanghai Astronomical Observatory, Shanghai, China, Ph.D, in Astrophysics

1996-99 Shanghai Astronomical Observatory, Shanghai, China, M.S. in Astrophysics

Professional Employment

2002 - 2004 Postdoc in Nanjing University

2004 - 2005 Associated researcher in Shanghai Observatory

2005 - 2008 Postdoc in Max-Planck-Institut fuer Radioastronomie

2008 - now Researcher in Purple Mountain Observatory

I am engaging in the study on molecular lines associated star-forming regions, molecular clouds and probing the spiral arm structure of the Milky Way with masers.

Mapping the Milky Way structure with masers

Astrometric VLBI observations of maser sources in the Milky Way are used to map the Galactic spiral structure and to determine fundamental parameters such as the rotation velocity and curve. Here, we will talk about an update on the VLBI results and give an outlook to future observations.

Relevant publications

1. The Distance to the Perseus Spiral Arm in the Milky Way, Xu, Y., Reid, M. J., Zheng, X. W., Menten, K. M., 2006, Science, 311, 54
2. Trigonometric Parallaxes of Massive Star Forming Regions: III. G59.7+0.1 and W 51 IRS2, Y. Xu, M. J. Reid, K. M. Menten, et al. 2009, ApJ, 693, 413
3. Trigonometric Parallaxes of Massive Star-forming Regions. VIII. G12.89+0.49, G15.03-0.68 (M17), and G27.36-0.16, Xu, Y., Moscadelli, L., Reid, M. J. et al. 2011, ApJ, 733, 25
4. On the Nature of the Local Spiral Arm of the Milky Way, Xu, Y., Li, J. J., Reid, M. J. et al. 2013, ApJ, 769, 15

Prof. Joss Bland-Hawthorn FAA

School of Physics, The University of Sydney

Email: jbh@physics.usyd.edu.au

In 1986, Joss obtained his PhD in astrophysics from the Royal Greenwich Observatory prior to taking up faculty appointments in Hawaii and Texas. In 1993, he moved to the Anglo-Australian Observatory where he was Head of a highly successful group that pioneered astronomical concepts: Nod & Shuffle, TTF, Dazle, Starbugs, WFMOS. In 2001, he proposed the field of astrophotonics that sits at the interface of astronomy and photonics. Revolutionary instruments have emerged from this new direction including PIMMS, GNOSIS, PRAXIS and SAMI.

Joss Bland-Hawthorn is the recipient of a Federation Fellowship at the University of Sydney where he is a Professor in Physics. He is an Associate Director and a founding member of the Institute for Photonics and Optical Science (IPOS). Joss has over 300 research papers, and is well known for his breakthroughs in astrophysics and instrumentation. With Ken Freeman, he pioneered the field of Galactic Archaeology which has given rise to new wave of million-star surveys RAVE, SEGUE, LAMOST, HERMES, and so on.

Joss is a recipient of the 2008 Muhlmann Award for experimental astronomy, and a recipient of the inaugural 2008 Group Achievement Award from the Royal Astronimical Society, and the Jackson-Gwilt medal in 2011. In 2010, he was the Leverhulme Visiting Professor to Oxford and Senior Fellow to Merton College. In 2011, he was the Brittingham Scholar at the University of Wisconsin and Professor Docente to the University of Bologna. In 2012, he was elected to the Australian Academy of Science.

The HERMES project – reconstructing the ancient Galaxy

The first building blocks of our Galaxy were likely to have been laid down in the first 300 million years after the Big Bang. The first stars that came into being in those early structures have long since disappeared but they may have left behind unique chemical signatures in today's stellar populations. Over the next 13 billion years, the Galaxy grew through a series of mergers and acquisitions into the corporate giant that surrounds us today – 100 billion stars and counting. This was undoubtedly a very complex process that we are far from understanding even with the most sophisticated computer simulations. All stars show evidence of chemical signatures that say something about their past. This is the motivation behind the HERMES instrument – a major new $15M facility at the AAT – that saw first light in October 2013. This is the first instrument wholly targetted at galactic archaeology (Freeman & Bland-Hawthorn 2002). The GALAH survey starting in early 2014 will attempt to reconstruct the early Galaxy history through the technique of chemical tagging.

Dr Elizabeth Wylie de Boer

The Australian National University

Email: elizabeth.wylie@anu.edu.au

Elizabeth Wylie de Boer currently holds a position as a Research Fellow at the Research School of Astronomy and Astrophysics at the Australian National University. She has been at the ANU since 2007, after graduating with a PhD from the University of Canterbury, New Zealand, in December 2006. Her area of research includes Galactic Archaeology and understanding the history of the formation and evolution of the Milky Way. She uses the combination of detailed chemical abundance and kinematic analysis of stars in the Galaxy in order to trace Galactic structure in the form of tidal streams and merger debris. She has connected field stars with the Omega Centauri globular cluster merger and is currently undergoing an extensive analysis of the Aquarius Stream to determine its origin. She is also heavily involved in the upcoming GALactic Archaeology with Hermes (GALAH) Survey which starts in 2014.

The Power of Galactic Archaeology in Understanding the Structure of the Milky Way

It is of vital importance to understand the structure of the Milky Way, as this provides the first step in extending this knowledge to extra-Galactic objects. Piecing together formation and evolution history of our own Galaxy is known as Galactic Archaeology. Our Galaxy has a very complex structure, containing tidal streams, tails and debris from various mergers that have taken place over the course of its existence. Much of this merger debris is now mixed into our Galaxy and disguises itself as field stars. Detailed chemical and kinematic analysis is now capable of disentangling the field stars from the remnant stars and we can now begin to work out detail of previous mergers and building blocks of our Milky Way. This talk will give an overview of the power of Galactic Archaeology and give some examples of recent studies that have discovered some of this fine-detail structure in our Galaxy.

Prof. Steven Tingay

International Centre for Radio Astronomy Research/Curtin University

Email: s.tingay@curtin.edu.au

Prof. Steven Tingay is a Western Australian Premier's Research Fellow, Director of the Curtin Institute of Radio Astronomy, Deputy Director of the International Centre for Radio Astronomy Research, and Director of the Murchison Widefield Array (MWA) project.

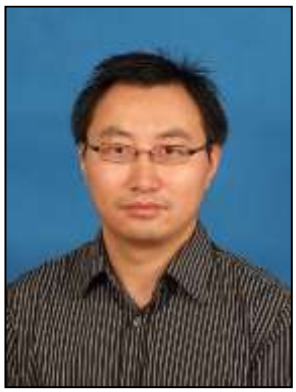
Steven has authored or co-authored over 130 papers in international refereed journals and has attracted over $80m of research funding over the last decade. His main interests are in radio astronomy and astrophysics. He has been responsible for the development of instrumentation and software that is now used around the world.

Steven currently leads the MWA project, a $50m international radio telescope recently completed and brought into its operational phase in the remote Murchison region of Western Australia. The MWA is the low frequency Precursor for the multi-billion dollar Square Kilometre Array (SKA) and he has been an active contributor to the international SKA project for the last decade.

Steven is an alumnus of The University of Melbourne and of the Australian National University.

Big Data concepts enable the next generation in radio astronomy

So much of the modern world is now defined via digital data collections, of increasing size and complexity, so-called Big Data. Science has always blazed a trail into the world of Big Data and radio astronomy is currently at the bleeding edge in this respect. High performance computing, high speed connectivity and massive storage facilities now defined the current and next generation of radio astronomy instrumentation. In this talk, I'll highlight the current state of the art in next generation radio astronomy instrumentation, the Murchison Widefield Array (MWA). The MWA has been constructed and is operated by an international consortium, as the sole low frequency Precursor to the Square Kilometre Array (SKA). I'll outline why the MWA is a leading exemplar of a Big Data defined telescope and explain the critical role the MWA plays in the development of SKA-low. I'll discuss the established connections between Australia and China on the path to SKA-low, opportunities for further immediate collaboration in MWA science and technology that will inform the SKA project, and other opportunities for next generation radio astronomy instrumentation, such as current discussions around collaboration on a Chinese-led space Very Long Baseline Interferometry mission.



Prof. Xi Kang

Purple Mountain Observatory, Chinese Academy of Science

Email: kangxi@pmo.ac.cn

***Education and Research Experience**:*

1995-1999, Lanzhou University, BS

1999-2004, Shanghai Astronomical Observatory, CAS, PhD

2005-2006, Oxford University, Postdoc

2006-2009, Max-Planck-Institute for Astronomy, Germany, Postdoc

2009-, Purple Mountain Observatory, Research professor

Working on large-scale structure and galaxy formation. Study on the color-bimodality of galaxies, AGN feedback in massive galaxies and the spatial distribution of subhalo in dark matter haloes and in the Milky-Way. I am recently interested in constraints on the warm dark matter using galaxy properties, such as Tylly-Fisher relation and satellites distribution in the Milky-Way.

Data challenge in cosmological N-body simulation

Cosmological simulation is now widely used to interpret the structure formation and evolution of the universe. However, the current simulation is limited by its size, in terms of the particles and data volume. I will highlight the current data challenge for cosmological simulation, including data management, data mining and its 3D visualization. I will also briefly present the biggest cosmological simulation (Pangu) produced by the Computational Cosmology Consortium of China.

Relevant publications

1. Kang, X., Maccio, A., Dutton, A., "The Effect of Warm Dark Matter on Galaxy Properties: Constraints from the Stellar Mass Function and the Tully-Fisher Relations", 2013, ApJ, 767, 22
2. Li, M, et al., "Bulk Flow of Halos in LCDM Simulation", 2012, ApJ, 761, 151
3. Kang, X., Li, M., Lin, W.P., Elahi, J.P., "Exploring Galaxy Formation Models and Cosmologies with Galaxy Clustering", 2012, MNRAS, 422, 804

A/Prof. Darren Croton

Swinburne University of Technology

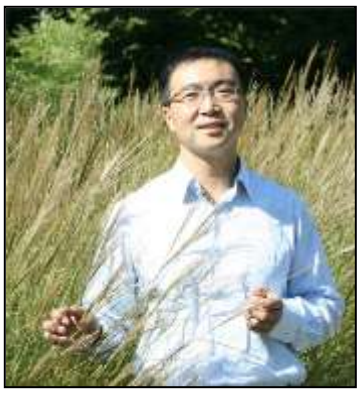
Email: dcroton@astro.swin.edu.au

Dr. Darren Croton is an Associate Professor and QEII Research Fellow in the Centre for Astrophysics and Supercomputing at Swinburne University of Technology. He is a theorist who works on the formation and evolution of galaxies in the local and distant Universe, using both simulations and large observational data sets. He has recently moved to address the challenging problem of big data in astronomy, focusing on data access through innovative virtual laboratories and cloud-based technologies

Dr. Croton is the Vice President of the Astronomical Society of Australia and served for many years as the Chair of the Australian National Institute for Theoretical Astrophysics. As a theorist he is member of many large international galaxy survey teams, including the Hubble Space Telescope Cosmic Assembly Near-IR Deep Extragalactic Legacy Survey (CANDELS) and the WiggleZ Galaxy Redshift Survey.

Astronomy in the era of big data

I will discuss the use of new technologies to build and deliver cosmological-scale galaxy formation simulations to the astronomy community. Combining high performance computing, a "web 2.0" front-end architecture, and cloud-based processing and storage, the AAL-NeCTAR funded "Theoretical Astrophysical Observatory" (TAO) will allow astronomers construct their own mock universes from a range of different dark matter simulations and galaxy models, filter the output through virtual telescopes, and download the results for their own scientific use. TAO will be of value to both large survey teams and individuals, and will serve a wide range of scientific needs far into the future.



Prof. Chenzhou Cui

National Astronomical Observatories, CAS (NAOC)

Email: ccz@bao.ac.cn

***Education and Research Experience**:*

Dr. Cui got his Ph.D. degree at NAOC in 2003. His Ph.D. thesis, "System Design for Chinese Virtual Observatory", is the first doctoral thesis in the field of Virtual Observatory around the world. From 2003 to 2005, Dr. Cui acted as the lead of LAMOST data management team. Since 2006, he became the chief information officer of NAOC, in charging of network infrastructure and e-Science projects of the institute. Under the lead of Dr. Cui, China-VO has always been being an active and positive member of International Virtual Observatory Alliance. LAMOST sky survey dataset is released by his team under the framework of Virtual Observatory.

Virtual Observatory, an e-Science Environment for Astronomy

During the last decades, Astronomy has been stepped into a data intensive era. TB datasets have been in hands, and PB datasets are emerging. Big data in astronomy brings challenges on data management, computing, bandwidth, software, and even the way to do research. Astronomers are working together with experts in computer science and information technology to provide an easy way to discover knowledge from big data. Virtual Observatory (VO) is a data-intensively online astronomical research and education environment, taking advantages of advanced information technologies to achieve seamless, global access to astronomical information. To allow users and applications to access distributed and heterogeneous datasets and services in a consistent and uniform way (interoperability), International Virtual Observatory Alliance (IVOA) has been defined a set of standards and specifications. However, the VO, especially the IVOA, does not address all of the challenges facing to astronomical research and education in a data-driven and data-intensive science research era. Standing on a broader vision, Astroinformatics will act as a sub-discipline of Astronomy to enable data-intensive astronomical science. In the talk, backgrounds and current status of VO research and development are introduced, challenges facing to Astronomy and requirements for Astroinformatics are discussed, activities and achievements from CAS astronomical observatories on e-Science are reviewed, prospects for VO in China is described.

Relevant publications

1. "Enhanced management of personal astronomical data with FITSManager", Chen-Zhou CUI, Dong-Wei FAN, Yong-Heng ZHAO, Ajit KEMBHAVI, Bo-Liang HE, Zi-Huang CAO, Jian LI, Deoyani NANDREKAR. 2011, New Astronomy, 17 (2012) 167-174. DOI: 10.1016/j.newast.2011.06.009
2. "SkyMouse: A smart interface for astronomical on-line resources and services", Chen-Zhou CUI, Hua-Ping SUN, Yong-Heng ZHAO, Yu LUO & Da-Zhi QI. 2008, Chinese Science Bulletin, 53 (10), 1479-1483
3. "VOFilter, Bridging Virtual Observatory and Industrial Office Applications", Chen-zhou Cui, Markus Dolensky, Peter Quinn, Yong-heng Zhao, Francoise Genova. 2006, ChJAA, 6 (3) , 379-386. 2006ChJAA...6..379C

Prof. Peter Quinn

University of Western Australia/International Centre for Radio Astronomy Research

Email: peter.quinn@uwa.edu.au

Prof. Peter Quinn received his BSc(Physics) from the University of Wollongong in 1978 and his PhD in astronomy from ANU in 1982. Prof. Quinn is an ICI highly cited researcher in astronomy and astrophysics with a special focus on computational cosmology and dark matter research. Following postdoctoral appointments at Caltech, NASA/STScI and ANU, he accepted a position as Division Head at the European Southern Observatory (Munich) in 1995. He was awarded a Western Australian Premier's Fellowship and took up a position at UWA in August 2006. In December 2008, he became the inaugural Director of the International Centre for Radio Astronomy Research (ICRAR), a new centre funded by the WA Government, UWA and Curtin University. ICRAR is focused on research excellence in astronomical science and technologies directed towards making fundamental contributions to the realization and scientific success of the SKA. Prof. Quinn became WA Scientist of the Year in 2012.

SKA and the challenge of big data in 21st century astronomy

The SKA will generate radio surveys of the sky which will result in individual final archival data products with volumes of order 10^{19} bytes. At sustained network speeds of 1Tb/s, individual data products will take more than 1 year to transfer between data centers. The total computing resources required to generate individual data products will need to be 10^{18} FLOPs sustained for more than a year. At 2020 prices, the tape storage needed for an individual survey could cost $\$10^{7}$-$\$10^{8}$ with an operational power budget of more than $XX per year. Astronomy needs to anticipate and plan for this scale shift in doing research that will occur in less than 10 years. We need to know if our current storage hierarchies, data formats, algorithms and systems architectures will scale from todays telescopes to SKA pathfinders (a factor of 10) to SKA1 (a factor of 100) and beyond. Where are the areas of concern? Where is innovation and new approaches needed? How are we going to do astronomy at the Exascale? We will address these questions based on current experience with SKA pathfinders and research programs going on at ICRAR as part of the SKA pre-construction program

Dr. Huaiming Song

Research Fellow of R&D Center, Sugon Information Industry Ltd.

Email : songhm@sugon.com

Huaiming Song received PhD from Institute of Computing Technology, Chinese Academy of Sciences in 2009. He was a postdoctoral research associate at the SCS laboratory, Illinois Institute of Technology (IIT, US), during 2009~2011. And he was also a visiting scholar at Argonne National Laboratory (ANL, US) in 2010 and 2011. His research interests are Large Scale Data Intensive systems, including data organization, query processing and optimization. He was working on I/O performance optimizing of data intensive systems. Dr. Song is now the director of Big Data department in R&D center of Sugon. He has been leading research and development of Sugon Big Data Machine, XData series products. XData family are developed for Big Data applications, which provide unified interface for structured and unstructured data processing. Now Sugon XData products are widely used for data analysis in many domains, such as sensor networks, finance, telecommunication, public security, scientific computing, etc.

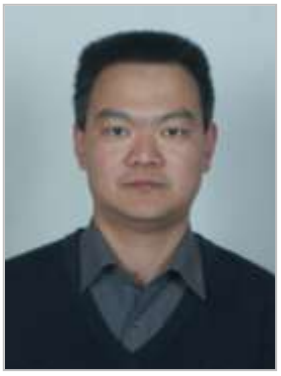
XData: Sugon all-in-one Big Data Machine

The term "Big Data" has now got a growing attention in both academia and industry with the fast pace of information explosion. Big Data is now in the face of enormous challenges, including capture, transfer, storage, analysis, search and visualization. Sugon XData 4.2 is an all-in-one Big Data machine, developed to partly solve these challenges, to provide complete solutions for big data applications. XData 4.2 system is a shared-nothing cluster, and includes a set of optimizing technologies of software and hardware. XData 4.2 provides users unified programming interfaces for access and processing both structured and unstructured data. This talk will include the key technologies and applications of XData. Based on Sugon XData, we are now devoting ourselves to providing complete solutions for Big Data applications in scientific research.

Relevant publications

1. Huaiming Song, Hui Jin, Jun He, Xian-He Sun, Rajeev Thakur, "A Server-Level Adaptive Data Layout Strategy for Parallel File Systems", Proc. of 2012 International Workshop on High Performance Data Intensive Computing(HPDIC 2012) In Conjunction With IEEE IPDPS 2012.
2. Huaiming Song, Yanlong Yin, Xian-He Sun, Rajeev Thakur, Sam Lang, "Server-Side I/O Coordination for parallel File Systems", Proc. Of the ACM/IEEE SuperComputing Conference, SC'11, Nov. 2011
3. Huaiming Song, Yanlong Yin, Yong Chen, XianHe Sun, "A Cost-intelligent Application-specific Data layout Scheme for Parallel File Systems", Proc. of the 20th International ACM Symposium on High Performance Distributed Computing, HPDC'11, June 2011.
4. Huaiming Song, Xian-He Sun, Yong Chen, "A Hybrid Shared-nothing/Shared-data Storage Scheme for Large-scale Data Processing", Best Paper Award, in Proc. of the 9th IEEE International Symposium on Parallel and Distributed Processing with Applications, ISPA'11, May 2011.
5. Huaming Song, Yanlong Yin, Xian-He Sun, Rajeev Thakur, and Samuel Lang, "A Segment-Level Adaptive Data Layout Scheme for Improved Load Balance in Parallel File Systems," Proc. of the 11th IEEE/ACM International Symposium on Cluter, Cloud and Grid Computing, CCGRID'11, May 2011

Invited Attendees



Dr. Bo Jin

Chinese Arctic and Antarctic Administration, SOA

Email: jinbo@caa.gov.cn

Antarctic Expedition Experience

Dec. 2003-Apr. 2005, wintering as station leader assistant in Zhongshan Station

Oct., 2007- March 2008, as the deputy leader of Chinese Dome A traversal team to the summit of Dome A for scientific investigations from Zhongshan Station

Oct., 2011- March 2012, as the leader of Chinese Dome A traversal team to the summit of Dome A for scientific investigations from Zhongshan Station

Prof. Yongtian Zhu

Nanjing Institute of Astronomical Optics and Technology, CAS

Email: ytzhu@niaot.ac.cn

Education & Research Experience

1986-1989, MS. Chinese Academy of science
1982-1986, BC. Changchun College of Optics and Fine Mechanics
2000 to present Professor, NIAOT
1995 to 1999 Senior Engineer, NAIRC,
1989 to 1994 Optic-mechanic engineer, NAIRC,

Major interests: *Detection technology on Exoplanets as well as High Resolution Spectrographs and imaging.*

Participated in the first High Resolution Spectrograph for Chinese 2.16-meter telescope; infrared imaging spectrograph of the China-Brazil Earth Resource satellite; PI of the focal plane instrument of LAMOST, in which successfully developed 16 low-resolution multi-object fibre spectrograph; PI of the Major International (Regional) Joint Research Project of NSFC; in charge of the large optic/IR telescope for Antarctic; has published over 40 papers.

Prof. Suijian Xue

Associate Director-General for Basic Research & International Cooperations

National Astronomical Observatories, CAS

Email: xue@nao.cas.cn

Suijian Xue received his BS degree in astronomy from Nanjing University in 1987 and PhD in astrophysics from University of Science and Technology of China in 1996. He spent three years from 1997 to 2000 conducting post-doctoral research at the Institute for Physical and Chemical Research of Japan (RIKEN) and National Astronomical Observatories of Chinese Academy of Sciences (NAOC). Xue is currently the Associate Director-General of NAOC, responsible for the Basic Research and International Cooperations.

He has been actively engaged in both bilateral and multi-lateral cooperation activities between China and a wide range of international communities in astronomy. He is a Board Member representing a Chinese consortium of institutes in the Thirty-Meter-Telescope International Observatory, LLC.

Xue's research interests focus on X-ray & multi-wavelength observations and studies on active galaxies and clusters of galaxies. He has more than 40 refereed publications, and was, in 2002, awarded the 1st Natural Science Prize of Tianjing Municipality for his research on "Multi-wavelength observation and study on galaxy interaction and merging process and the influence to the galaxy formation and evolution".

Prof. Jinliang Hou

Shanghai Astronomical Observatory, CAS

Email : houjl@shao.ac.cn

Jinliang HOU is the vice-Director of Shanghai Astronomical Observatory (SHAO), CAS, and is a Professor of Astronomy at the Research Center for Galaxies and Cosmology in SHAO. He got his PhD at SHAO in 1997. He has worked at Institut d'Astrophysique de Paris (IAP) between 1999 and 2000 as a visiting scholar. His main research interests are the Chemical Evolution of the Milky Way Galaxy and other disk spirals, Chemical Evolution of the Damped Lyman alpha systems, Open Clusters and the Galactic structure. He has authored and co-authored over 80 scientific papers. During the past years, he has led a research group in SHAO participating the China's large scientific project – LAMOST Galactic Structure survey. LAMOST is a highly innovative astronomical facility. It comprises a reflective Schmidt telescope with a large active segmented reflecting corrector and a focal plane with a robotic 4000 fibers which feeds 16 spectrographs. The telescope can observe 4000 objects in one exposure and therefore very efficient in taking stellar spectra. It has started full operation since last year, and now has already taken more than 1 million stellar spectra. Professor Hou's group is mainly in charge of the Milky Way disk survey. They try to survey the whole disk (visible in the telescope site) with concentration on several hundreds of open clusters, and will provide the largest open cluster spectral data base for further study.

Prof. Bo Peng

National Astronomical Observatories, CAS

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Bo Peng received his BSc on Astrophysics in 1987 in Peking University, got his PhD on Astrophysics in 1993 in Chinese Academy of Sciences. He became an associated Professor in 1995 at Beijing Astronomical Observatory, and a Professor in 2000 in National Astronomical Observatories, Chinese Academy of Sciences. He has been the Deputy Director of FAST (Five-hundred-meter Aperture Spherical Telescope) Project since 2007, and funding Director of the JLRAT (Joint Laboratory of Radio Astronomy and Technology) since 2010. He is currently the science Director of the SKA (Square Kilometre Array) Board of Directors in the SKA Organisation.

He has been interested in radio astronomy research and technology development, i.e., sky survey, transient sky, giant radio galaxies, space weather and telescope instruments related. He participated Miyun sky survey at 232 MHz with the MSRT (Miyun Synthesis Radio Telescope) during 1987 and 1997, joined the WENSS (Westerbork North Sky Survey) project in Netherlands for a year in 1993, worked at MPIfR(Max-Planck Institute for Radio astronomy) in Germany on IDV (Intraday variability) study for 2 years during 1997-2000. He has been involved in the global cooperation on SKA project since the beginning around 1993. He is one of the key persons to initiate, promote, and lead the world's largest single dish FAST project under construction.

Prof. Zhaohui Shang

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Tianjin Normal University

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Zhaohui Shang obtained his B. Sc. degree in astrophysics in 1988 and M.S. degree in astrophysics in 1991 from Nanjing University, China. He worked as an assistant researcher at Purple Mountain Observatory for 5 years before he went to graduate school at the University of Texas at Austin and earned his Ph.D. in Astronomy there in 2003. He did his postdoc at University of Wyoming. He is currently a professor at Tianjin Normal University, China, and holds an adjunct position at National Astronomical Observatories, CAS, leading the Antarctic Astronomy Group at NAOC to develop the Control, Operation and Data System as well as the pipeline for AST3. He joined the 2009/2010 traverse to Dome A, Antarctica for astronomical projects. His astrophysical research interests include multi-wavelength study of quasars, study on relationship between black hole growth and galaxy evolution, and time-domain astronomy

Prof. Xinmin Zhang

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In 1991 Xinmin Zhang graduated from the University of California at Los Angeles (UCLA) obtaining a Ph.D from the Department of Physics and Astronomy with Professor Roberto Peccei. From 1991 to 1996 he was a postdoctoral fellow in US and returned to China in August 1996 to work at the Institute of High Energy Physics. In 1997 he won the Chinese Academy of Sciences "Hundred Talents" award. In 1998 he was promoted to a full professor. In 1999 he won the NSFC "Outstanding Youth" award. He has been working on cosmology and particle physics, so far published more than 160 papers with a total of more than 7,000 citations. In 1999-2000, his group proposed the non-thermal mechanism of WIMP dark matter production and warm WIMP model; in 2003 proposed a neutrino dark energy model predicting neutrino mass varying; in 2004, proposed a new scenario of dark energy, dubbed Quintom. In 2005-2006 his group proposed to test the CPT symmetry with the cosmic microwave background radiation polarization data and was the first group to do the data analysis on this topic.

Prof. Xingwu Zheng

School of Astronomy and Space Science, Nanjing University

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Education and research Experience:

1982-1984 Harvard University, visiting scientist, Department of Astronomy

1960-1965 Bachelor of Science;, Nanjing University, Nanjing, China,

Professional Employment:

2001-present, Professor, Department of Astronomy, Nanjing University

1990-2001: Associated Professor, Department of Astronomy, Nanjing University

1980-1990: Lecture, Department of Astronomy, Nanjing University

Research field :

- *Molecular cloud and star formation*
- *Astrophyiscal masers*
  Dynamics of masers in protostellar disks and molecular outflows
  Megamasers in extragalactic disks
  Astrometric VLBI observations of masers
- *Galactic structure and kinematics*

Early Career Researchers

Dr. Catherine Braiding

University of New South Wales

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Catherine Braiding is a postdoctoral researcher at the University of New South Wales, working on the Mopra Southern Galactic Plane CO Survey, which aims to map the distribution and dynamics of carbon monoxide in our galaxy. Together with maps of neutral carbon from Nanten2, and C+ from the HEAT telescope in Antarctica, these data will allow us to understand how molecular clouds form. Catherine has also modelled the influence of magnetic fields (in particular, the Hall effect) on the gravitational collapse of molecular cloud cores into protostars, and the interactions that occur between supernova remnants and molecular clouds.

Dr. Joanne Dawson

CSIRO

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Jo Dawson is a Bolton Fellow at CSIRO Astronomy and Space Science, and an expert in the Galactic interstellar medium. Her work has addressed the formation and evolution of molecular clouds and stars, and the role of large-scale stellar feedback in galaxy evolution. She is the Principle Investigator of SPLASH - an international survey project using the Parkes telescope to map hydroxyl throughout the Southern Milky Way. She gained her PhD in 2010 from Nagoya University, Japan, and was previously an Australian Research Council Super Science Fellow at the University of Tasmania.

Dr. Paul Hancock

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I am an Early Career Research Fellow currently at Curtin University. I obtained my PhD at the University of Sydney, where I worked on the Australia Telescope 20GHz (AT20G) survey. I then continued to work as a Super Science Fellow in radio transients at USYD where I helped to create the Variable And Slow Transients (VAST) prototype pipeline, including the source finding algorithm Aegean. My interests are in radio transients including: supernovae, gamma-ray bursts, and tidal disruption events. I lead a project that will use the Murchison Wide-field Array (MWA) to use the scintillation of extragalactic radio sources to trace the turbulent structure of gas within the Milky.

Dr. Mike Ireland

Australian Astronomical Observatory

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Dr Michael Ireland obtained his PhD from he University of Sydney in 2006, working jointly on optical stellar interferometry instrumentation and stellar astrophysics. From 2006 to 2008, he was a Michelson Postdoctoral Fellow at the California Institute of Technology, developing the technique of high-contrast aperture mask interferometry behind adaptive optics. From 2008 to 2011, he lead the Precision Astronomical Visible Observations (PAVO) beam combiner at the SUSI and CHARA interferometers while based at the University of Sydney as an ARC Postdoctoral fellow. Since 2011 he has been a Lecturer in astrophotonics in a joint position between Macquarie University and the Australian Astronomical Observatory.

Dr. Sergio Leon-Saval

The University of Sydney

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Sergio G. Leon-Saval was awarded his PhD by the University of Bath, UK, in 2006 working at the Centre for Photonics and Photonic Materials. He is a DVCR Research Fellow with the Institute of Photonics and Optical Science (IPOS) at the School of Physics, University of Sydney, Australia. Dr Leon-Saval has over nine years experience in the area of photonics and optical fibres. He has more than 5 years experience on the fabrication, development and testing of photonics technologies for astronomical instrumentation, area known as Astrophotonics. Some of those technologies have already being implemented in fully commissioned telescope instruments.

Dr. James Miller-Jones

Curtin University

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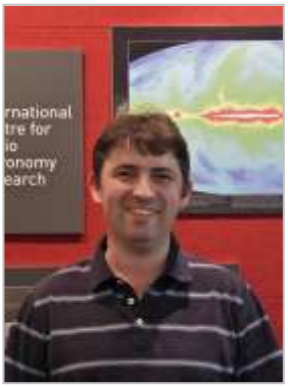
James Miller-Jones received his DPhil from the University of Oxford in 2006. Following a postdoctoral appointment at the University of Amsterdam, he took up a prestigious Jansky Fellowship at the National Radio Astronomy Observatory in the United States. In 2010, he moved to Curtin University in Perth, Australia, as a Curtin Research Fellow. He works primarily on accretion physics and the formation of jets, focussing on X-ray binaries, which he uses to study the universal connection between accretion and outflow around compact objects. His expertise also encompasses high angular resolution radio astronomy, studying black hole formation via high-precision astrometric observations.



A/Prof. Chris Power

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I am a theoretical astrophysicist who uses supercomputer models to study how galaxies form and evolve over cosmic time. I received my PhD from Durham Universisty (UK) in 2003, where I worked under the supervision of Prof. Carlos Frenk on the distribution of dark matter in galaxies. Subsequently I held postdoctoral positions at the Centre for Astrophysics and Supercomputing at Swinburne University (Australia) and with the Theoretical Astrophysics Group at the Univesity of Leicester (UK), before taking up a Research Associate Professorship at the International Centre for Radio Astronomy Research at the University of Western Australia in early 2011.

Dr. Willem van Straten

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Willem van Straten is a Senior Lecturer in the Faculty of Information & Communication Technologies at Swinburne University of Technology, working in the Centre for Astrophysics and Supercomputing. After completing his PhD on high-precision pulsar timing, Willem enjoyed post-doctoral appointments at the Netherlands Foundation for Research in Astronomy (ASTRON) and The Centre for Gravitational Wave Astronomy (The University of Texas at Brownsville). He is the primary author and maintainer of two scientific data analysis packages used by the international community of pulsar astronomers, and he is currently leading the design of the pulsar timing instrumentation for the Square Kilometre Array.

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