

Annual Report 2015



AMSI's mission

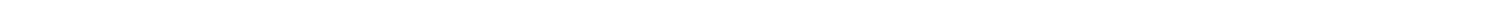
THE RADICAL IMPROVEMENT OF MATHEMATICAL SCIENCES CAPACITY AND CAPABILITY IN THE AUSTRALIAN COMMUNITY THROUGH:

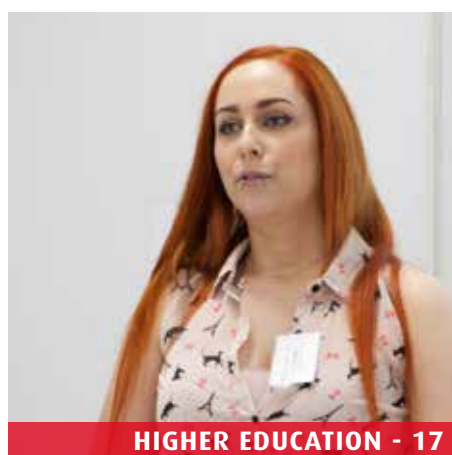
The support of high quality mathematics education for all young Australians.

Improving the supply of mathematically well-prepared students entering tertiary education by direct involvement with schools.

The support of mathematical sciences research and its applications including cross-disciplinary areas and public and private sectors.

The enhancement of the undergraduate and postgraduate experience of students in the mathematical sciences and related disciplines.





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From the Chair



Dr Ron Sandland AM FTSE
Chair



“The role of the mathematical sciences has been explicitly recognised through investment in STEM education and digital literacy.”

I wrote in my last report that “Australia as a nation is facing some very significant challenges; as the minerals boom draws to a close we must increase our productivity or face the reality of a reduced standard of living”. It is therefore gratifying that the Australian Government has now radically increased the level of urgency with which the above issues can be addressed through its \$1 billion commitment to science and innovation. The role of the mathematical sciences has been explicitly recognised through investment in STEM education and digital literacy. The new policy represents explicit recognition of the role of innovation in Australia’s transformation.

AMSI’s leadership in this domain has played an important part in this national recognition. The role of Professor Ian Chubb as Australia’s Chief Scientist in catalysing the change in government policy was seminal and he leaves the Office

of Chief Scientist with AMSI’s profound gratitude. We also welcome Dr Alan Finkel to the office and wish him continued success in the role.

AMSI’s Industry Advisory Committee, chaired by Dr Mark Lawrence, has been finding a very strong receptiveness to the need to address these issues among the industry leaders with whom they have met.

Education at all levels is key and AMSI’s advocacy in this area has focused on addressing the slide in students taking higher level mathematics courses, reversing the removal of mathematical prerequisites for tertiary study, and enhancing the training of mathematical educators.

It is particularly pleasing that the BHP Billiton Foundation has chosen to invest \$22 million in the CHOOSEMATHS program, a partnership with AMSI to address public perception of women and girls in mathematics, improve education and teacher standards and improve engagement with mathematics. I would particularly like to thank our Director, Professor Geoff Prince and Ms Janine McIntosh for their tireless work with the Foundation in securing this investment, and to the far-sighted leadership of BHP Billiton in recognising this need.

In other areas AMSI continues to develop its portfolio — AMSI’s Higher Education Program under Simi Henderson’s indefatigable leadership continues its upward trajectory, and AMSI Intern, led by Hannah Hartig, ably acting for Cate Ballard, has grown to embrace co-investment by eight universities in NSW and Victoria.

AMSI continues to benefit greatly from the commitment of its board members and the members of its hard-working advisory committees. I would particularly like to pay tribute to AMSI’s wonderful and committed staff without whose efforts none of the above could have been achieved.

Sadly, in a year in which the ERA rankings have affirmed the excellence of Australia’s university researchers across the mathematical sciences, I must record the death of one of its titans, Professor Peter Hall FAA FRS AO, whose support of and commitment to AMSI was of inestimable benefit to us, as was his unassuming personal friendship to so many.

From the Director



Professor Geoff Prince
Director



Working across all stages of the pipeline, AMSI continues to progress its mission to radically improve Australia's mathematical sciences capacity and capability.

Key priorities in 2015 were:

- Restore university maths prerequisites from their historic low and turn around declining school mathematics enrolments
- Train unqualified teachers of school mathematics and secure the supply of future maths teachers
- Increase the number of girls studying maths and women employed in the quantitative professions
- Boost engagement between Australian business and mathematical sciences research

This year we have achieved significant milestones in each of these areas, through our programs as well as advocacy and policy development.

Our 2015 *Discipline Profile* attracted considerable media attention when we reported that only 14 per cent of Australia's science degrees were requiring Year 12 intermediate mathematics, with none in NSW. There is no doubt that the absence of prerequisites is contributing to the continuing decline in Year 12 enrolments in intermediate and advanced mathematics. We have enlisted the public support of current and former Chief Scientists, government ministers and eminent scientists and our advocacy has in part been responsible for the foreshadowed reintroduction of prerequisites by the University of Sydney. We continue to work strategically to bring about much needed progress on this critical issue.

AMSI has been campaigning for action by governments and administrations at all levels to address out-of-field teaching in mathematics. Currently, Australia stands out in the OECD as having between 30 and 40 per cent of Years 7-10 mathematics classes without a suitably trained teacher. In 2015, we submitted proposals to the Education Council, the Department of Education and Training and the Office of the Chief Scientist. I believe we will see these proposals begin to bear fruit in 2016.

April marked the launch of AMSI and BHP Billiton Foundation's five-year partnership program, CHOOSEMATHS. This was a result of a year of planning by Janine McIntosh at AMSI and Michelle Raftus at the Foundation. Without doubt this is Australia's most significant program to improve the participation of girls and women in the mathematical sciences. I am

“AMSI’s advocacy has in part been responsible for the foreshadowed reintroduction of prerequisites. We continue to work strategically to bring about much needed progress on this critical issue.”

pleased to report that the project is well underway with 15 staff now on the CHOOSEMATHS team. You can read more about this landmark program in this *Annual Report* (pg 25).

Led by Mark Lawrence and Adelle Howse, AMSI's Industry Advisory Committee has undertaken the first stage of a major project to scope and improve mathematical sciences capacity within Australia's private and government agency sectors. Committee members conducted substantial face-to-face inter-

views with nearly 30 senior executives with results to underpin the second stage of the project in 2016. Our primary intention is to establish effective communication between our member schools and departments and the employers of their graduates.

It is a pleasure to acknowledge the achievements of Professor Ian Chubb, Australia's former Chief Scientist. AMSI worked closely with Professor Chubb and his office and our success must be seen in the context of the powerful STEM agenda he has created. The resulting commitment by both sides of politics to undertake long-term science and innovation planning is warmly welcomed by AMSI and its membership.

I thank AMSI's Board and committee members for their continued commitment and input in 2015. In particular, our Board Chair, Ron Sandland, and Deputy Director, Gary Froyland, have both provided valuable strategic direction and advice to the AMSI Executive.

AMSI's program managers and dedicated staff have once again delivered enormous benefit to our stakeholders. Cate Ballard and Hannah Hartig have overseen the expansion of the PhD intern program in partnership with eight universities, while Simi Henderson has led our research and higher education programs to new attendance and delivery records. I also acknowledge the efforts of Janine McIntosh, and new CHOOSEMATHS Executive Director, Inge Koch, who are delivering on this important initiative. Supporting this work, Mari Ericksen continues to transform our public and stakeholder engagement and Rod Birch brings sound financial management to our growing enterprise. Finally, my personal thanks go to Anne Nuguid, my executive assistant from 2009 to 2015, for her tireless support and initiative. Anne has joined the AMSI Intern program as a senior project officer. Following this move, AMSI welcomed Kirsten Doert as my executive assistant.

Members

FULL MEMBERS



ASSOCIATE MEMBERS



GOVERNMENT AGENCIES



SOCIETIES



List of members as of May 2016

\$22m

FIVE-YEAR

CHOOSEMATHS

PARTNERSHIP WITH

BHP BILLITON

FOUNDATION LAUNCHED



PAGE 25

\$80k

BOEING

INVESTMENT TO

EXPAND **AMSI**

TEACHER TRAINING

RESOURCES



PAGE 23

**RAPID
EXPANSION**

OF AMSI INTERN & SCHOOLS

programs as **AMSI**

strengthens capacity

to drive its vision for

Australian mathematics

PAGE 21 & 23

**1000
RESEARCHERS**

ATTEND AMSI
EVENTS IN 2015

PAGE 13

AMSI
SPONSORS

**21
WORKSHOPS**



PAGE 13 & 14

**DOUBLED
ATTENDANCE OF
WOMEN**

AT FLAGSHIP EVENTS
SINCE 2011 (117 IN 2015
UP FROM 55 IN 2011)

PAGE 17

**AMSI INTERN
BUSINESS
DEVELOPMENT
OFFICERS
NOW EMBEDDED
ACROSS NSW & VIC
UNIVERSITIES**



PAGE 21

**AMSI INTERN
CO-INVESTMENT
PARTNERSHIP
LAUNCHED
WITH EIGHT
PARTNER
UNIVERSITIES**



PAGE 21

**ACE NETWORK
LAUNCHED**



Connecting Australian
& international mathematical
science communities
with the launch of the
**ADVANCED COLLABORATIVE
ENVIRONMENT (ACE) NETWORK**

PAGE 13

**ALMOST
3000
FACEBOOK
LIKES**



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AMSI AUSTRALIAN
MATHEMATICAL
SCIENCES
INSTITUTE

**NEW
BRANDING
LAUNCHED IN 2015**

PAGE 27

**19%
INCREASE**

Media coverage increases by
19 per cent since 2014 with
50 MEDIA ARTICLES IN 2015

PAGE 27

**600
RESEARCH STUDENTS & ECRS
ATTENDED AMSI TRAINING
EVENTS IN 2015**



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Contributed to representation of
the mathematical sciences in the
consultation process for the

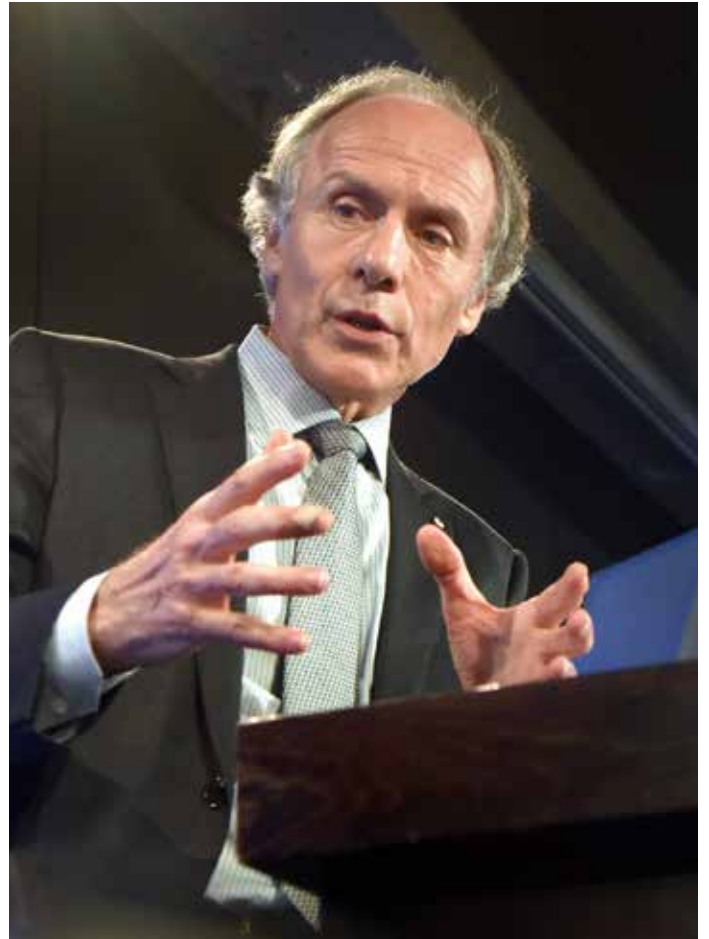
**\$1 BILLION NATIONAL
INNOVATION & SCIENCE AGENDA**



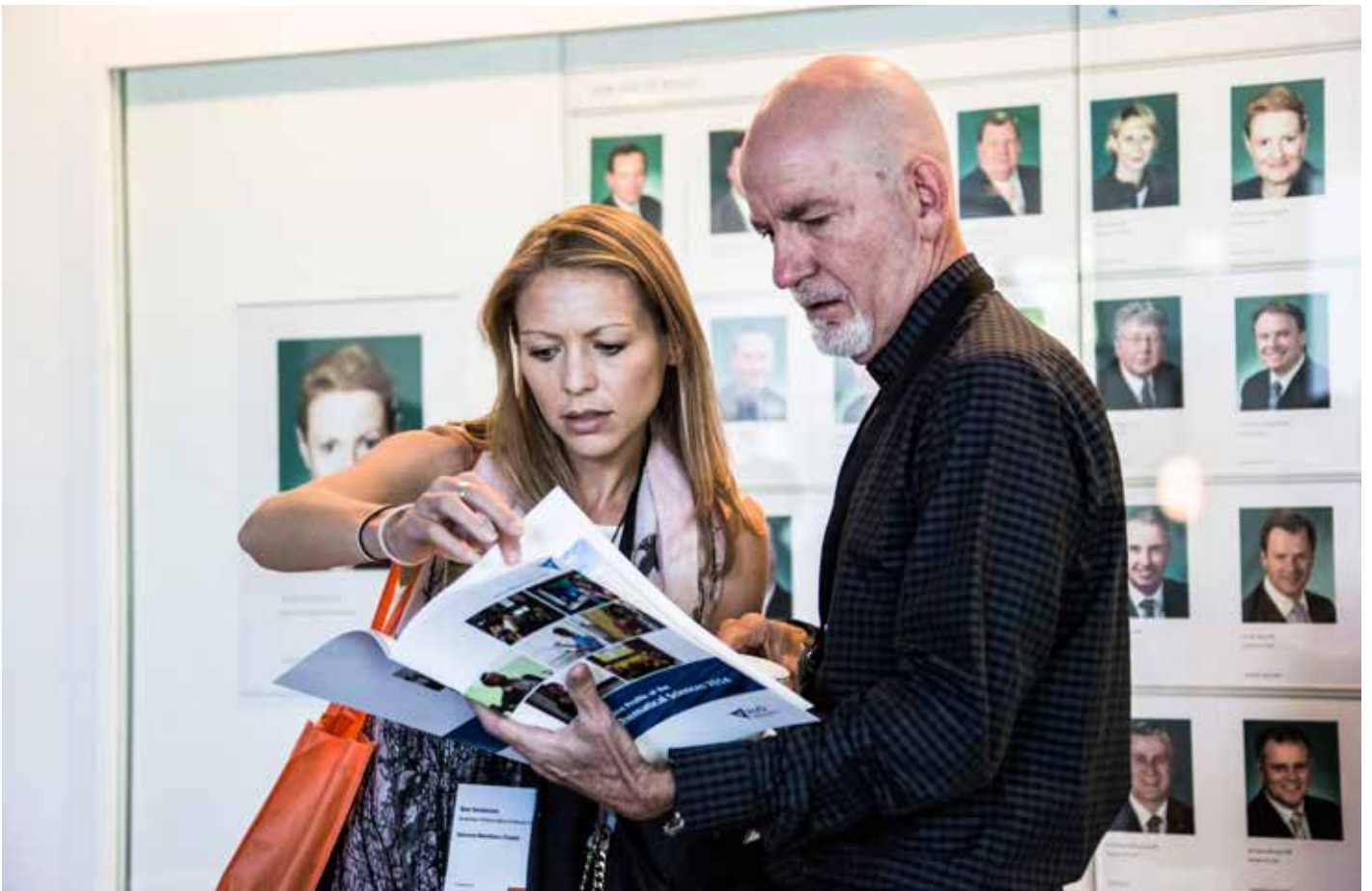
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Professor Ian Chubb at Science Meets Parliament PHOTO: MARK GRAHAM



Dr Alan Finkel at Science Meets Parliament PHOTO: MARK GRAHAM



Simi Henderson (AMSI) & Dr Kevin Larkin (Griffith University) at Science Meets Parliament PHOTO: LORNA SIM

As the central voice for Australia's mathematical sciences, AMSI plays an active role in the development of national research policy and frameworks to help shape Australian innovation for the future. We continue to drive a policy and advocacy agenda to achieve critical reform at all key stages of the mathematics pipeline from school-based and higher education, research training and funding to industry collaboration and innovation.

In 2015, AMSI delivered the following policy submissions:

- *Review of Research Policy and Funding Arrangements*
- *ACOLA Research Training System Review Submission*
- *Vision for a Maths Nation*
- *Response to Vision for a Science Nation from the Australian Mathematical Sciences Institute*

These are available online: amsi.org.au/submissions/

Significantly AMSI represented the mathematical sciences and cognate disciplines during the consultation phase of the Australian Federal Government's \$1 billion *National Innovation and Science Agenda*. An important platform to highlight critical challenges facing Australian research and innovation, our submission included key recommendations in line with AMSI's core priority areas, including reform to improve STEM education at all levels, higher education and research training frameworks and cross-disciplinary and industry research engagement. The delivery of this government policy framework in 2015 represented a turning point for national investment in STEM, science, research and innovation.

The fourth edition of the *Discipline Profile of the Mathematical Sciences* revealed the current status of Australian mathematics at all stages of the pipeline from school and higher education, research and research training, and graduate careers. This data is supported by key priorities outlined for government and peak body intervention and action in AMSI's 2015 core policy document, *Vision for a Maths Nation*.

THE AUSTRALIAN MATHEMATICAL SCIENCES IN 2015

The Australian Academy of Science has estimated that the mathematical and physical sciences are worth \$145 billion to the Australian economy. Despite this profound economic impact, Australia continues to run a mathematical deficit, with the growing disparity between demand and supply threatening future prosperity. This is attributable to a number of factors, including a lack of university mathematics prerequisites, poor student and career engagement, teacher quality and supply of mathematically prepared graduates. In particular, Year 12 participation in high-level mathematics continues to fall (as of 2013, enrolments in advanced maths had dropped by 32 per cent since 1995) resulting in a drought of mathematically prepared graduates. Additionally, due to a range of cultural and social factors the number of women and girls participating in mathematical sciences and STEM remains critically low with only 30 per cent of undergraduate and graduate students female. Despite these challenges, the Australian mathematical sciences continue to outperform other science fields with a 28 per cent ARC Discovery grant success rate significantly higher than the 21 per cent success rate recorded by the other science fields since 2011.

Outgoing Australian Chief Scientist, Professor Ian Chubb, has been

a tireless advocate for the mathematical sciences and STEM during his tenure. His leadership and commitment to the protection of Australia's future technological and innovation capacity has provided a strong platform for AMSI to progress its policy agenda. In particular we have welcomed the opportunity to actively consult on key policy frameworks including the submission of detailed responses to *Vision for a Science Nation* and the ACOLA Research Training System Review. Professor Chubb has regularly shown support for AMSI and its members, most recently through his contribution to a STEM special featured in the November issue of *the Update*. Along with incoming Chief Scientist, Dr Alan Finkel, he joined a chorus of STEM leaders in support of AMSI's campaign for the reintroduction of university mathematics prerequisites. We look forward to continuing to drive a strong STEM agenda with Dr Finkel as he steps into Australian Science's top role in 2016.

OUR VISION FOR THE MATHEMATICAL SCIENCES

With 75 per cent of Australia's fastest growing employment areas requiring STEM, it is essential to ensure Australia has the mathematical and statistical skills to remain internationally competitive and protect national security, population health and climate stability into the future. Future mathematical literacy requires decisive policy action and reform today.

Key AMSI Policy Recommendations:

- *Restore university maths prerequisites from their historic low and turn around declining school mathematics enrolments*
- *Train the unqualified teachers of school mathematics and secure the supply of future maths teachers*
- *Increase the number of girls studying mathematics and women employed in the quantitative professions*
- *Boost the engagement of Australian business with mathematical sciences research*

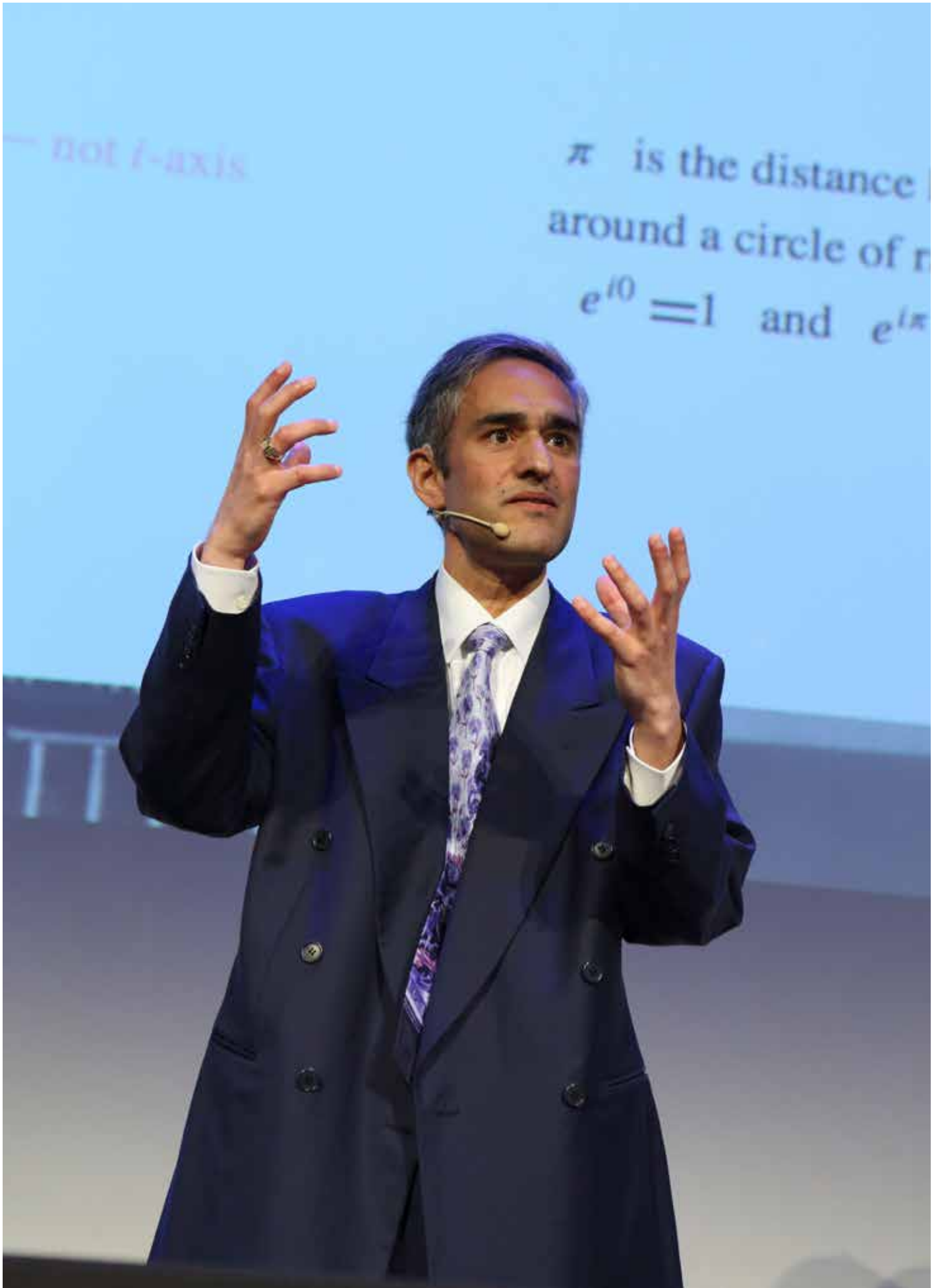
ADVOCACY

AMSI represents the mathematical sciences adding its voice to the following advisory panels and task forces:

UTS review panel (2013–14), National Committee for the Mathematical Sciences, Bid Committee for ICME.14 in 2020, Australian Mathematical Society (AustMS) Steering Committee, AustMS Council, Decadal Plan for the Mathematical Sciences Executive Committee and Australian Technology Network of Universities IDTC Board.

The Director of AMSI attended the following external events:

- *ASEARC meeting, FYIMaths National Forum, Science Meets Parliament, Australian Academy of Science meeting on economic value of STEM,*
 - *STEM Education Conference, MAGIC at the Office of the Chief Scientist and meetings with the Chair of ATSIHEAC.*
-



Professor Arun Ram giving a public lecture at the AMSI Winter School at the University of Queensland PHOTO: KAYLENE BIGGS

AMSI's outreach initiatives strengthen awareness and understanding of the mathematical sciences while fostering collaboration and engagement at all stages of the mathematical pipeline.

Further building the discipline's public profile, community engagement included a series of public events, as well as media, flagship publications and online platforms. Focusing on AMSI's key policy priorities, outreach activities highlighted key challenges facing Australian mathematics and STEM capability for the future.

PUBLIC EVENTS

AMSI continues to incorporate public lectures and panel discussions into its flagship training and research event programs. Appealing to broader audiences, these events bring the discipline to life by providing real-life context for an often-complex branch of research. Additionally, AMSI's women in mathematics events provide a critical setting to challenge the current narrative for women and girls in mathematics. As we seek to foster engagement with the discipline, these events encourage networking to seed collaboration and provide opportunity for existing leaders to mentor new talent.

In 2015 the AMSI public events program covered a wide range of topics including geometry, symmetry, moving boundary problems and how forensic exploration of big data is impacting medical research. Running during flagship training and research programs including AMSI Summer School, AMSI BioInfoSummer, AMSI Winter School and Heidelberg Laureate Forum, these lectures illustrate the cross-discipline impact of the mathematical sciences.

GENDER EQUITY IN MATHEMATICS

Women and girls continue to be under-represented in mathematics. Challenging traditional mathematical career narratives and championing the participation of women and girls at all stages of the discipline pipeline remains essential.

As facilitator of the Australian Mathematical Society (AustMS) Women in Mathematics Special Interest Group (WIMSIG), AMSI is actively challenging the mathematical and general communities to address this issue through a series of public 'Women in Mathematics' events as part of each flagship-training program. Raising awareness of issues faced by women in the mathematical sciences, these events are helping create a national support network.

As well as the *Women in Mathematics Networking Event*, AMSI has embedded a series of women in maths events as part of its flagship programs including AMSI Summer School, BioInfoSummer and AMSI Winter School. In November 2015, we also hosted the AMSI Women in Mathematics Lunch with WIMSIG featuring a presentation from Professor Marilys Guillemin (pg 23).

In addition to traditional engagement events, AMSI is tackling the gender divide through the national CHOOSEMATHS program (pg 25). Funded by the BHP Billiton Foundation and launched in 2015, this program will deliver a range of initiatives to strengthen teacher training and development, female participation in mathematics and careers awareness. A targeted awards program will foster a culture of mathematical excellence in the classroom through acknowledgement of outstanding upper primary and secondary maths students and high performing mathematical educators, in particular those who have encouraged and supported girls in maths.

TELLING OUR STORY

As well as mainstream and niche media coverage, partnerships with *ABC Science Online* and *the Conversation* provide a public platform for AMSI members and event speakers to add their voice to the communication of the mathematical sciences. Opinion pieces help drive understanding of the broad and ever changing impact of the discipline, bringing to life real-world applications stemming from some of the discipline's leading national and international minds. Featuring engaging science communicators, these media pieces are popular with our broader target audience outside the discipline.

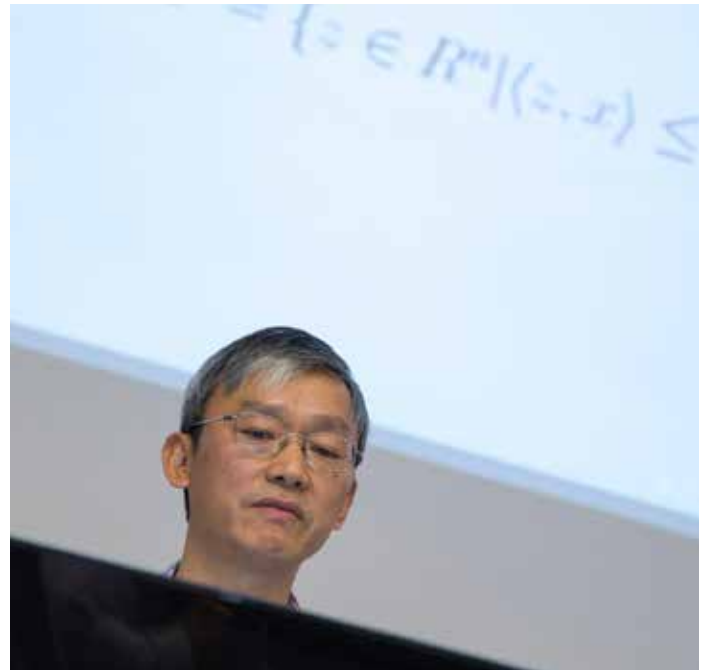
Key Public Events 2015

- *The Hitchhiker's Guide to Geometry*
- *The Glass Bead Game*
- *AMSI Boeing Aerospace Careers Roadshow*
- *Public Lecture Tour — Active and Flexible Bodies Moving With(in) Fluids*
- *Alex Rubinov Memorial Oration 2015 — Doing Maths: A Risk Free Choice — Dr Mark Lawrence (AMSI Board Member)*
- *A Forensic Exploration of Cancer Research*

Details on these events are available at amsi.org.au/past-events-list/

"International speakers such as Margaret Wertheim provide a chance for the public to see mathematical theory as it applies in the real world."

Professor Geoff Prince, AMSI Director



KEY STATS

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904 participants
49 international speakers
57 travel grants
21 workshops

PARTICIPATION

AMERICAS	11%
OCEANIA	70%
ASIA	7%
EUROPE	12%

49 Sponsored International Speakers

FUNDING \$305,307

4th South Pacific Continuous Optimisation Meeting (SPCOM 2015) PHOTO: ANDY STEVEN

AMSI's Research program supports mathematical sciences research and its applications through promotion of cross-disciplinary public and private sector collaboration.

Our coordination of one of the nation's largest sustained scientific workshop programs and our stewardship of the Mathematics of Planet Earth 2013 in Australia won us international acclaim.

NEW IN 2015

It has been another year of growth for AMSI Research, as we continued to lay the foundations for an Australian Research Centre in the mathematical sciences.

The launch of the Advanced Collaborative Environment (ACE) Network has strengthened the Australian university mathematical sciences community, simplifying connectivity through video-conferencing. This network replaces the national Access Grid Rooms (AGR), which ceased operation at the end of 2014. The new, sophisticated software platform provides greater functionality and enhanced connectivity within the Australian and international mathematical sciences communities. This year, we finalised the infrastructure of the network including new features such as recording of lectures and seminars, and broader access for individuals via laptops and hand held devices. The feedback on the reliability and ease of use of the new software has been very positive and we hope to start expanding the activities on the network in 2016.

AMSI's Research and Higher Education Committee commissioned a review of the AMSI Scientific Workshop Program. This focused on AMSI event support including topic range, financial support and overall program effectiveness. Forty-five responses were received, informing a comprehensive report from the review committee. The program has been revitalised with committee recommendations implemented, including broader more flexible funding opportunities and the roll out of online applications and reporting.

In 2015, AMSI partnered with the Australian Mathematical Society to support five Australian researchers and students to attend the annual Heidelberg Laureate Forum and complete extended research travel in Europe. This event fosters outstanding emerging talent, giving them the opportunity to engage with current winners of the most prestigious scientific awards in Mathematics and Computer Science. Our students joined 200 other young scientists from across the globe for a series of lectures, panels and discussions with their academic role models.

NATIONAL COLLABORATIVE RESEARCH

Reporting to the AMSI Board, the Scientific Advisory Committee (SAC) competitively award funding for the AMSI Scientific Workshops.

In 2015, the SAC funded 21 scientific workshops on topics ranging from Complex Systems and Networks to Algebra and Number Theory. The workshops provided a platform for strengthen Australia's knowledge base through engagement with international research leaders.

AMSI also awarded 57 travel grants to our members to cover staff and student attendance at our workshops, meetings and courses — all made easier by the new online application platform.

AMSI continues to provide annual support to the Mathematics in Industry Study Group (MISG). MISG 2015 provided students with valuable collaboration experience through team-based challenges

tackling a range of interesting and relevant industrial problems. Over 100 delegates came together at Queensland University of Technology to work on solving industrial problems from Centor, Cook Medical, CRC Si, Sunwater and Transpower.

LINKING TO THE WORLD

This year's AMSI-ANZIAM Lecturer was world-renowned New York University Mathematician and Director of Applied Mathematics at the Courant Institute of Mathematical Sciences, Professor Michael Shelley. Throughout July and August, he delivered public lectures and specialist talks at universities in New South Wales, Victoria, South Australia, Western Australia and Queensland.

The AMSI-CARMA Lecturer launched in May following an agreement with the University of Newcastle's Centre for Computer Assisted Research Mathematics and its Applications (CARMA). As the first lecturer, Carnegie Mellon University's Professor Jeremy Avigad gave a short course on computational methods in mathematics.

Under the Scientific Workshop Program a further 49 international experts were supported to visit Australia.

AMSI thanks Professor Gary Froyland and Professor Jon Borwein, Chairs of the Research and Higher Education Committee and Scientific Advisory Committee respectively and all the committee members for their support and advice throughout 2015.

2016 promises to be another big year working with the AMSI Research Centre partners to grow Australia's mathematical sciences research programs.

AMSI RESEARCH REPORT

AMSI Research Report 2014–15 provides a comprehensive record of the full range of the Institute's activities for the year. This is available for download at amsi.org.au/research-reports/

"AMSI research workshops provide fertile environments to sow the seeds for research innovation and excellence. Encouraging the exchange of ideas as well as national and global collaboration, these events deliver training and development to foster future research leaders."

Professor Terence Tao, UCLA

AMSI SPONSORED SCIENTIFIC WORKSHOP PROGRAM 2015

AMSI's Scientific Workshop program facilitates collaborative mathematical research throughout Australia by:

- Sponsoring local and international workshops and conferences
- Providing travel support for Australian students and researchers to attend AMSI-sponsored events
- Bringing leading international researchers to Australia for scientific collaboration and public outreach

The University of New South Wales FEB 2-6 ATTENDEES 47

ALGEBRAIC, NUMBER THEORETIC & GRAPH THEORETIC ASPECTS OF DYNAMICAL SYSTEMS

Arithmetical dynamical systems, that is, dynamical systems generated by iterations of rational functions over fields of number-theoretic interest, have seen a significant explosion of work in recent years but still many algebraic, number theoretic and graph theoretic problems remain wide open. This workshop provided a platform to explore complex algebraic and number theoretic behaviour, as well as advance understanding of the structure of functional arithmetical dynamical systems graphs.

University of South Australia FEB 8-12 ATTENDEES 60

SOUTH PACIFIC CONTINUOUS OPTIMISATION MEETING SPCOM 2015

Hosted by the University of South Australia, the (Fourth) South Pacific Continuous Optimisation Meeting (SPCOM 2015) was held in Adelaide. SPCOM 2015 closely followed high-profile Australian mathematics meeting, ANZIAM 2015, held in early February at Outrigger Surfers Paradise, QLD.

Macquarie University FEB 17 ATTENDEES 20

WOMASY - GEOMETRIC & HARMONIC ANALYSIS MEETS PDE

Attended by research groups from across the wider Sydney area, The WOMASY workshop provided an opportunity to share and report on research and network. It was also an opportunity for early career researchers to develop their communication skills in front of a broad audience. The 2015 event program included a wide range of topics at the intersection of harmonic analysis and partial differential equations.

The University of Adelaide APRIL 7-10 ATTENDEES 51

AUSTRALIA/NEW ZEALAND APPLIED PROBABILITY WORKSHOP 2015

Bringing together local researchers with a strong active interest in Applied Probability, this workshop featured challenging cutting-edge presentations from leading international invited speakers as well as current research results. Discussion also covered new theoretical and methodological contributions to Applied Probability and the application of new and existing techniques to areas such as epidemiology, ecology, finance, and queuing systems and networks.

The University of Adelaide APRIL 13-17 ATTENDEES 41

SYMMETRIES & SPINORS: INTERACTIONS BETWEEN GEOMETRY & PHYSICS

The interplay between physics and geometry has led to stunning advances and enriched the internal structure of each field. This is vividly exemplified in the theory of supergravity, a supersymmetric extension of Einstein's relativity theory to the small scales governed by the laws of quantum physics. The use of sophisticated mathematics to find solutions to the generalised Einstein equations continues to provide a rich source for new exotic geometries. This workshop brought together leading experts and forged future collaborations.

Federation University Australia APRIL 16-17 ATTENDEES 27

WORKSHOP ON CONTINUOUS OPTIMISATION: THEORY, METHODS & APPLICATIONS

Dedicated to the memory of Professor Alexander Rubinov this meeting was attended by Australian and international experts from all areas of optimisation theory. The meeting provided a platform for knowledge sharing and idea exchange as well collaboration. Discussion covered all areas of continuous optimisation, optimal control and their applications in machine learning, water management, engineering, mechanics, economics, business, bioinformatics.

The University of Newcastle JUNE 19-21 ATTENDEES 40

WORKSHOP ON MATHEMATICS & COMPUTATION

The three day workshop covered areas including; computer-assisted discovery, formal proof and computer-assisted proof, computational group theory including celebration of the 50th anniversary of the discovery of the Janko group and computational number theory and related topics.

The Australian National University JULY 13-17 ATTENDEES 51

THE MATHEMATICS OF CONFORMAL FIELD THEORY

The rich and varied cross-fertilisation between physics and mathematics has led to significant advancement in each field. The two-dimensional conformal field theory (CFT) is a standout example providing a natural source of new mathematical structures that build bridges between seemingly disparate mathematical fields. This conference fostered communication and collaboration between international field leaders in mathematics and mathematical physics.

The Australian National University JULY 19-25 ATTENDEES 62

BAXTER 2015: EXACTLY SOLVED MODELS & BEYOND

This meeting was organised in honour of Rodney Baxter's 75th birthday, with presentations highlighting Professor Baxter's pioneering contributions to exactly solved models in statistical mechanics which have inspired crucial developments in key areas of theoretical physics and mathematics.

The University of Sydney JULY 20 ATTENDEES 50

ANALYSIS & PARTIAL DIFFERENTIAL EQUATIONS

This seminar brought together specialists, early career researchers and PhD students working across analysis, partial differential equations and related fields in Australia. As well as platform to share research, the event provided an ideal opportunity for networking and exploring new research projects and collaborative opportunities. In particular, the event gave PhD students and early career researchers the opportunity to present their research to a wider audience.

The University of Adelaide JULY 27-31 ATTENDEES 40

WORKSHOP ON GEOMETRIC QUANTISATION

An increasingly active area since before the 1980s, Geometric quantisation has links to physics, symplectic geometry, representation theory, index theory, and differential geometry and geometric analysis in general. It also acts as a focal point for the interaction between many areas, which has yielded far-reaching and powerful results. The workshop brought together world-leading speakers proving a platform for global collaboration.

The University of Newcastle AUG 21–22 ATTENDEES 50

WORKSHOP IN HONOUR OF BRAILEY SIMS

Running across three days the workshop honoured the contribution of retiring Professor Brailey Sims. The workshop broadly covered functional and nonlinear analysis and celebrated his contributions to geometry.

The University of Newcastle SEPT 18–19 ATTENDEES 44

NUMBER THEORY DOWN UNDER 2015

A focussed conference, this event was an opportunity for Australian number theorists to share their current work and ideas. Broad reaching sessions explored many areas of number theory while providing established and emerging Australian researchers opportunity to interact with top international number theory experts. Key interactions between Diophantine geometry, Diophantine approximation, transcendence theory, and analytical computations were a key focus.

Flinders University SEPT 25–7 ATTENDEES 30

AMSI/AUSTMS WORKSHOP GEOMETRY & ANALYSIS

A satellite event of the 59th AustMS Annual Meeting, the event explored the cutting-edge of Differential geometry, Lie theory and Complex analysis, providing a platform for exploration of current research. Discussion covered a wide area of pure mathematics, from Lie groups and algebras to geometric methods in complex analysis of several variables. The workshop gave early career researchers and students a forum to showcase their work and engage with leading mathematicians.

The University of Western Australia OCT 6–8 ATTENDEES 54

INTERNATIONAL WORKSHOPS ON COMPLEX SYSTEMS & NETWORKS

Strongly interdisciplinary, the workshop fosters engagement between electrical and electronic engineers, mathematicians, physicists, computer scientists, biologists, and social scientists working in network science and engineering. The event focused on the significant impact of network topological complexity on collective dynamics and emergent systems performance with a special emphasis on the Mathematics of Complexity, Modelling and Engineering for Remote Operations.

The University of Adelaide OCT 19–23 ATTENDEES 23

AUSTRALIA-JAPAN GEOMETRY, ANALYSIS & THEIR APPLICATIONS

Global analysis is reliant on the combining of ideas from complementary areas of geometry and analysis. This workshop brought together Australia and Japanese researchers with a shared interest in these areas to build interdisciplinary and pure research capacity and application.

The University of Sydney NOV 4–5 ATTENDEES 31

RECENT TRENDS IN NONLINEAR EVOLUTION EQUATIONS

This workshop focused on showcasing the recent progress in the study of nonlinear diffusion equations, as well as equations of geometric flows and highlighting key challenges for the future in quantitatively analysing the dynamics of solutions arising from the flows generated by deterministic and nondeterministic evolution equations or geometric evolution equations.

Swinburne University of Technology NOV 30–DEC 1 ATTENDEES 47

SM² STATISTICAL MECHANICS OF SOFT MATTER

Recently established, the series provides a platform for local discussion on Statistical Mechanics of Soft Matter. This fills a critical gap in the Australian scientific calendar by providing an informal workshop on the fundamentals and applications of equilibrium and non-equilibrium statistical mechanics relating to simple and complex liquids, polymers, biological materials and other forms of soft matter.

The University of Adelaide DEC 6–9 ATTENDEES 56

KOZWAVES 2015: THE SECOND INTERNATIONAL AUSTRALASIAN CONFERENCE ON WAVE SCIENCE

Waves are ubiquitous features of nature, governing a wide range of physical processes. A common mathematical theory provides a unifying framework for the different forms of wave phenomena. The event brought together mathematicians, physicists, material scientists, engineers and geophysicists, fostering cutting-edge research through its interdisciplinary focus and underpinning collective mathematical language.

The University of Melbourne DEC 7–8 ATTENDEES 30

GUTTMANN 2015 - 70 & COUNTING

This conference was a celebration of Professor Tony Guttmann's 70th birthday and his enormous contribution to mathematics in Australia and Critical Phenomena in Statistical Mechanics. Leaders in the field of Critical Phenomena, Enumerative Combinatorics, Algebraic Combinatorics and Computational Algorithms attended. These fields of mathematics play a significant part in the understanding of Critical Phenomena.

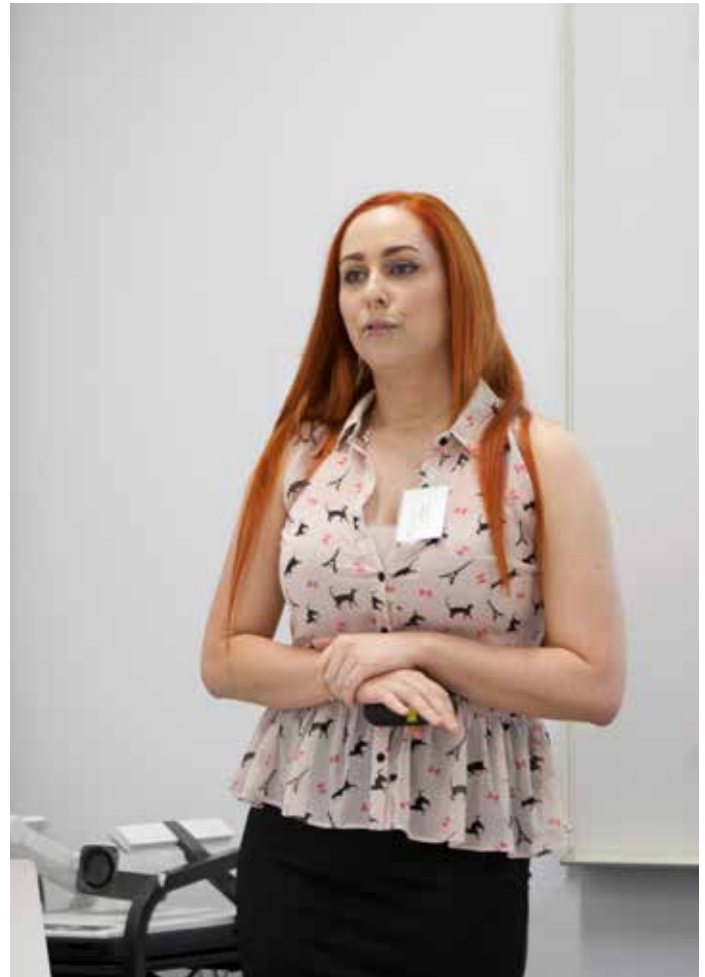
The University of Queensland DEC 14–18 ATTENDEES 29

CONFERENCE ON GEOMETRIC REPRESENTATION THEORY

The conference fostered links between prominent international and Australian geometric representation theory experts. Discussion focussed on areas such as interactions between representation theory, algebraic geometry, symplectic geometry, and number theory providing a platform to strengthen ties between the Australian and international communities.



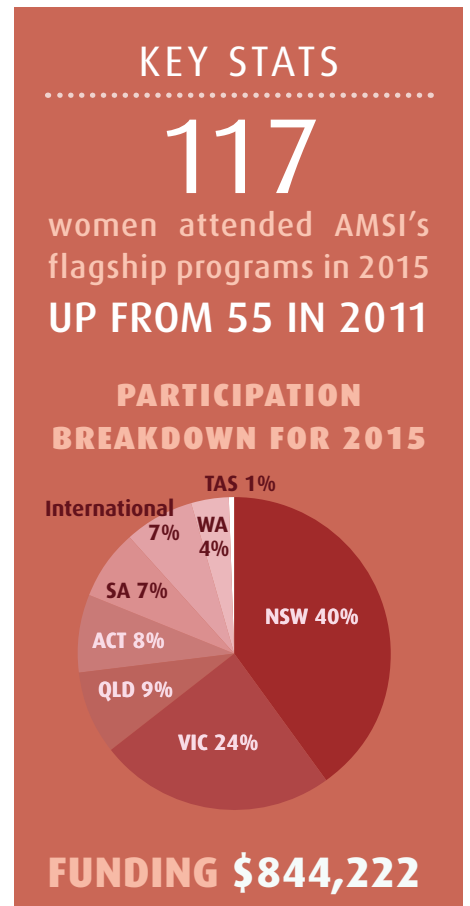
Dr Federico Frascoli, Swinburne University of Technology PHOTO: ESSICA BELLAMY



Vacation Research Scholar Asha Gair, La Trobe University PHOTO: ESSICA BELLAMY



Undergraduate students at the 2015 AMSI Big Day In student conference in Melbourne PHOTO: JESSICA BELLAMY



AMSI's Higher Education program enhances the undergraduate and postgraduate experience of students in the mathematical sciences and related disciplines. Setting the gold standard for research training infrastructure, our flagship events include training schools, graduate courses and scholarships.

Exposure to cutting-edge methodologies and field areas not routinely covered in academic courses, prepares emerging talent for the challenges of cross-disciplinary research within industry environments. This is vital as Australia transitions to a STEM driven economy, increasing the need for research leaders with the experience and confidence to drive innovation in the public and private sectors.

DEVELOPING WORLD-CLASS TALENT

In 2015, the AMSI Higher Education program strengthened its engagement with the mathematical sciences community resulting in partnerships with 18 organisations. In another year of growth, 600 students and early career researchers attended events, while 59 national and international experts participated in a teaching capacity, volunteering their time, passion and research expertise with emerging researchers.

Commonwealth funding has continued to support growth across AMSI's flagship events with a 120 per cent increase in participation since 2012.

Featuring specialist talks, one-off courses and cutting-edge research, this year's program fostered broader learning outcomes beyond the scope of traditional academic programs. With an estimated 75 per cent of jobs in the fastest growing industries requiring STEM-skilled workers, equipping students for a 21st century workforce is critical to maximising Australia's productivity.

INCREASING GENDER EQUITY

Currently women account for fewer than 30 per cent of undergraduate and postgraduate enrolments in the mathematical sciences.

In 2015, the launch of the CHOOSEMATHS Travel Grants for Women expanded the support available for women in mathematical research. These grants provide financial support to assist women to build and extend their skills and professional networks through attendance at key events and/or assist with caring responsibilities. Funded by the BHP Billiton Foundation this is an initiative of the CHOOSEMATHS Program.

Other activities fostering gender equity include embedded Women in Maths events, participation targets and increased female representation among speakers.

INSPIRING THE NEXT GENERATION

AMSI Higher Education has an embedded outreach program designed to connect school students and the general public to the exciting world of the mathematical sciences. Cutting-edge research is made accessible through a range of outreach initiatives such as media campaigns, blog posts, speaker and student interviews, opinion pieces, public lectures, panel discussions and social media.

"Inspiring students, researchers and professionals to pursue study and careers in fields such as bioinformatics, is crucial to the future of research and innovation in Australia.

That is why the Australian Government supports [AMSI Flagship events]."

**Senator the Hon Simon Birmingham
Minister for Education and Training**



FLAGSHIP EVENTS

Australia's biggest maths student event

2015 AMSI SUMMER SCHOOL

5–29 January, The University of Newcastle

A four-week residential learning program, the 2015 AMSI Summer School gave 109 students the opportunity to tackle one or two of eight intensive honours level pure and applied mathematics and statistics subjects on offer. Under the supervision of Australian research leaders, academic work was complemented by enrichment lectures, as well as social and special events, public lectures and a careers afternoon.

Vital bioinformatics training event

2015 AMSI BIOINFOSUMMER

7–9 December, The University of Sydney

Two hundred students and public and private sector researchers gathered at the University of Sydney for a showcase of cutting-edge developments in bioinformatics. In his opening message, Senator Simon Birmingham reminded attendees of the importance of bioinformatics and its underpinning advanced techniques. This year's event featured a mix of presentations and lectures from Australian and international speakers as well as software training to up-skill and inspire delegates.

Intensive themed research school

2015 AMSI WINTER SCHOOL ON ALGEBRA, GEOMETRY & PHYSICS

29 June–10 July, The University of Queensland

Over two weeks participants attended a series of mini-courses, including a week of introductory lectures providing in-depth foundational understanding and in-depth presentations on current research problems. This year's event delivered a wide-ranging program of courses with field leaders exploring geometric representation theory, MODULI spaces in symplectic geometry, moonshine conjectures and vertex operator algebras and k-theory and its applications. Featuring a panel of academic and industry leaders, the Women in Mathematics public event was a social highlight.

A summer of research

AMSI VACATION RESEARCH SCHOLARSHIPS

56 of our brightest undergraduate students spent their summer working on cutting-edge research projects under the supervision of Australian field leaders at 12 of Australia's leading universities. At the end of the six weeks, they presented their work in Melbourne at the AMSI Big Day In student conference. AMSI provides monetary scholarships to give students a taste of life as a researcher and encourage them to pursue further research in mathematics and statistics.

OTHER EVENTS/PROGRAMS

A conference by students for students

AUSTRALIAN MATHEMATICAL SCIENCES STUDENT CONFERENCE

30 November – 2 December 2015, University of Tasmania

AMSI and AustMS partnered to support the AMSSC, providing 25 of Australia's best postgraduate and honours mathematical sciences students with the chance to share their research, build their networks and encourage collaboration within a friendly and informal atmosphere..

Shared honours program

AMSI ADVANCED COLLABORATIVE ENVIRONMENT (ACE)

In 2015, the ACE network offered 11 shared honours subjects giving students a broader research experience beyond their home academic programs and supporting the ability to offer a full honours program at our smaller member universities. The response to the recent switch to new video-conferencing platform was very positive.

SPONSORS



AMSI thanks the following people for their leadership in 2015, Director of Summer School Dr Jeff Hogan (The University of Newcastle), Directors of BioInfoSummer Professor Jean Yang (The University of Sydney) and Dr Nicola Armstrong (Murdoch University), and Director of Winter School Dr Phil Isaac (The University of Queensland). We also acknowledge the contribution of the speakers, Vacation Research Scholar supervisors and support staff and their generosity in giving their time to ensure the success of these events.



Mediterranean linseed, an uncommon weed in Victoria, found in the Grampians National Park

AMSI continues to provide statistical support to Parks Victoria's environmental monitoring, evaluation and reporting processes through the partnership program established in 2010. This year, AMSI statistician, Kally Yuen, worked with Science and Management Effectiveness Branch staff on data analysis and development of monitoring protocols and data management system for a number of projects.

SALLOW WATTLE CONTROL MONITORING PROJECT IN THE GRAMPIANS NATIONAL PARK

A native plant, Sallow Wattle is also an environmental weed in many areas of Australia. Widespread invasion of Sallow Wattle in the Grampians National Park has become a major concern for Parks Victoria following the January 2014 bushfire. The Victorian Government post-fire recovery fund enabled the establishment of an experimental monitoring program to ascertain the most effective technique to control the notorious weed. Dr Marie Keatley, Parks Victoria flora scientist, and Kally Yuen worked with park rangers to develop the program, which will trial five control techniques. This commenced in November 2015 with baseline monitoring resulting in detection of Mediterranean Linseed, an uncommon weed in Victoria. This has since been removed from the site and a specimen collected for the National Herbarium of Victoria.

FOX CONTROL & REMOTE CAMERA MONITORING AT THE GREAT OTWAY NATIONAL PARK

The introduced Red Fox preys on a wide range of native fauna and poses a serious threat to the conservation of many species at the Great Otway National Park. A fox-baiting program is helping to address this threat, with rangers monitoring effectiveness through annual remote camera monitoring of fox and native prey species. In 2015, an analysis was undertaken of the data collected from 2009 to 2014. Results were presented to Dr Mark Antos, Parks Victoria fauna scientist, as well as local and regional staff. This will assist planning of a proposed large-scale fox control program in the park. In December 2015, the team presented a poster on the evaluation of monitoring and analysis approaches used in this program at the Eco-Stats Conference in Sydney. This received positive feedback from attendees.

AMSI INTERN PROGRAM

Parks Victoria is a long-term AMSI Intern industry partner, providing opportunities for postgraduate students to gain industry experience and apply their research in the context of real-world projects. In 2015, Deakin University postgraduate student, Yongqing Jiang, commenced a three-month internship under the supervision of Dr John Wright and Dr Mark Antos. In recent years, motion or heat-triggered remote cameras have proven to be an efficient and reliable tool for animal surveys. While this approach offers many benefits over other methods, such as trapping, it has high data management and curation demands. Yongqing's project aims to develop an efficient data management system to capture the camera data and generate basic summary outputs. Engagement with AMSI commenced in October 2015 with a detailed briefing of the project. Having commenced in December 2015, it is anticipated that the project will be completed in March 2016.

AMSI acknowledges Parks Victoria for their continuing support of this important research collaboration.



KEY STATS

18 INTERNS
FROM
7 DISCIPLINES
PLACED WITH
14 INDUSTRY
PARTNERS
ACROSS
9 INDUSTRY
SECTORS
GENERATING
\$462,000
FUNDING FOR THE
UNIVERSITY SECTOR

Dr Mark Antos (Parks Victoria) with intern Yongqing Jiang — “Implementation of a data management system for environmental surveys using remote cameras”

AMSI Intern specialises in creating opportunities for PhD students to work with industry and apply their research to complex real-world research challenges. As we seek to strengthen Australia's STEM and innovation capability, our aspiration is for these short-term industry engagements to become a vital and ubiquitous part of the Australian postgraduate experience.

Using an outward-facing approach, our program identifies businesses with the capacity to leverage the specialised skills and high-end expertise of Australia's best and brightest to address complex industry challenges and drive innovation. Our specialist business development team assist to bring industry and academia together to deliver rapid results via short, targeted research projects. With a national network of over 30 research organisations, AMSI Intern can match any business with the skills and talent they need to overcome their challenge, and create long lasting collaborations with academic mentors.

BUILDING FOR GROWTH

A growing recognition of the value of industry-based experiences with PhD students, along with a significant co-investment in the program by eight partner universities, has placed tremendous demand on the services provided by AMSI Intern.

In 2015, the program underwent a dramatic organisational transformation which saw three new Business Development (BDs) staff embedded at co-investment partner universities across New South Wales and Victoria, accompanied by a matching team of support staff based at AMSI. Drawing on AMSI Intern's newfound capabilities and strengthened university connections, our BDs sought to build program capacity by seeding a variety of long-term partnerships with government and big business.

A rapid rise in the demand for internship opportunities also necessitated the diversification of expertise and industry partners for projects. The visible effect of this was apparent towards the end of 2015, with a surge in the number of internship signing requests. This included placements for AMSI Intern's first postgraduate law students and adoption of the program by an overseas business.

PERFORMANCE SUMMARY

In recognition of our growing capabilities and industry networks, AMSI Intern launched its 2015–2016 campaign using simplified collateral featuring the growth of a seedling. This imagery is also symbolic of the transformative effect of AMSI Intern on PhD students and businesses alike. The 2015–2016 campaign was designed to specifically target Small-to-Medium-sized Enterprise (SMEs), with campaign messages refined to reflect the needs and concerns of small business owners.

Driven by a strong demand for specialist data science expertise, over half the internship opportunities for 2015 came from the Biotechnology or Information and Communications Technology (ICT) sectors. Two-thirds of the interns were placed in Victoria, with the remaining students distributed across New South Wales, Queensland and South Australia.

"After the success of the 2015 internships we have another three interns commencing in early 2016 to work with high performing staff in my team and elsewhere in Telstra."

Steve Morris, General Manager, Technology—Big Data.

Despite the absence of any State-based Technology or Innovation Vouchers to reduce the cost of R&D for SMEs in Victoria, half of all the business challenges solved by AMSI Intern were for SMEs, with the remaining projects evenly supplied by big business and government agencies. As a result, only 20 per cent of internships were eligible for any form of subsidy.

Consistent with previous years, AMSI Intern continued to meet or exceed the expectations of our student interns, academic mentors and business partners. All respondents to our 2015 post-internship survey reported they were satisfied with their experience, with many indicating they would use the program again and recommend it to others. More than 80 per cent of academic mentors went on to report that their collaborative partnership with industry continued beyond the completion of the internship.

Sixty per cent of academic mentors surveyed, report gaining a new industry partnership as a result of their involvement with AMSI Intern. Upon completion of the internship, almost twenty per cent report that the industry partner directly funded them to implement the results, with a further third reporting joint submission of grant applications for government funding (e.g. ARC Linkage, Innovation Connections and Accelerate Commercialisation).

STRATEGIC PARTNERSHIPS

AMSI Intern welcomed the long-awaited announcement of \$40 million in Commonwealth funding towards the Innovative Manufacturing CRC (IMCRC), to be matched by an additional \$210 million, over the next seven years. As a formal partner, AMSI Intern is well positioned to support the full spectrum of IMCRC activities, from technical programs to market transformation initiatives.

Growing success within the defence sector led to the renewal of the Defence Science Institute (DSI) MoU, including a significant financial commitment to support internships with SMEs undertaking defence-related R&D.

"The Defence Science Institute is a proud collaborator with AMSI Intern in providing research higher degree students the ability to apply their knowledge and solve real defence-related industry problems. The value of this program is not to be underestimated, increasing the size of the Defence industry ecosystem will ultimately lead to stronger innovation in this industrial sector," Dr Regina Cramer, Associate Director, DSI.

This year also saw the conclusion of the four Inspiring Women industry internships. Facilitated by AMSI Intern for Veski and the Office of the Lead Scientist, the internships provided industry-based research experience to Victorian women studying at honours or master's level. Survey responses show participants to be unanimous in their support for the program and its value in preparing them for future employment. All industry partners and academic mentors involved were uniformly described as providing a level of internship support that far exceeded expectations. AMSI Intern welcomed the opportunity to be a part of this valuable initiative.



CHOOSEMATHS GEM Days give high school girls the opportunity to meet like-minded students and learn why studying maths can open doors for their future careers

AMSI’s Schools program delivers a range of initiatives to support mathematics education in schools, including mathematics teacher resources, professional development programs, and student resources such as careers information to promote the importance of mathematics for career choices.

A busy year in the AMSI Schools arena, the program has undergone significant expansion with the launch of the national \$22 million CHOOSEMATHS program in partnership with BHP Billiton Foundation. This has seen our team grow from three to 15 staff in 2015. We have also continued engagement with Boeing Australia with the global aerospace leader sponsoring a national aerospace careers event series.

In 2015, AMSI Schools continued to promote mathematical career pathways with our annual publication, *Maths Ad(d)s* distributed to every Australian school.

The release of AMSI’s *Participation in Year 12 Mathematics 2004–2014* report revealed a continuing drop in high-level mathematics

participation, particularly amongst girls. This highlights the considerable challenges ahead to ensure future generations are equipped with the mathematical skills to work within a STEM focused economy.

OUTREACH — THE WILLIAM BUCKLAND FOUNDATION, GEELONG CLUSTER

AMSI Schools continues to support mathematical education outcomes at 12 Geelong-based schools through ongoing professional development and schools visits. In 2015 we worked with a great team of enthusiastic teachers, delivering a series of well-attended PD sessions addressing a range of issues and topics. Planning and assessment

featured highly on the needs this year, as did the topics Data and Statistics, Problem Solving and Engagement.

WIMSIG SPECIAL EVENT

With a strong agenda supporting participation of girls and women in mathematics, AMSI Schools hosted a Women In Maths Special Interest Group (WIMSIG) lunch event. Keynote presenter Professor Marilyns Guillemain, Associate Dean Learning and Teaching, Faculty of Medicine, Dentistry and Health Science and Centre for Health Equity, Melbourne School of Population and Global Health from Melbourne University, shared insights from her involvement in the SAGE (Science in Australia Gender Equity) program.

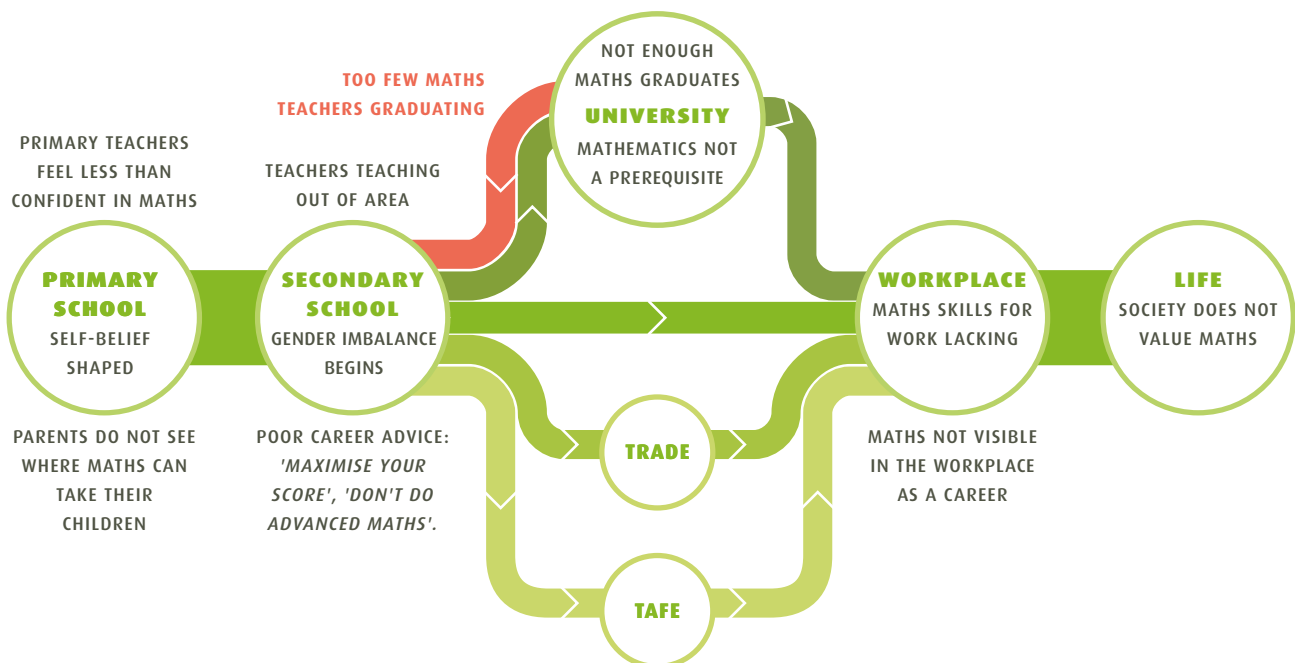
AUSTRALIA’S MATHEMATICS EDUCATION CHALLENGE

We believe every child entering the education system has mathematical potential.

The mathematics education journey can be visualised as a pipeline that follows the journey through school, tertiary education and ultimately into the practical workplace environment.

At points along this pipeline, different factors choke the outputs. The result is that Australia is experiencing a period of fewer maths graduates and fewer STEM capable citizens.

AMSI Schools makes use of the pipeline idea to explain pressure points for action and offers programs to act on these pressure points with Australian students, teachers and the public.





Janine McIntosh, Program Manager (Schools) with Michelle Raftus from BHP Billiton



Professor Geoff Prince, Andrew Mackenzie, CEO BHP Billiton and Lily Serna, mathematician and TV personality

CHOOSEMATHS

AMSI will strengthen Australia's mathematics capability through its BHP Billiton Foundation funded five-year national CHOOSEMATHS program. The team will work with schools in metropolitan and regional areas across Australia to implement strategies at key stages of the pipeline to strengthen mathematics education outcomes, and to entice more girls and young women into mathematics.

Underlying the four components of the program, a research stream will track community perception and program effectiveness.

1 - TEACHER PROFESSIONAL DEVELOPMENT

Professional development will be delivered on-the-ground in 120 Australian schools. Based on a cluster arrangement, where a secondary school and up to three of its feeder primary schools are formed into a professional development group, teachers will work with an AMSI Specialist to focus on enhancing content knowledge in mathematics.

2 - NATIONAL WOMEN IN MATHEMATICS CAREER AWARENESS CAMPAIGN

Targetting students, teachers, parents, and the public our national campaign will increase awareness of mathematics career pathways and the rewarding and interesting opportunities open to those who 'stick with maths'.

3 - INSPIRING WOMEN IN MATHEMATICS INITIATIVE

CHOOSEMATHS will work with members of the mathematical community to tackle the gender divide in mathematics and STEM. Current female and male STEM leaders in industry and business will act as role models, sharing their stories and field experience to inspire young women. This component also includes the Maths and Biology initiative: an opportunity to highlight the role of mathematics in biology both in the context of curriculum and industry, and to promote potential emerging cross-discipline career pathways to students, teachers and parents.

4 - THE BHP BILLITON AWARDS FOR EXCELLENCE IN THE TEACHING & LEARNING OF MATHEMATICS (CHOOSE MATHS AWARDS)

While teachers are very good at celebrating their student achievements to foster and nurture talent and learning confidence, they are not often celebrated for their own. The CHOOSEMATHS program will recognise outstanding mathematics teachers by initiating the Annual BHP Billiton Foundation Awards for Excellence in the Teaching of Mathematics.

"Any increase in STEM participation is good news but an increase in female representation is especially valuable because of the undeniable benefits of diversity."

Mr Andrew Mackenzie, BHP Billiton CEO

CHOOSEMATHS ADVISORY COMMITTEE

The CHOOSEMATHS Advisory Committee, representing the broader Stakeholder Community, provides high level strategic and policy advice to the CHOOSEMATHS Executive Director and Program Director for the effective delivery of the outcomes and KPI's as outlined in the Project proposal. Committee members, listed below, will advocate for the CHOOSEMATHS Project, acting as ambassadors for the project when dealing with government and industry.

The membership of the Committee is as follows:

- **Prof. Kate Smith-Miles** — *Chair - Monash University*
- **Jennifer Dawson** - *BHP Billiton Manager Communities, BHP Billiton Foundation*
- **Jill Elsworth** - *QLD Department of Education, Director Curriculum into the Classroom*
- **Dr Michael Forbes** - *Biarri Commercial Mathematics*
- **Assoc. Prof. Inge Koch** - *Executive Director - CHOOSEMATHS*
- **Adjunct Prof. Gilah Leder** - *Monash University*
- **Prof. Jennifer Graves AO** - *Distinguished Professor, La Trobe University*
- **Nagla Jebeile** - *NSW Department of Education*
- **Janine McIntosh** - *Schools Manager & CHOOSEMATHS Program Director, AMSI*
- **Michael O'Connor** - *Schools Outreach Project Manager, AMSI*
- **Prof. Geoff Prince** - *Director, AMSI*
- **Dr Roslyn Prinsley** - *Office of the Chief Scientist for Australia Adviser, STEM*
- **Prof. Terry Speed** - *UC Berkeley, Walter & Eliza Hall Institute*



Students at the 2015 AMSI Summer School held at the University of Newcastle PHOTO: MATT HUDSON

As Australia's national voice for the mathematical sciences, AMSI engages with a broad target audience from primary and secondary students, teachers and parents, university students, the AMSI membership, government and industry. In 2015, a strengthened media presence supported policy engagement, advocacy and research training activities.

STRATEGY & BRANDING

Success of our **customer-centric marketing strategy** is evidenced by high open rates of email communications, rising engagement through social and web platforms for AMSI programs and increased awareness of the AMSI brand to support lead generation and policy promotion. This strategy delivers tailored campaigns with messaging targeted to specific market demographics, including the media. Key messages consider tone, timing, channel, design, cost and resourcing with a clear call-to-action.

With continued national and global program exposure, the AMSI logo remains the cornerstone of our brand identity. A refresh and review of branding across existing collateral in 2015 has ensured consistency and clarity across print and online communications. The roll out will continue in 2016. amsi.org.au/amsi-logo

We have also continued to build on the functionality of our customer relationship management and marketing systems. In 2015, we have expanded existing systems as well as developing new customised functions and processes. A new user-based school portal for teachers, parents, students and general public attending AMSI Schools events will streamline data collection (such as event registration) and reduce staff workload. It is possible for this functionality to be rolled out in other program areas in the future. Growth and strong health of data in key sectors including academia, government, industry and media will enable more specific segmentation of lists and more targeted messages to our core markets.

PUBLICATIONS REVIEW

Responding to publications poll feedback from AMSI members, we have implemented a number of positive changes to AMSI publications to ensure they remain engaging, informative and accessible to existing and new audiences. Annual publications include the *Annual Report*, *Track Record*, *Maths Ad(d)s*, *Discipline Profile* and *Policy Document*, and *the Update*.

This year saw the redesign of several existing publications, and the launch of a new-look biannual bulletin, *the Update*. Circulated to

both domestic and international audiences, this newsletter will keep members up-to-date with events, announcements, interviews and major stories relating to the mathematical sciences community. Featuring high-profile contributions from eminent political, academic and STEM leaders, 2015, editions were themed to align with AMSI's key policy priorities, such as engagement of girls in maths and university maths prerequisites. Contributors included Fields Medallist Professor Terry Tao, Professor Peter Bartlett and the then Chief Scientist Professor Ian Chubb and Dr Alan Finkel.

With the support of the Australian Association of Mathematics Teachers (AAMT), AMSI continues to distribute the digital edition of *Maths Ad(d)s* across Australian schools. The print edition was circulated at AMSI Member University open days, careers expos and school visits.

amsi.org.au/publications

MEDIA GROWTH — PUBLICITY

The go-to-authority on the state of mathematics, AMSI continues to build its media presence with a 19 per cent increase in coverage and 18 media releases in 2015. In line with AMSI's key priorities and *Vision for a Maths Nation* policy, media campaigns included the launch of CHOOSEMATHS, our five-year national awareness program sponsored by the BHP Billiton Foundation, restoration of university mathematics prerequisites and industry-university research engagement.

In February, the internationally distributed *Asia Pacific Mathematics Newsletter* featured a five-page promotional special highlighting AMSI's policy measures, membership and programs. We also contributed to national discussions on STEM and mathematics education, as well as analysis following the December launch of the government's National Innovation and Science Agenda.

Our continued partnership with ABC Science provided further exposure through publication of opinion content authored on ABC online.

amsi.org.au/news-media

KEY STATS

50 NEWS ARTICLES
QUOTE AMSI IN 2015

19% INCREASE
FROM 2014

2846 FACEBOOK
LIKES SOCIAL MEDIA
EXPOSURE AND A

19% INCREASE
FROM 2014

AMSI EMAIL OPEN
RATE **41%**
AVERAGE EDUCATION
SECTOR EMAIL OPEN
RATE **23%**



Professor Geoff Prince addresses the AMSI board

AMSI is an unincorporated joint venture which is a collaboration of universities and other bodies related to the mathematical sciences. Six universities signed a Joint Venture Agreement (JVA) in 2002 to become the first full members of AMSI. The University of Melbourne is AMSI's lead agent and since 2002 a further six additional universities have become full members, including all Group of Eight universities.

AMSI'S ORGANISATIONAL STRUCTURE PROVEN EFFECTIVE

AMSI has made, and continues to make, a significant contribution to furthering the interests of the mathematical sciences in Australia. Our initiatives and programs are important parts of an overall strategy to enhance the standing and health of mathematics and statistics across the community.

AMSI is critically dependent upon the support of its member institutions. Without this support — both financial and via active participation in AMSI's enterprise — the institute would not be able to provide the many services that are of direct benefit to the mathematical sciences.

AMSI's members meet face to face twice a year and the full members meet at least four times each year. In this way AMSI keeps its programs fresh and responsive to its membership.

MANAGEMENT OF AMSI

The JVA empowers the AMSI Board to be responsible for the overall direction of the institute, formulation of policies and management of activities in AMSI's three portfolio areas:

- *Primary and Secondary School Education*
- *Research and Higher Education*
- *Business, Industry and Government*

External advice is provided by four high-profile advisory committees.

Activities are detailed in the annual Business Plan and Budget document, authorised annually by the full members and the board. Management of the institute and its activities is the responsibility of the Executive Committee. Members of the Executive Committee are listed on page 30–31.

AMSI Board Composition

The board comprises:

- *An independent chair appointed by the full members*
- *The institute director*
- *The institute deputy director appointed by the full members*
- *One person representing the lead agent — the University of Melbourne*
- *Two people representing the full members appointed by mutual agreement of the full members*
- *Two people representing the associate members appointed by mutual agreement of the associate members*
- *Up to five independent members representing business and industry appointed by mutual agreement of the full members*

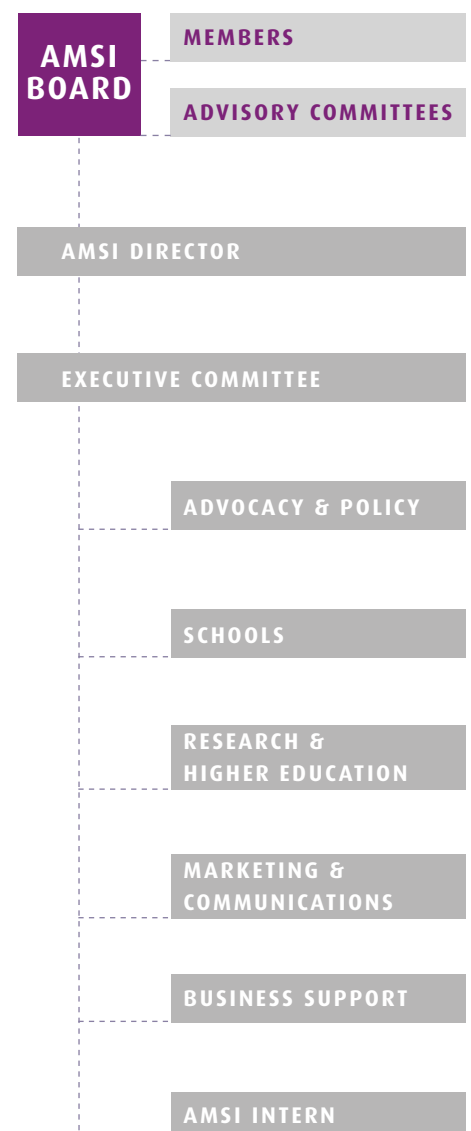
Remuneration of board members is noted in the financial statements at the conclusion of this report.

TERM OF BOARD MEMBERS

The persons comprising the board are appointed for terms of one year but are eligible to serve for one or more further terms if reappointed in accordance with clause 19.3 of the JVA. Board representatives for the full members and associate members will serve two-year terms.

In 2015 board meetings were held on 20 February, 5 May, 17 July and 2 November.

ORGANISATIONAL STRUCTURE



Committees & Stakeholders

BOARD MEMBERS

Dr Ron Sandland AM — *Chair*
AMSI

Prof. Lynn Batten
Deakin University

Prof. Nigel Bean
The University of Adelaide

Prof. Karen Day
The University of Melbourne

Dr Eileen Doyle FAICD
Company Director

Prof. Gary Froyland
Deputy Director, AMSI

Prof. Joseph Grotowski
The University of Queensland

Dr Adelle Howse
Leighton Holdings Ltd

Dr Mark Lawrence
Mark Lawrence Group

Prof. Geoff Prince
Director, AMSI

Lily Serna
Speaker & Presenter

Prof. Song-Ping Zhu
University of Wollongong

BOARD OBSERVERS

Dr Bob Anderssen
Chair, Education Advisory Committee

Prof. Jonathan Borwein
Chair, Scientific Advisory Committee

Prof. Nalini Joshi
Chair, National Committee for the
Mathematical Sciences

Prof. Tim Marchant
President, AustMS

Prof. Tony Guttmann
Director, MASCOs

AMSI RESEARCH & HIGHER EDUCATION COMMITTEE

Prof. Gary Froyland — *Chair*
University of New South Wales

Prof. Jonathan Borwein
The University of Newcastle

Assoc. Prof. Regina Burachik
University of South Australia

Dr Peter Caccetta
CSIRO

Michael Cromer
The Australian National University

Prof. Norm Dancer
The University of Sydney

Prof. Jan De Gier
The University of Melbourne

Prof. Andrew Eberhard
RMIT University

Prof. Joseph Grotowski
The University of Queensland

Simi Henderson
AMSI Program Manager (Research &
Higher Education)

Assoc. Prof. Inge Koch
Executive Director — CHOOSEMATHS

Prof. Tim Marchant
Australian Mathematical Society

Prof. Geoff Prince
Director, AMSI

Dr Matt Ritchie
Walter & Eliza Hall Institute

AMSI SCIENTIFIC ADVISORY COMMITTEE

Prof. Jonathan Borwein — *Chair*
University of Newcastle

Prof. Ben Andrews
Australian National University

Prof. Philip Broadbridge
La Trobe University

Prof. Darren Crowdy
Imperial College London

Prof. Ezra Getzler
Northwestern University

Assoc. Prof. Frances Kuo
University of New South Wales

Prof. Elizabeth Mansfield
University of Kent

Prof. Geoff Prince
Director, AMSI

Prof. Kate Smith-Miles
Monash University

Prof. Terry Speed
UC Berkeley, Walter & Eliza Hall Institute

Prof. Terry Tao
UCLA; Clay Mathematics Institute

Prof. Ole Warnaar
The University of Queensland

AMSI INDUSTRY ADVISORY COMMITTEE

Dr Mark Lawrence — *Chair*
Mark Lawrence Group

Prof. Nigel Bean
University of Adelaide

Dr Eileen Doyle FACID
Company Director

Joe Forbes
Biarri Commercial Mathematics

Dr Hannah Hartig
Program Manager (AMSI Intern)

Dr Adelle Howse
CIMIC

Prof. Geoff Prince
Director, AMSI

Bryan Quinn
BHP Billiton

AMSI EDUCATION ADVISORY COMMITTEE

Dr Bob Anderssen — *Chair*
CSIRO

Dr Amie Albrecht
University of South Australia

Abdulmoed Arayne
Brunswick Secondary College

Dr Frank Barrington
University of Melbourne

Prof. Kim Beswick
AAMT President

Peter Brown
University of New South Wales

Dr Michael Evans
AMSI Senior Consultant

Janine McIntosh
AMSI Program Manager (AMSI Schools),
CHOOSEMATHS Program Director

Prof. Geoff Prince
Director, AMSI

Prof. Jacqui Ramagge
University of Wollongong

Philip Swedosh
King David School

David Treeby
Presbyterian Ladies' College

CHOOSEMATHS COMMITTEE

Prof. Kate Smith-Miles — *Chair*
Monash University

Jennifer Dawson
BHP Billiton Manager Communities, BHP
Billiton Foundation

Jill Elsworth
QLD Department of Education, Director
Curriculum into the Classroom

Dr Michael Forbes
Biarri Commercial Mathematics

Assoc. Prof. Inge Koch
Executive Director — CHOOSEMATHS

Adjunct Prof. Gilah Leder
Monash University

Prof. Jennifer Graves AO
Distinguished Professor, La Trobe University

Nagla Jebeile
NSW Department of Education

Janine McIntosh
AMSI Program Manager (AMSI Schools),
CHOOSEMATHS Program Director

Michael O'Connor
AMSI Schools Outreach Project Manager

Prof. Geoff Prince
Director, AMSI

Dr Roslyn Prinsley
Office of the Chief Scientist for Australia
Adviser, STEM

Prof. Terry Speed
UC Berkeley, Walter & Eliza Hall Institute

Staff



Prof. Geoff Prince
DIRECTOR OF AMSI
director@amsi.org.au

Having previously held leadership roles at AMSI from 2004–2006, Geoff rejoined the institute as Director in 2009. A respected member of the Australian Mathematical Sciences community, he has also held positions as Head of Mathematics and Statistics at La Trobe University and Vice President of the Australian Mathematical Society (2008–2009). His research interests are in the field of applications of differential geometry to differential equations, uncovering results in electrodynamics through to highway design.



Prof. Gary Froyland
DEPUTY DIRECTOR
g.froyland@unsw.edu.au

An ARC Future Fellow and Professor in the School of Mathematics and Statistics at the University of New South Wales (UNSW), Gary's research areas include ergodic theory, dynamical systems and optimisation. While at UNSW he has been awarded three ARC Discovery Projects, an ARC Linkage Project, a Future Fellowship and has been a Chief Investigator in MASCOs. Prior to his appointment at UNSW, he was a Senior Scientist at BHP Billiton Technology in Melbourne. His work at BHP Billiton produced three patent applications and he was awarded the BHP Billiton Innovation Prize.



Assoc. Prof. Inge Koch
EXECUTIVE DIRECTOR,
CHOOSEMATHS
inge@amsi.org.au

As Executive Director for AMSI and the CHOOSEMATHS program, Inge is building on her experience in and passion for engaging girls and young women in her love for mathematics. Prior to joining AMSI in 2015, Inge worked in industry and the CSIRO, and had academic positions at Newcastle University, UNSW and Adelaide University. Her statistics research interests focus on analysis of high-dimensional data with applications in proteomics and cancer research.



Janine McIntosh
PROGRAM MANAGER (AMSI SCHOOLS), CHOOSEMATHS PROGRAM DIRECTOR
janine@amsi.org.au

Janine is the Schools Program Manager. Her role is to develop school mathematics material and to work with teachers to enhance the mathematics experiences of the children they teach. Janine is an experienced primary school teacher, curriculum writer for the VCAA and the Australian Curriculum, Assessment and Reporting Authority and mathematics educator at the University of Melbourne. She is also a member of the Maths Challenge committee of the Australian Mathematics Trust.



Simi Henderson
PROGRAM MANAGER (RESEARCH & HIGHER EDUCATION)
simi@amsi.org.au

Simi's role is to facilitate national and international research collaborations and provide research training for AMSI Members. In her time at AMSI, Simi has increased the scale and impact of the Research and Higher Education programs by developing partnerships, implementing a coordinated marketing strategy and securing funding. Simi graduated in 2002 with a Bachelor of Science in Social Policy from the London School of Economics.



Dr Hannah Hartig
ACTING NATIONAL PROGRAM MANAGER (AMSI INTERN)
hannah@amsi.org.au

Drawing on her extensive senior management and university-industry partnerships experience, Hannah has overseen the national operational and strategic management of AMSI Intern to foster multi-discipline growth and intern placements across all industry sectors. Her past roles include Research Partnerships Manager and Faculty of Science and Manager of the School of Earth Sciences at the University of Queensland.



Cate Ballard
NATIONAL PROGRAM MANAGER (AMSI INTERN) (on maternity leave)
cate@amsi.org.au

Cate has been the National Program Manager for AMSI Intern since September 2011. Her role is to develop and grow the postgraduate internship program. Before coming to AMSI, Cate worked at the International College of Management, Sydney in a dual role as an Industry Training/Business Development Manager. She has also held strategic sales and marketing roles with two leading hotel chains in Australia.



Mari Ericksen
MARKETING & COMMUNICATIONS MANAGER
mari@amsi.org.au

Mari is responsible for developing the marketing and communications strategies and plans for AMSI and its programs. Before joining AMSI, Mari held senior marketing positions at the Financial Times (UK) and the Victorian National Parks Association. Mari graduated in 1999 with a Bachelor of Business in Tourism and Hospitality from La Trobe University.



Rod Birch
BUSINESS MANAGER
r.birch@amsi.org.au

Rod joined AMSI as Business Manager in October 2011. Formerly with the Faculty of Medicine, Dentistry and Health Sciences at the University of Melbourne, his career has spanned work in Government, two major accounting firms and a major bank and has included consulting to the tertiary education sector.

HONORARY STAFF

Dr Michael Evans
Senior Consultant

Jan Thomas OAM
Research Fellow

NON-EXECUTIVE STAFF

Kirsten Doert
EA to the Director (From March 2015)

Anne Nuguid
EA to the Director (Until February 2015)

Maaiké Wienk
ACE Coordinator/Finance Officer

MARKETING & COMMUNICATIONS

Paul Murphy
Graphic Designer

Michael Shaw
Multimedia Manager

Laura Watson
Media & Communications Officer (From September 2015)

Stephanie Pradier
Media & Communications Officer (Until September 2015)

AMSI SCHOOLS

Jacinta Blencowe
Outreach Officer

Sara Borghesi
Outreach Officer

Greg Carroll
Outreach Officer

Lauren Draper
Administrative support

Claire Embregts
EA, Schools

Marcus Garrett
Outreach Officer

Dr Susan James
Outreach Officer

Ann Kilpatrick
Outreach Officer

Dr Tania King
Gender Researcher

Kristin Marriner
CHOOSEMATHS, Marketing & Communications Coordinator

Michael O'Connor
Schools Outreach Project Manager

Kerrie Shearer
Outreach Officer

Darla Trejo
CHOOSEMATHS, Finance & Admin Officer

AMSI INTERN

Margo Brown
EA, National Program Manager & Admin Assistant

Brad Buller
Admin Assistant

Rachel Geddes
Business Development Officer (Victoria)

Robert Mann
Business Development Officer (Victoria)

Anne Nuguid
Project Officer, AMSI Intern

Mark Ovens
Business Development Officer (NSW)

PARKS VIC

Dr Kally Yuen
Statistician

RESEARCH & HIGHER EDUCATION

Elizabeth Phu
Project Officer RHED

Joanna Wilson
Project Officer RHED (Until September)

Liam Williamson
Administration Support

Financials

AMSI's financial records are managed and administered by AMSI staff by utilising the accounting and financial systems of the University of Melbourne. All financial statements are reconciled to the University of Melbourne's integrated financial system to ensure compliance with relevant policy and to confirm the amount of cash reserves held by the University of Melbourne on behalf of AMSI.

During the year we successfully transitioned to our own department within the Faculty of Science, so our funds are now held independently of the School of Mathematics and Statistics.

Our operating performance for the year was largely within expectation, having regard to operating conditions we experienced.

Our total income for the year was \$6,492,478. Two major developments contributed to the increase over 2014 revenues. This year we began our work with the CHOOSEMATHS Program funded by the BHP Billiton Foundation (\$4,247,342). In addition we commenced work on our intern collaboration agreements with key members in Victoria and New South Wales (\$655,000).

Other income included grant income from the Commonwealth (\$259,000), membership subscriptions (\$752,600), publishing (\$185,253), other grants (\$216,341) and sponsorships,

interest and other income (\$176,942).

Our expenses for the year totalled \$4,407,136, incurred across our key operating areas. Our Directorate activities which includes Governance and Outreach incurred \$1,033,997 in line with expectations. Our Research and Higher Education Program incurred \$1,008,383 in line with expectations. The Schools Program incorporating CHOOSEMATHS incurred \$1,586,493, which was below budget due to the delayed start of activities. Our Internship Program incurred \$778,263, which was also below expectations, again due to the delayed start of activities.

Major commitments to CHOOSEMATHS and the Intern Program are a feature of our increased expenditure as compared to 2014.

In overall terms, the Institute derived a net operating surplus of \$2,085,342 for the reporting period (\$6,492,478 income less \$4,407,136 expenses). Together, the opening cash of \$1,415,702 and the operating surplus contributed to our closing cash position of \$3,501,044. It should be noted that, of this amount, \$2,763,151 is committed to CHOOSEMATHS, whilst \$365,494 is committed to Investing in Mathematics. In addition, within AMSI Core, we carry forward funds of \$372,399, of which \$225,000 is committed for expenditure

in the Schools Program and \$70,000 for expenditure in the AMSI Intern program.

CERTIFICATION

The University of Melbourne undertakes to provide audited financial statements for all contractually funded activities when required by the relevant funding body, but not generally for AMSI as a whole. In the absence of an overall annual audit statement, the following certification is provided.

We hereby certify that funds received by AMSI during the reporting period ended 31 December 2015 and the expenditure incurred during that period were in accordance with all relevant funding agreements, with the AMSI Joint Venture Agreement, and with the approved Business Plan.

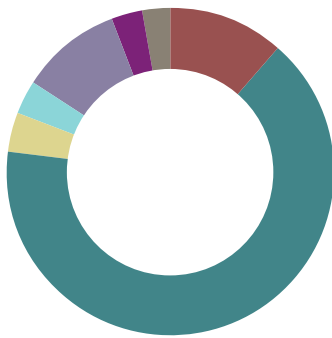
The balance of cash reserves as at 31 December 2015 of \$3,501,044, as detailed in the following financial statements, is consistent with the balance of AMSI funds as represented in the accounting records of the University of Melbourne as at 31 December 2015.



Geoff Prince
Director



Rod Birch
Business Manager



Institute Income

AMSI Membership Subscriptions	752,600
CHOOSEMATHS - BHP Billiton Foundation	4,247,342
Investing in Maths - Commonwealth Government Grant	259,000
Other Grants - Schools Program	216,341
Internships	655,000
Publishing Revenue - CUP and copyright revenues	185,253
Other income - includes consulting, sponsorships and interest income	176,942
Total	\$ 6,492,478



Institute Expenditure

Directorate - including Governance and Outreach	1,033,997
Research and Higher Education	1,008,383
Schools Education - including the CHOOSEMATHS Program for 2015	1,586,493
Internships	778,263
Total	\$ 4,407,136

Statement of Financial Performance

	1 Jan 2015 to 31 Dec 2015		1 Jan 2014 to 31 Dec 2014	
	\$	\$	\$	\$
INCOME				
Membership Income				
AMSI Membership Subscriptions		752,600		1,194,760
Major Grants				
Investing in Maths - Commonwealth Grant for Higher Education		259,000		984,000
CHOOSEMATHS - BHP Billiton Foundation		4,247,342		
Other Grants - Schools Program		216,341		312,336
Internships - includes collaboration and placement fees		655,000		214,000
Publishing Revenue - CUP and copyright revenues		185,253		223,397
Other income - includes consulting, sponsorships and interest income		176,942		257,736
Total Income		6,492,478		3,186,229
EXPENDITURE BY PROGRAM				
Directorate - including Governance and Outreach		1,033,997		1,068,154
Research and Higher Education		1,008,383		948,356
Schools Education - including the CHOOSEMATHS Program for 2015		1,586,493		416,396
Internships		778,263		261,770
Total Expenditure		4,407,136		2,694,676
Operating Surplus/(Deficit)		2,085,342		491,553
STATEMENT OF FINANCIAL POSITION				
	As at 31 Dec 2015		As at 31 Dec 2014	
	\$	\$	\$	\$
ASSETS				
Funds on Hand:				
Project 000020 - AMSI Core	372,399		806,807	
Project 099901 - CHOOSEMATHS BHP Billiton Foundation Grant	2,763,151			
Project 080060 - Investing in Mathematics Commonwealth Grant	365,494	3,501,044	608,895	1,415,702
Net Assets		3,501,044		1,415,702
EQUITY				
Retained income brought forward	1,415,702		924,149	
Net of income over expenditure	2,085,342	3,501,044	491,553	1,415,702
Net Equity		3,501,044		1,415,702

AMSI Publications

AMSI produces a suite of publications, resources and reports to support delivery of its core programs and enhance engagement with the Australian mathematical sciences and broader community. These can be accessed via the links provided below.



AMSI TRACK RECORD

Providing a 'helicopter' view of AMSI's growth and impact since 2002, *Track Record* documents the evolution and key achievements of each of the institute's core programs.

amsi.org.au/track-record-publication



MATHS AD(D)S

Australia's leading mathematics career resource, this guide is updated annually to empower students with a full overview of the growing industry opportunities open to those with high-level mathematics.

amsi.org.au/mathsadds2015



ANNUAL REPORT

This report provides a snapshot of AMSI's key achievements and activities, highlighting successes across all program areas and the institute's impact on the mathematical sciences through policy, advocacy and outreach.

amsi.org.au/annual-report



THE UPDATE

This biannual magazine spanning the mathematical sciences pipeline, takes an in-depth view of the latest 'hot topics', industry successes and research from AMSI and Australia's mathematical sciences community.

amsi.org.au/the-update-publication



DISCIPLINE PROFILE OF THE MATHEMATICAL SCIENCES

Released annually, *the Discipline Profile of the Mathematical Sciences* is the 'go to' data resource for media, policy makers and discipline and community stakeholders interested in the state of Australian mathematics at all stages of the pipeline.

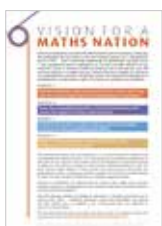
amsi.org.au/discipline-profile



AMSI GENDER REPORT

AMSI undertook an international literature survey and reported the results in the *AMSI Gender Report 2014*. This research provides the evidence base for the design of the BHP Billiton Foundation program.

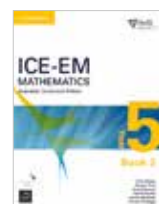
amsi.org.au/genderreport2014



VISION FOR A MATHS NATION

AMSI's core policy document, *Vision for a Maths Nation* sets the institute's key priorities for intervention at all stages of the mathematical pipeline as identified within the *Discipline Profile*.

amsi.org.au/maths_nation



TEXTBOOKS

Available through Cambridge University Press, the ICE-EM series targets Years 5-10 to support transition from primary to secondary school. As well as required curriculum content, the books cover additional topics relevant and essential for a robust understanding of mathematics.

amsi.org.au/ice-em-textbooks



RESEARCH REPORT

Illustrating the cross-discipline and industry impact of the mathematical sciences, this report documents the success and impact of AMSI's Research and Higher Education programs and annual research related activities.

amsi.org.au/research-reports/



AMSI WEBSITES

amsi.org.au
amsiintern.org.au
research.amsi.org.au
highered.amsi.org.au
Schools.amsi.org.au
calculate.org.au
careers.amsi.org.au

