Jacqui Ramagge

Current Position

Professor of Mathematics at the University of Sydney, Australia

Contact Details

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Selected Personal Details

Nationalities: Australian, English, & Spanish. Children: Adrian (b. 1998), Daniel (b. 2002).

Qualifications

1993	PhD	Mathematics	University of Warwick, UK
1990	MSc	Mathematics	University of Warwick, UK
1988	BA (First Class)	Mathematics	University of Warwick, UK

Professional Development

2015	General Management Program	Harvard Business School
2014	Foundations of Directorship	Aust. Inst. of Company Directors
2008	Resolving conflict using emotional intelligence	AVCC workshop

Employment History

2015–	Professor	University of Sydney (USyd)
2007–2015	Academic (Levels D–E)	University of Wollongong (UOW)
1993–2007	Academic (Levels A–C)	University of Newcastle (UoN)

Leadership Positions Held

2017–	Chair	Australian Council of Heads of Maths and Stats
2016–	Head	School of Mathematics and Statistics, USyd
2017–	Chief Editor	Lecture Series, The Australian Mathematical Society (AustMS)
2014	Chair	Australian Research Council (ARC) Laureate Fellowship Selection Advisory Committee (FL SAC)
2009–2013	Head	School of Mathematics and Applied Statistics, UOW
2008-2009	Director	AMSI Summer School, held at UOW
2006	Director	Women@UoN Program, UoN

Notable Memberships

2017	Three review panels: one Faculty, one School, one ARC CoE
2016	Royal Society of New Zealand , Member of Marsden Fund Mathematics and Information Sciences panel
2015	ARC Excellence for Research in Australia, Member of Mathematics, Information and Computing Sciences Research Evaluation Committee
2010–2014	ARC: College of Experts (2010–12) and Laureate Fellowship SAC (2012–14)
2012	Australian Curriculum, Assessment and Reporting Authority (ACARA): Senior Secondary Mathematics Curriculum Advisory Panel
2011– 2014	Australian Academy of Science: National Committee for the Mathematical Sciences
2009–	Australian Mathematical Sciences Institute Educational Advisory Committee

Media Experience

2016	Series of University of Sydney videos on ATAR
2016	Sydney Morning Herald video clip *Can you game the ATAR?* (>140k hits in 48 hrs)
2014	*730* Report on *Crisis in Maths*, Friday January 24 2014
2011	*Life Matters* Radio National *Is maths a foreign language?*, 30 May 2011
1999 – 2005	ABC Radio Newcastle *Maths Talkback* with Paul Bevan and others

EXECUTIVE SUMMARY

I have a significant profile in Leadership, Research, Teaching, and Service.

Leadership

I lead by example; my performance makes me a credible leader of both research and teaching endeavours in complex environments. I have strong communication skills that enable me to effectively communicate a vision to both academic and professional staff at all levels.

In my first year as Head of SoMS at USyd we hired 10 academic staff, undertook major curriculum reform, improved research performance, and delivered a surplus above budget.

I was Head of SMAS at UOW from 2009 to 2013. During that time we: appointed 25 new academic staff; increased our annual competitive income by 48%; increased our consultancy income by 560%; increased our ERA score in the 01 FOR code from 3 to 4; increased our undergraduate EFTSL by 24%; increased average entry scores of mathematics undergraduate students; supervised the third-largest cohort of research students in mathematical sciences in Australia; received two national teaching citations; and were part of a successful $2M national project funded by the OLT. My interpersonal and leadership skills were reflected in the *Your Voice* survey, with *Engagement* in the School increasing from 85% in 2007 (the last survey prior to my appointment) to 91% in 2012 (the last survey during my tenure).

I was Deputy Chair of the ARC DECRA Selection Committee in 2012 and Chair of the Australian Laureate Fellowships Selection Advisory Committee in 2014. I have been Head of the School of Mathematics and Statistics at USyd since 1 January 2016.

Research

Research is a central and critical component of my academic career.
I have focused on research across mathematical boundaries, bringing insight and innovation to core areas of interest. For example, I used a combination of algebra, geometry and functional analysis to progress the Baum-Connes conjecture and I have worked with electrical engineers. My major projects are on: the structure of totally disconnected, locally compact groups; self-similar actions; and the classification of equilibrium states on C^*-algebras.

I have given plenary talks at international conferences and earned over $2M in external competitive research funding since 2002. Given a choice, I work as part of a team.

Teaching

I enjoy teaching, take it very seriously, and received a teaching award from the University of Newcastle Faculty of Science and IT. In my last Student Evaluation of Teaching, the average of the first eight questions was 5.8 out of a possible 6. I am on the Educational Advisory Committee for the Australian Mathematical Sciences Institute, and I served on the national ACARA Advisory Panel for the Australian Senior Secondary Mathematics Curriculum.

Service

I believe that contributions to the immediate and broader community are of paramount importance to the success of individual academics, as well as the discipline and the institutions they serve. As a sample of my contributions, I have served on: the Australian Mathematics Trust Primary Problems Committee since 2003; the UOW Academic Senate 2009–2015; the ARC College of Experts 2010–2012; the Australian Academy of Sciences National Committee for the Mathematical Sciences 2011–2014; the ARC Australian Laureate Fellowships Selection Advisory Committee 2012–2014; the UOW Council 2013–2015; the UOW Central Professorial Promotion Committee 2014; and the ARC Excellence in Research Australia Mathematics, Information and Computing Sciences Research Evaluation Committee 2015.

Leadership, Governance and Service

Head, School of Mathematics and Statistics at the University of Sydney

I have been Head of the School of Mathematics and Statistics at USyd since 1 January 2016. In my first year as Head we hired 10 ongoing academic staff, undertook major curriculum reform, improved research performance, and delivered a surplus above budget.

At the institutional level I have served on appointment committees for other disciplines (3 HoS positions, one team relocation, and 3 targeted appointments), and am a member of the University Executive Education Committee and the USyd SAGE Self-Assessment Team.

Head, School of Mathematics and Applied Statistics at UOW

I was Head of the School of Mathematics and Applied Statistics at UOW from August 2009 to December 2013. During that time I was responsible for: leading both teaching and research in the School; operationalising the UOW strategic plan; and performance management of staff. Initially I was the direct manager of all staff including all postdoctoral researchers and all four professional staff. Over time I developed a more sophisticated managerial structure with more appropriate reporting lines for staff. Throughout my time as Head, I remained responsible for the management of all Professors in the School despite being an Associate Professor at the time of my appointment.

The School thrived under my leadership. We appointed 25 new academic staff, many funded from external sources, and supervised the third-largest cohort of research students in the mathematical sciences in Australia. We increased our performance and enhanced our reputation in both research and teaching.

In research we

- increased our annual income from national competitive grants by over 48% (from $725k to $1.08M per annum), including a Future Fellow and a DECRA;
- increased our annual income from consultancy by over 560% (from $449k to $2.53M per annum);
- increased our Excellence in Research in Australia (ERA) score in 01 Mathematical Sciences from world class (3) to above world class (4).

In teaching and learning we

- increased our annual undergraduate EFTSL by over 24% (463 to 575);
- increased the average entry score of undergraduates in mathematics from a UAI of 79 to an ATAR of 87;
- received two national teaching citations for Rodney Nillsen and Caz Sandison;
- were part of a successful $2M project, *Inspiring mathematics and science in teacher education*, funded by the Office of Learning and Teaching.

This success was due to the hard work of the staff in the School. However, as Head my job was to provide the environment in which activities that led to these successes were valued, encouraged, and supported.

There were also some challenges. Some were managerial, such as an academic whose appointment was not confirmed at the end of his probationary period. Some were critical

incidents: the sudden unexpected death of a young member of staff; the suicide of a student; and the deaths of two other students in separate accidents. Although traumatic, the School emerged stronger and more united after each of these incidents.

My leadership is also reflected in the results of the *Your Voice* survey; the School's overall Engagement score increased from 85% in 2007 (the last survey prior to my appointment) to 89% in 2010 and to 91% in 2012 (the last survey during my tenure).

Australian Research Council

As a member of the Engineering, Mathematics and Informatics panel of the ARC College, 2010–2012 I helped award: Discovery Projects, Linkage Projects, Future Fellowships, Discovery Early Career Researcher Awards (DECRAs), and Discovery Outstanding Researcher Awards (DORAs). During 2012–2014 I served on the Australian Laureate Fellowship Selection Advisory Committee. I was Deputy Chair of the DECRA panel in 2012 and Chair of the Australian Laureate Fellowship Selection Advisory Committee in 2014. In 2015 I served on the ERA Research Evaluation Committee for Mathematics, Information and Computation Sciences.

In a similar vein, I served on the Marsden Fund Mathematics and Information Sciences Panel for the Royal Society of New Zealand.

Review Panels

I have served on three review panels: one review of a Faculty at the University of Sydney, one review of a School at another institution, and one review of an ARC Centre of Excellence.

Relocating a Research Team

I negotiated the relocation of a team of four mathematicians from the University of Newcastle, Australia, to the University of Wollongong, Australia, in 2007. At the time this was a complete novelty in mathematics. I was not the most senior member of the team and am still awed by the trust placed in me by my colleagues during that process.

Mentoring and Professional Development

I have a long-standing interest in professional development at all levels. As well as directing Women@UoN I have: been a mentor for the UOW Early Career Development Program since its inception in 2011 until my departure in 2015; mentored a Head of School from another Faculty; mentored UOW Laureate Fellowship applicants; presented at the AustMS Early Career Workshops in 2012 and 2013; mentored postgraduate students in the mathematical sciences via the BH Neumann Prize both personally and in writing [1]; and presented at Leadership programs. My role as Head of School necessarily involves mentoring, both informally and formally within the various career development processes at UOW and USyd. This has included career planning with outcomes ranging from promotions to successful DECRA and Future Fellowship applications.

[1] J. Ramagge, *How to make life hell for the judges of the B.H. Neumann Prize,* Austral. Math. Soc. Gaz. 23 (1996) 186–187.

Research

Research Interests

I have broad interests across mathematics and its applications. I have published in group theory, functional analysis, operator algebras, and control theory. My current major projects are on: the general structure theory of totally disconnected, locally compact groups; the study of self-similar actions; and the classification of KMS states on C^*-algebras.

Researcher Profiles

In my mathematical papers, authors are listed alphabetically.

ResearcherID profile: http://www.researcherid.com/rid/D-4449-2012

ORCiD profile: http://orcid.org/0000-0001-9376-5712

Google Scholar profile: http://scholar.google.com.au/citations?user=JFfZfpAAAAAJ&hl=en

My MathSciNet author ID is 352868. From UOW this can be accessed via

http://www.ams.org.ezproxy.uow.edu.au/mathscinet/search/author.html?mrauthid=352868

Australian Research Council Grants

2017–2019	Ramagge, Brownlowe, Raeburn, and Laca, DP170101821, $286,000 *From actions to operator algebras and their equilibrium states*
2015–2017	Willis and Ramagge, DP150100060, $443,000 *Scale-Multiplicative Semigroups and Geometry*
2013–2015	Ramagge and Raeburn, DP130100490, $390,000 *States and structure of operator algebras from self-similar actions*
2010–2013	Ramagge, Raeburn, and Laca, DP1096001, $420,000 *Structure and states of operator-algebraic dynamical systems*
2009–2014	Willis and Ramagge, DP0984342, $376,868 *Totally disconnected groups in algebra and geometry*
2005–2007	Willis and Ramagge, DP0556017, $234,000 *Geometric representation of small-rank totally disconnected groups*
2003–2005	Raeburn, Ramagge, Laca, and Larsen, LX0348081, $50,600 *Hecke Algebras in Algebra and Analysis*
2002–2004	Willis and Ramagge, DP0208137, $185,000 *Totally disconnected groups and their algebras*

Other Significant Funding

2007	VolkswagenStiftung: Willis *et al* (Ramagge 1 of 4), €44,000 *Totally disconnected Groups, Graphs and Geometry*

In the following list, some authors are highlighted as follows:

- Student co-authors are marked with a ^{s}.
- Post-doctoral coauthors are marked with a ^{p}.
- Early-career or mid-career coauthors to whom I provided significant mentoring during the collaboration are indicated with a ^{m}.

Authors are listed alphabetically in all but [17]. Author contributions to each paper is equal with that of the other authors except for: [17] in which I did not significantly contribute to the engineering applications discussed; and [13] in which five of the authors were undergraduate students being guided through a research project.

The figure (a/b Qi) represents the SCImago 2015 exact and quartile journal rank.

Scholarly book chapters:

[24] A. Ram and J. Ramagge, Affine Hecke Algebras, cyclotomic Hecke algebras and Clifford theory, A tribute to C. S. Seshadri (Chennai, 2002), 428–466, **Trends Math.**, Birkhäuser, Basel, 2003.

Refereed journal articles:

[23] M. Laca, I. Raeburn, J. Ramagge, and M.F. Whittaker^p, Equilibrium states on operator algebras associated to self-similar actions of groupoids on graphs, 48 pages, arxiv.org:1610.00343.pdf

[22] N. Brownlowe^m, D. Pask, J. Ramagge, D. Robertson^p, and M.F. Whittaker^p, Zappa-Szép product groupoids and C^*-blends, *Semigroup Forum* 94 (2017) 500–519. (23/78 Q2)

[21] U. Baumgartner, J. Ramagge and G.A. Willis, Scale-multiplicative semigroups and geometry: automorphism groups of trees, **Groups Geom. Dyn.** 10 (2016) 1051–1075. (5/45 Q1)

[20] M. Laca, I. Raeburn, J. Ramagge, and M.F. Whittaker^p, Equilibrium states on the Cuntz-Pimsner algebras of self-similar actions, **J. Funct. Anal.** 266 (2014) 6619–6661. (8/118 Q1)

[19] N. Brownlowe^m, J. Ramagge, D. Robertson^p, and M.F. Whittaker^p, Zappa-Szép products of semigroups and their C^*-algebras, **J. Funct. Anal.** 266 (2014) 3937–3967. (8/118 Q1)

[18] M. Laca, I. Raeburn and J. Ramagge, Phase transition on Exel crossed products associated to dilation matrices, **J. Funct. Anal.** 261 (2011) 3633–3664. (8/118 Q1)

[17] J. Mare^s, J. De Doná, M. Seron^m, H. Haimovich^{m}and J. Ramagge, When does QP yield the exact solution to constrained NMPC?, **Int. J. Control** 82 (2009) 812–821. (31/598 Q1)

[16] U. Baumgartner^m, M. Laca, J. Ramagge and G.A. Willis, Hecke algebras from groups acting on trees and HNN extensions, **J. Algebra** 321 (2009) 3065–3088. (14/78 Q1)

[15] U. Baumgartner^p, J. Ramagge and B. Rémy, Contraction groups in complete Kac-Moody groups, **Groups Geom. Dyn.** 2 (2008) 337–352. (5/45 Q1)

[14] U. Baumgartner[p], J. Ramagge and G.A. Willis, A compactly generated group, whose Hecke algebras admit no bounds on their representations, **Glasg. Math. J.** 48 (2006) 193–201. (118/373 Q2)

[13] U. Baumgartner[p], J. Foster[s], J. Hicks[s], H. Lindsay[s], B. Maloney[s], I. Raeburn, J. Ramagge and S. Richardson[s], Hecke algebras of group extensions, **Comm. Alg.** 33 (2005) 4135–4147. (35/78 Q2)

[12] J. Ramagge and W.W. Wheeler[m], Cohomology of buildings and finiteness properties of $\tilde{A}_n$-groups, **Trans. Amer. Math. Soc.** 354 (2002) 47–61. (25/373 Q1)

[11] J. Ramagge, A.G. Robertson and T. Steger, A Haagerup Inequality for $\tilde{A}_1 \times \tilde{A}_1$ and $\tilde{A}_2$ Buildings, **Geom. Funct. Anal.** 8 (1998) 702–731. (2/118 Q1)

[10] J. Ramagge and W.W. Wheeler[m], Posets and differential graded algebras, **J. Austral. Math. Soc. Ser. A** 64 (1998) 1–19. (258/373 Q3)

[9] J. Ramagge and A.G. Robertson, Factors from trees, **Proc. Amer. Math. Soc.** 125 (1997) 2051–2055. (73/373 Q1)

[8] J. Ramagge and A.G. Robertson, Triangle buildings and actions of type III_{1/q^2}, **J. Funct. Anal.** 140 (1996) 472–504. (8/118 Q1)

[7] J. Ramagge, A realization of certain affine Kac-Moody groups of types II and III, **J. Algebra** 171 (1995) 713–806. (14/78 Q1)

[6] J. Ramagge, On certain fixed point subgroups of affine Kac-Moody groups, **J. Algebra** 171 (1995) 473–514. (14/78 Q1)

[5] J. Ramagge, Affine Kac-Moody groups of types II and III, **C. R. Math. Acad. Sci. Paris** 319 (1994) 207–212. (68/373 Q1)

Refereed conference papers:

[4] J. Ramagge, Groups, representations and Haagerup's inequality for buildings. Functional Analysis, Optimization and Applications, J. Giles and B. Ninness (eds), **Proc. CMA** 36 (1999) 121–126.

[3] J. Ramagge and A.G. Robertson, Factors from buildings, **Contemp. Math.** 206 (1997) 165–167.

Other research publications:

[2] B. Armstrong[s], M. Fielding[m], S. Kirk, and J. Ramagge, Factors affecting success in CHEM101 at UOW, **Austral. Math. Soc. Gaz.** 41 (2014) 91–98.

[1] J. Ramagge, An introduction to Kac-Moody groups, **Austral. Math. Soc. Gaz.** 19 (1994) 207–212.

Teaching

Teaching Experience and Evaluations

I have taught classes from primary school level to postgraduate coursework level varying in size from 5 to over 500. The delivery style has included workshops, tutorials, lectures, electronic delivery, multi-campus video-conference, and multimedia presentations.

At UOW the benchmark for student evaluations is the average of the first 8 questions on a standard questionnaire. My three most recent evaluations have had averages of 5.8 out of 6.

Educational Development

One of my first actions as Head of School at USyd was to initiate a full curriculum review. This has dovetailed nicely with the subsequent review of institutional offerings. We are rolling out three completely redeveloped majors (Mathematics, Statistics, and Financial Mathematics and Statistics) and one new major (Data Science) under the new framework in 2018.

I was a driving force in the development of the *Bachelor of Medical Mathematics* at UOW. It is particularly popular with females, who now constitute 33% of the UOW maths/stats cohort.

I initiated and coordinated the development of a new major in the Bachelor of Mathematics and Finance in *Quantitative and Computational Trading*. This involved extensive consultation with industry partners *Tibra Capital* who are world leaders in computational trading. Tibra Capital now provides over $110,000 per year in scholarships and prizes at UOW.

I developed and implemented a suite of mathematics content subjects for prospective primary school teachers. My efforts in this area are global and include teaching into the *Vermont Mathematics Initiative*. I received an individual mention in the Go8 *Review of Education in Mathematics, Data Science and Quantitative Disciplines* in 2009 for my work in this area.

Educational Funding

2009-2010	DEEWR: AMSI (Ramagge a member of the module-writing team), $2,000,000 *The Improving Mathematics Education in Schools project*
2008–2009	Australian Mathematical Sciences Institute: $220,000 AMSI Summer School (Ramagge as Director)
2008–2011	ALTC: Porter *et al* (Ramagge a Unit Leader), LE8-783, $220,000 *Building leadership capacity for the development and sharing of mathematics learning resources across disciplines and universities*