Curriculum Vitae

DOMINIC VERITY

Centre of Australian Category Theory Department of Mathematics and Statistics Faculty of Science and Engineering Macquarie University, Sydney, NSW 2109, Australia

Email: dominic.verity@mq.edu.au

Homepage: http://dom-verity.github.io

ORCID: https://orcid.org/0000-0002-4137-6982

URL: https://researchers.mq.edu.au/en/persons/dominic-verity

Current position

Emeritus Professor of Pure Mathematics, Macquarie University

Areas of research interest

Higher Category Theory • Homotopy Theory • Programming Languages

APPOINTMENTS HELD

2020-2021	Professor of Pure Mathematics, Department of Mathematics and Statistics, Faculty of Science and
	Engineering, Macquarie University, Australia
2012-2020	Professor of Computing, Department of Computing, Faculty of Science and Engineering, Macquarie
	University, Australia
2013-2017	Chair of Academic Senate, Vice-Chancellor's Office, Macquarie University, Australia
2001-2007	Director of Postgraduate Programs, Division of ICS, Macquarie University, Australia
2001-2012	Associate Professor, Department of Computing, Macquarie University, Australia
2000-2001	Senior Lecturer, Department of Computing, Macquarie University, Australia
1999-2000	Director and Lead Consultant, Categorical Solutions Pty. Ltd., Sydney, Australia
1996-1999	Head of Equity Derivative Trading, HSBC James Capel, Sydney, Australia
1995-1996	Senior Quantitative Analyst, Equity Derivatives Trading, Deutsche Bank, Syndey, Australia
1993-1995	Consultant Quantitative Analyst, Bain and Company, Deutsche Bank, Syndey, Australia
1993-1995	Lecturer, Department of Mathematics, Macquarie University, Australia
1992-1993	Research Fellow, Department of Mathematics, Macquarie University, Australia
1991-1992	Research Fellow, Department of Pure Maths and Mathematical Statistics, Cambridge University, UK
1983-1984	Computer Engineer, BBC World Service, Bush House, London, UK
1981-1983	Computer Programmer, Acorn Computers Limited (now ARM Limited), Cambridge, UK

MACQUARIE University

EDUCATION

1988-1992	PhD in Mathematics, Fitzwilliam College, Cambridge University, UK
1987-1988	Part III Mathematics, awarded with Distinction, Fitzwilliam College, Cambridge University, UK
1984-1987	BSc (Hons) Mathematics, Double 1st Class, Fitzwilliam College, Cambridge University, UK

RECENT AWARDS, INVITATIONS & HONORARY APPOINTMENTS

2020	Research Professor and Program Organiser, Mathematical Sciences Research Institute (MSRI)
	program "Higher Categories and Categorification", Berkeley (CA) USA.
2019	Visiting Research Fellow, Dept. of Mathematics, Johns Hopkins University, Baltimore (MD) USA
2018	Invited Mentor, Mass. Institute of Technology, Talbot Workshop, Course title: "Model-independent
	theory of ∞-Categories", Portland (OR) USA

2017	<i>Invited Lecturer</i> , AMSI Summer School 2017, Course title: "Category Theory and Computer Science", Sydney University, Australia.
2016	Visiting Professor, Dept. of Mathematics and Mathematical Statistics, Cambridge University, UK
2016	Visiting Research Fellow, Max Planck Institute for Mathemantics, Bonn, Germany
2015,2016	Visiting Research Fellow, Dept. of Mathematics, Johns Hopkins University, Baltimore MD, USA
2012-2015	Associate in Mathematics, Dept. of Mathematics, Harvard University, Cambridge MA, US (various separate appointments)
2011	Invited Participant, Mathematisches Forschungsinstitut Oberwolfach, Mini-workshop: "The
	homotopy interpretation of constructive type theory", Germany
2011	National Citation for Outstanding Contribution to Student Learning, Australian Learning and
	Teaching Council (ALTC), "For a decade of inspirational and innovative educational leadership in the
	field of Information Technology
2009	Vice Chancellor's Award for Teaching Excellence, Macquarie University, "For leadership and
	development of postgraduate and professional development programs in Information Technology"
2006 and 2009	Visiting Research Fellow, Fitzwilliam College and Visiting Professor, Department of Pure Mathematics and Mathematical Statistics, Cambridge University, UK

EXTERNALLY FUNDED GRANTS

2019-2021	(with R. Street, S. Lack & R. Garner) Australian Research Council, Discovery Project
	DP190102432, "Working synthetically in higher categorical structures", AU\$453,000
2016-2018	(with R. Street, S. Lack & R. Garner) Australian Research Council, Discovery Project
	DP160101519, "Monoidal categories and beyond: new contexts and new applications", AU\$580,900
2015-2018	(with M. Hillier, A. Fluck et. al.) Australian Government Office of Learning and Teaching,
	"Transforming exams across Australia: processes and platform for e-exams in high stakes, supervised
	environments", AU\$500,000
2013-2015	(with R. Street, S. Lack & R. Garner) Australian Research Council, Discovery Project
	DP130101969, "Structural homotopy theory: a category-theoretic study", AU\$600,000
2010-2012	(with R. Street, M. Johnson & S. Lack) Australian Research Council, Discovery Project
	DP1094883, "Applicable Categorical Structures". AU\$290,000
2007-2009	(with R. Street, M. Johnson & S. Lack) Australian Research Council, Discovery Project
	DP0771252 , "Cohomology enhanced: an application of enriched and higher categories". AU\$276,000

PhD students

2021 ongoing	(with S. Lack) David Farrell, "Model independent fibred ∞-category theory"
2021 ongoing	(with R. Garner) Yao Tang, "Higher categories and dependently typed logics"
2020 ongoing	(with S. Lack) Nicola Di Vittorio, "Higher derivators as a foundation for ∞-category theory"
2018 ongoing	(with R. Garner) Paula Verdugo, "Synthetic ∞-category theory"
2020 awarded	(with R. Street) Yuki Maehara, "The Gray tensor product for 2-quasi-categories", Vice-Chancellor's
	Medal for Excellence
2018 awarded	(with R. Garner) Edoardo Lanari, "Cylinder objects for Grothendiek-Maltsiniotis ∞-groupoids"
2015 awarded	(with R. Garner) Mitchell Buckley, "Three studies in higher category theory: fibrations, skew monoidal structures and excision of extremals"
2015 awarded	(with R. Garner) Matthew Burke, "Synthetic Lie Theory"
2012 awarded	(with R. Street) Thomas Booker, "Generalized and particular monoidal categories, and structures therein"
2012 awarded	(with R. Street) David Oury, "Duality for Joyal's category Θ and homotopy concepts for Θ -sets"
2011 awarded	(with M. Johnson) Micah McCurdy, "Cyclic *-autonomous categories and the Tannaka adjunction via graphical methods"
2011 awarded	(with A. Sloane) Matthew Roberts, "Compiled generics for functional programming languages"
2010 awarded	(with P. Watters) Wai Han Ho, "On the evaluation of face identification systems"
2007 awarded	(with A. Sloane) Ekaterina Stefanov, "Simple code compression and customisation for bytecode for interpreters"

PUBLICATIONS & TALKS

Selected articles and preprints

2021	(with M. Rovelli and V. Ozornova, submitted) GRAY TENSOR PRODUCTS AND SATURATED <i>n</i> -COMPLICIAL SETS, https://arxiv.org/abs/2007.01235, submitted to <i>Higher Structures</i> .
2020a	(with E. Riehl) On the construction of limits and colimits in ∞ -categories Theory and Applications of Categories, 35 (2020), 1101–1158.
2020b	(with E. Riehl) Infinity category theory from scratch, $Higher Structures$, $4(1)$ (2020), $115-167$. (invited publication)
2020c	(with E. Riehl) RECOGNIZING QUASI-CATEGORICAL LIMITS AND COLIMITS IN HOMOTOPY COHERENT NERVES, <i>Applied Categorical Structures</i> , 28 (2020), 669–716.
2018	(with E. Riehl) THE COMPREHENSION CONSTRUCTION, <i>Higher Structures</i> , 2(1) (2018), 116–190.
2017b	(with E. Riehl) Kan extensions and the calculus of modules for ∞-categories, <i>Algebraic and Geometric Topology</i> , 17-1 (2017) 189–271.
2017a	(with E. Riehl) Fibrations and Yoneda's Lemma in an ∞ -cosmos, <i>Journal of Pure and Applied Algebra</i> , 221(3) (2017) 499–564.
2016a	(with E. Riehl) Homotopy coherent adjunctions and the formal theory of monads. <i>Advances in Mathematics</i> , 286:802–888
2015b	(with E. Riehl) The 2-category theory of Quasi-Categories. <i>Advances in Mathematics</i> , 280:549–642
2015a	(with E. Riehl) Completeness results for quasi-categories of algebras, homotopy
	LIMITS, AND RELATED GENERAL CONSTRUCTIONS. Homology, Homotopy and Applications, 17(1):1–33
2014	(with E. Riehl) The Theory and Practice of Reedy Categories. <i>Theory and Applications of Categories</i> , 29(9):256–301
2010	(with R. Street) The comprehensive factorisation and torsors. <i>Theory and Application of Categories</i> , 23(3):42–75
2008	Weak complicial sets I, basic homotopy theory. <i>Advances in Mathematics</i> , 219:1081–1149
2007	WEAK COMPLICIAL SETS II, NERVES OF COMPLICIAL GRAY-CATEGORIES. In A. Davydov et al., editors, <i>Categories in Algebra, Geometry and Mathematical Physics (StreetFest)</i> , volume 431 of <i>Contemporary Mathematics</i> , pages 441–467. American Mathematical Society.
1995	(with A. Joyal & R. H. Street) Traced monoidal categories, Mathematical Proceedings of the Cambridge Philosophical Society, 119(3):425—446

Books and memoirs

(with E. Riehl) The elements of ∞-category theory,
http://www.math.jhu.edu/~eriehl/elements.pdf, 640 pages, contracted for publication by
Cambridge University Press in 2021.
ENRICHED CATEGORIES, INTERNAL CATEGORIES AND CHANGE OF BASE. Reprints in Theory and
Application of Categories, 20:1–266
Complicial Sets, Characterising the Simplicial Nerves of Strict ω -Categories,
volume 193 of Memoirs of the AMS. American Mathematical Society

Invited Keynotes, Courses and Plenaries

2020	INVITED MINI-COURSE, HIGHER CATEGORIES AND CATEGORIFICATION, Mathematical Sciences Research Institute, Berkeley (CA) USA, "Synthetic ∞-category theory".
2019	Invited mini-course, Foundational Methods in Computer Science, University of
	Calgary, Calgary Canada, "Synthetic ∞-category theory".
2019	Invited speaker, Tercer Coloquio de Categorías, Álgebra y Temas Afines, UNAM
	Oaxaca Mexico, "Synthetic ∞-category theory and ∞-cosmology"
2018	Invited speaker, Diagrammatic Reasoning in Higher Education, University of
	Newcastle, "An exploration of String Diagrams in Computer Science"
2018	Invited mini-course, Topology in Australia and South Korea (AMSI), POSTECH,
	Pohang, South Korea, "An introduction to model independent ∞-category theory"
2017	INVITED SPEAKER, CATEGORIES FOR HOMOTOPY THEORY AND REWRITING, CIRM, Luminy,
	France, talk entitled "A complicial compendium"
2016	Invited speaker, International Category Theory Meeting (ICTM2016) Dalhousie
	University, Halifax, Canada, talk entitled "On the Yoga of (Un)straightening"

2016	Invited speaker, 31st Summer Topology Conference, University of Leicester, UK, talk
•	entitled "A monadic account of Lurie's (un)straightening construction"
2015	INVITED SPEAKER, JOHNS HOPKINS TOPOLOGY SEMINAR, Baltimore MD, USA, talk entitled "The Unbearable Lightness of 2-Being"
2015	PLENARY SPEAKER, INTERNATIONAL CATEGORY THEORY CONFERENCE (CT15), Aveiro,
	Portugal, talk entitled "The calculus of modules for ∞-categories"
2014	PLENARY SPEAKER, INTERNATIONAL CATEGORY THEORY CONFERENCE (CT14), Cambridge,
	UK, talk entitled "The formal theory of $(\infty,1)$ -categories"
2013	Invited speaker, Harvard Topology Seminar, Cambridge MA, USA, talk entitled
	"COBORDISMS AND WEAK COMPLICIAL SETS"
2012	INVITED SPEAKER, MIT TOPOLOGY SEMINAR, Cambridge MA, USA, talk entitled "Homotopy
	coherent adjunctions and the walking adjunction"
2010	PLENARY SPEAKER, INTERNATIONAL CATEGORY THEORY CONFERENCE (CT10), Genova, Italy,
	talk entitled "On the 2-category theory of quasi-categories"
2009	PLENARY SPEAKER, INTERNATIONAL CATEGORY THEORY CONFERENCE (CT09), Cape Town,
	South Africa, talk entitled "Weak complicial sets and iterated Segal spaces"
2009	Plenary Speaker, 88th Peripatetic Seminar on Sheaves and Logic in Honour of the
	60th birthdays of Professors Martin Hyland and Peter Johnstone, University of Cambridge, United
	Kingdom, talk entitled "On the non-canonicity of complicial stratifications"
2008	Invited Speaker, Australian National University, Algebra Seminar, Canberra, Australia,
	talk entitled "Quasi-categories, weak complicial sets and manifolds"
2008	PLENARY SPEAKER, INTERNATIONAL CATEGORY THEORY CONFERENCE (CT08), Calais, France,
	talk entitled "Cobordisms and Weak Complicial Sets"
2007	Plenary speaker, International Category Theory Conference (CT07), Carvoeiro,
	Portugal, talk entitled "Weak complicial sets and internal quasi-categories"
2006	Keynote speaker, 50th Anniversary Meeting of the Australian Mathematical
	Society, Sydney, Australia, talk entitled "Non-abelian cohomology as the raison d'être for higher
	category theory"
2005	Invited speaker, Streetfest, Conference and Workshop in Honour of Ross
	STREET'S 60TH BIRTHDAY, Sydney and Canberra, Australia, talk entitled "A simplicial weak category
	theory"

SERVICE

2020-	MEMBER, EMERITUS PROFESSOR PANEL, responsible for making recommendations to Academic
	Senate regarding the appointment of Emeritus Professors, Macquarie University, Australia.
2017-	MEMBER, ORGANISING COMMITTEE, Mathematical Sciences Research Institute (MSRI) Scientific
	Program: "Higher Categories and Categorification (2020)", Berkeley (CA), USA.
2016-	DEPUTY DIRECTOR, CENTRE OF AUSTRALIAN CATEGORY THEORY, Macquarie University,
	Australia
2020-2021	MATHEMATICS RESEARCH LEAD, Department of Mathematics and Statistics, Faculty of Science
	and Engineering, Macquarie University, Australia.
2017-2021	CHAIR, UNIVERSITY DISCIPLINE COMMITTEE, Macquarie University, Australia, responsible for
	chairing hearings of all serious student misconduct cases, appointed at the request of the
	Vice-Chancellor.
2013-2017	CHAIR OF ACADEMIC SENATE, responsible for leading the academic governing body of Macquarie
	University, http://senate.mq.edu.au, elected 2012 & 2015
2013-2016	MEMBER, UNIVERSITY COUNCIL, the overall governing body of Macquarie University, elected
	2012 & 2015
2013-2016	Member, University Council Management, Appointments & Awards,
	Remuneration, and Discipline Committees
2011-2016	Elected Member, Academic Senate, elected 2010, 2012 & 2014
2013	(with R. Garner & S. Lack) Organiser, International Category Theory Conference
	(CT13), Macquarie University, Sydney, Australia
2011-2014	CHAIR, SENATE LEARNING AND TEACHING COMMITTEE, responsible for leading academic policy
	development for and oversight of Macquarie University's learning & teaching activities
2011-2015	Member, Macquarie University Teaching Excellence Academy, provide advice to the
	DVC Provost on all aspects of learning & teaching practice
2011	ACTING HEAD, DEPARTMENT OF COMPUTING, Macquarie University, Sydney, Australia
2006-2008	ELECTED MEMBER, ACADEMIC SENATE, elected 2005

2002-2007	Director, Postgraduate and Professional Development Programs, Division of
	Information and Communications Sciences, Macquarie University, Sydney
2002-2007 and	MEMBER, FACULTY EXECUTIVE, Division of Information and Communications Sciences,
2011	Macquarie University, Sydney
2003-2007	MEMBER, SENATE ACADEMIC PROGRAM COMMITTEE (APC) review, approval and quality
	assurance of all of Macquarie University's coursework programs
2005-2007	Chair, Undergraduate and Postgraduate Sub-Committees of APC

 $Last\ updated: January\ 12,2022 \bullet Typeset\ in\ Lua \LaTeX $$ $$ https://dom-verity.github.io$