

Michelle Strumila

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*Research in algebraic topology: cyclic and modular operads,
graphical and asteroidal sets, and topological quantum field
theories (TQFTs)*

Education

University of Melbourne

Melbourne, Australia

PhD. Mathematics

2020

Giving Daggers to Higher Cats: Generalised Quasi Operads, Astroidal Sets, and a Surface Operad

Supervisor: Marcy Robertson

Monash University

Melbourne, Australia

Bachelor of Science (Adv) with honours

2015

○ Honours thesis: TQFTs, Contact Geometry, and Information Theory

Supervisor: Daniel Mathews

○ Undergraduate thesis: Inhomogeneous Cosmology in an Anisotropic Universe

Supervisor: Daniel Price

Awards and Grants

All awards are in approximate conversion to AUD.

MSRI travel grant: Higher Categories and Categorification, USA, 2020, \$2700, *Unused due to Covid-19*

Cheryl Praeger Travel Grant: Women in Topology, Germany, 2019, \$3000

Foundation Compositio Travel Grant: Women in Topology, Germany, 2019, \$800

Student Support Scheme: AustMS, Adelaide, 2018, \$600

Topology in Australia and South Korea: IBS-CGP, Pohang, 2018, \$3000

MSRI travel grant: Derived geometry and higher categorical structures in geometry and physics, 2018, \$1,400

WIMSIG travel grant: Women in mathematics conference, Adelaide, 2017, \$600

AMSI travel grant: Summer school, 2015

AMSI research award: Vacation research project, 2014, \$2700

Publications

M Strumila. Quasi modular operads. *In preparation*

E Belmont, N Castellana, J Grbić, K Lesh, and M Strumila. The normalizer decomposition for p-local compact groups. *In preparation*

E Belmont, N Castellana, J Grbić, K Lesh, and M Strumila. A new approach to mod 2 decompositions of $BSU(2)$ and $BSO(3)$. *Preprint, submitted for publication, 2020, <https://arxiv.org/abs/2004.07306>*

Conferences and Seminar Talks (Selected)

Monash Topology Seminar: Monash University, Melbourne, Australia, 2020

- Graphical Sets and a Mapping Class Group Operad

Category theory session at AustMS: Monash University, Melbourne, Australia, 2019

- Graphical Sets and Surfaces

Algebraic Topology Seminar: Universitat Autònoma de Barcelona, Barcelona, Spain, 2019

- Extensions of Infinity Operads

Women in Topology: Hausdorff Institute of Mathematics, Bonn, Germany, 2019

- Fusion categories

With Natalia Castellana, Kathrine Lesh, Jelena Grbic, and Eva Belmont

Category theory session at AustMS: University of Adelaide, Australia, 2018

- The Mapping Class Group Operad

Topology in Australia and South Korea: IBS-CGP, Pohang, South Korea, 2018

Category theory, algebraic topology, and K-theory session at AustMS: Macquarie University, Sydney, Australia, 2017

WIMSIG conference: University of South Australia, Australia, 2017

- Coloured Cyclic Operads

Topology in Australia and South Korea: University of Melbourne, Australia, 2017

Higher structures in Geometry and Physics: Matrix, Creswick, Australia, 2016

AMSI VRS: University of New South Wales, 2014

- Topological Quantum Field Theory and Information Theory

Teaching

Monash University

Melbourne, Australia

Teaching Assistant

2014–

- *MTH2010: Multivariable calculus*

Finding and proving limits in two variables (including $\varepsilon - \delta$ proofs), partial derivatives, Green's theorem and Stoke's theorem

- *MTH1030: Techniques for modelling*

Calculus and linear algebra

- *MAT2003: Continuous mathematics for computer science*

Combinatorics, probability, calculus, linear algebra

- *MAT1830: Discrete mathematics for computer science*

Logic, induction, recursion, graph theory, combinatorics

- *MTH3121: Algebra and number theory I*

Group theory, prime factorisations, RSA

Educational Support

- *MTH2132: The nature and beauty of mathematics*

Diverse topics, including symmetry, juggling, optimisation, golden ratio

- *Maths Learning Centre*

Answering student questions on a diverse range of topics at all levels

University of Melbourne

Melbourne, Australia

Educational support

2016–

- *MAST90029: Differential topology* exam marking

Teaching Assistant

- *MAST10005: Calculus 1*

- *MAST10007: Linear algebra*

Service

Science Immersion Day: John Monash Science School, 2020

Graduate topology seminar: Co-organised with Xing Gu, Semester 2 2018

World Maths Competition: Supervisor and judge, University of Melbourne, 2018

Graduate student website: Creating content (including video lectures) for a graduate student website, University of Melbourne, 2017

Peer mentoring: Monash University, 2015

Open day: Monash University, 2014

Languages

English: Fluent

Mother tongue

Italian: Moderate

Completed VCE, visited Italy, currently out of practice

Russian, Ukrainian, Latin, Korean: Basic

Have studied at university level

Computer skills

Confident: \LaTeX , Excel, Word, Access, GIMP (Photoshop)

Some knowledge: Mathematica, MATLAB, Autohotkey, Linux, Fortran, Python, Lua, Visual Basic