Curriculum Vitae

Contact Information

Name | **Manuel Luís Henriques de Araújo**

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Current Position

I am currently a Research Associate with the Cambridge Logical Structures Hub, in the Department of Computer Science and Technology at the University of Cambridge. I will be here until January 2023, working with Jamie Vicary and his group. I am interested in Topology in general, particularly Topological Quantum Field Theory and related higher algebraic and categorical structures.

Previous Positions

Period | **September 2019 – June 2022**

Postdoctoral Researcher in the "Higher Structures and Applications" research project at the Department of Mathematics of Instituto Superior Técnico.

Period | **September 2018 – August 2019**

Postdoc with the “Mathematics Inspired by String Theory and Quantum Field Theory” group, at the University of Hamburg.

Period | **September 2017 – August 2018**

Guest at the Max Planck Institute for Mathematics, in Bonn.

Education

Period | **September 2013 – August 2017**

Degree Obtained | Doctor of Philosophy (D.Phil) in Mathematics (University of Oxford)

Thesis Topic | Coherence for 3-dualizable objects. (supervised by Christopher Douglas)
https://deposit.ora.ox.ac.uk/theses/uuid:a4b8f8de-a8e3-48c3-a742-82316a7bd8eb/file/content01

Period | **July 2011 – June 2013**

Degree obtained | Master's Degree (MSc) in Mathematics and Applications (IST, Lisbon)

Thesis Topic | Symplectic Embeddings. (supervised by Gustavo Granja)

Period | **October 2009 – July 2011**

Degree obtained | Degree (BSc) in Applied Mathematics and Computation (IST, Lisbon)

Period | **September 2007 - July 2009**

Degree obtained | Did not finish.

Program | Integrated Master's Degree (MSc) in Electrical and Computer Engineering (IST, Lisbon)

Publications

2017

Symplectic embeddings in infinite codimension. Araújo, M. & Granja, G. J. Homotopy Relat. Struct (2017). https://link.springer.com/article/10.1007/s40062-017-0189-8

2021

Coherence for adjunctions in a 3-category via string diagrams. Compositionality.
https://compositionality-journal.org/papers/compositionality-4-2/

Preprints

2022 Computads and string diagrams for n-sesquicategories. https://arxiv.org/abs/2210.07704

2022 Coherence for adjunctions in a 4-category. https://arxiv.org/abs/2207.02935

2022 Simple string diagrams and n-sesquicategories. https://arxiv.org/abs/2202.09293

2020 String diagrams for 4-categories and fibrations of mapping 4-groupoids. https://arxiv.org/abs/2012.03797

Awards and Scholarships

2017/2018 Max Planck Institute for Mathematics postdoctoral grant.

2013/2014 - 2015/2016 EPSRC Research Studentship.

2013/2014 - 2015/2016 Christ Church Mathematics Scholarship

2011/2012 FCT *Scientific Initiation Grant*

2010/2011 IST Merit Scholarship

2010/2011 Gulbenkian *Novos Talentos em Matemática* Scholarship.

2009/2010 Gulbenkian *Novos Talentos em Matemática* Scholarship.

2008/2009 FCT *Integration Into Research Grant*.

2008/2009 IST Merit Diploma.

2007/2008 IST Merit Diploma.

Talks

March 16, 2022 *String diagrams for higher categories.* Algebra Seminar, University of Aberdeen.

March 9, 2022 *String diagrams for higher categories.* TQFT Seminar, Instituto Superior Técnico.

November 2021 – February 2022 *Simple string diagrams and n-sesquicategories.* Series of 3 talks at Instituto Superior Técnico.

December 17, 2020 *Coherence for adjunctions in a 3-category via string diagrams.* Informal seminar of the "Higher Structures and Aplications" research group, Instituto Superior Técnico.

September – December 2020 *String diagrams for 4-categories and fibrations of mapping 4-groupoids*. Series of 4 talks at Instituto Superior Técnico.

November 6, 2019 *Coherence for 3-dualizable objects*, Mini-meeting on Higher Structures and Applications, Instituto Superior Técnico.

October 23, 2019 *Topological Field Theory in dimension 3*, TQFT Seminar, Instituto Superior Técnico.

October 23, 2018 *Using the cobordism hypothesis to find presentations of bordism categories*, Algebra and Mathematical Physics Research Seminar, University of Hamburg

July 10, 2015 *Fusion categories and 3-dimensional topological field theories*, Young Topologists' Meeting, EPFL

June 20, 2013 *Symplectic embeddings into CP∞,* Seminário Geometria em Lisboa (IST Geometry Seminar).

Research Visits

April 2016	I spent a month at Stanford University, visiting Christopher Douglas.
May 2015	One month stay at the Trimester program on "Homotopy theory, manifolds, and field theories", Hausdorff Institute for Mathematics, Bonn.
April 2014	One month stay at the MSRI scientific program on Algebraic Topology, Berkeley, California.

Conferences and Summer Schools

September 2022	"Physics from the Point of View of Geometry" workshop, University of Oxford.
September 2022	2022 Clay Research Conference, University of Oxford.
September 2022	Yorkshire and Midlands Category Theory Seminar, University of Cambridge.
June 2022	Barcelona Conference on Higher Structures, University of Barcelona.
November 2019	Mini-meeting on Higher Structures and Applications, Instituto Superior Técnico, Lisbon.
August 2018	Higher algebra and mathematical physics, Max Planck Institute for Mathematics, Bonn
July 2018	Higher structures in homotopy theory. Isaac Newton Institute, Cambridge.
February 2018	Workshop on Factorisation Algebras and Homology and the Cobordism Hypothesis, Saint-Etienne de Tinée.
July 2016	Young Topologists' Meeting, Copenhagen
June 2016	Topology of manifolds conference, Lisbon
June 2016	European Talbot Workshop on Topological aspects of quantum field theories, Winterberg
July 2015	Young Topologists' Meeting, EPFL
June 2015	Early Career Stage Topologists at Imperial College, Imperial College London
January 2015	"Symmetry and Topology in Quantum Matter" workshop, Institute for Pure and Applied Mathematics, UCLA.
October 2014	Masterclass on Topological quantum field theories, quantum groups and 3-manifold invariants (University of Copenhagen).
June 2014	Young Topology Meeting UK, Imperial College London
April 2014	"Reimagining the Foundations of Algebraic Topology" conference, at MSRI.

Teaching Experience

Trinity 2016 (Apr - Jun)	Tutor for the Part A course "Topology and groups". Exeter College, University of Oxford.
Trinity 2016 (Apr - Jun)	Tutor for the Part A course "Topology". Exeter College, University of Oxford.
Michaelmas 2015 (Oct - Dec)	Tutor for the Part A course "Topology". Exeter College, University of Oxford.
Hilary 2015 (Jan - March)	Tutor for the Part A course "Topology and groups". Exeter College, University of Oxford.
Michaelmas 2014 (Oct - Dec)	Tutor for the Part A course "Topology". Exeter College, University of Oxford.
Hilary 2014 (Jan - March)	Teaching Assistant for the Part C course "Homological Algebra". Mathematical Institute, University of Oxford.
Michaelmas 2013 (Oct - Dec)	Teaching Assistant for the Part C course "Lie Algebras". Mathematical Institute, University of Oxford.