Giacomo Tendas

Personal details

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ORCID:	0000-0003-1001-6690
City:	Brno, Czech Republic
Nationality:	Italian
Date of birth:	25 November 1993
Place of birth:	Oristano (Italy)
Current affiliation:	Department of Mathematics, Masaryk University

Appointments

2022 - current

Postdoc - Department of Mathematics, Masaryk University

Project: Enriched categories and their applications.
Coordinators: Jiří Rosický and John Bourke.

Education

2019 - 2022

Ph.D. in Mathematics, Macquarie University - Australia.

- Title: Topics in the theory of enriched accessible categories.
- Available at: `https://doi.org/10.25949/21638081.v1`
- Supervisor: A/Prof. Stephen Lack (principal) and Richard Garner (associate).

2018 - 2019

Master of Research in Mathematics, Macquarie University - Australia.

High Distinction, April 2019.

- Title: Enriched Regular Theories.
- Available at: `https://doi.org/10.25949/19443470.v1`
- Supervisor: A/Prof. Stephen Lack.

2015/2016 - 2016/2017

Master Degree in Mathematics, Università di Pisa - Italy.

110/110 cum laude, 15 December 2017

- Master Dissertation: Strongly Preserved Formulas in Topoi.
- Available at: `https://etd.adm.unipi.it/t/etd-11222017-094128/`
- Supervisor: Prof. Andreas R. Blass.

2012/2013 - 2014/2015

Bachelor Degree in Mathematics, Università di Pisa - Italy.

110/110 cum laude, 16 October 2015

- Bachelor Dissertation: ∂-Ramsey Theorem and a van der Corput Lemma.
- Supervisor: Prof. Mauro Di Nasso.

Research Statement

I am a researcher in category theory, specifically in the areas of *enriched* and *accessible* categories.
Early in the development of category theory, it was realised that ordinary categories,

in which one has objects and sets of morphisms between any two objects, are not sufficient to describe some important structures in mathematics, particularly in algebra and topology, and that it was necessary to develop what is now known as *enriched category theory*. As the name suggests, this is a more powerful (and unavoidably more subtle) version of ordinary category theory, which has important applications in many different contexts.
Among this framework, the theory of enriched accessible categories has received renewed interest because of its usefulness particularly in algebra (with additive, linear, and DG-categories), logic (as they describe categories of models of first order theories), homotopy theory (especially in the field of ∞-cosmoi), and in other purely category theoretical settings. One of the main objective of my work in this context is to advance this theory of enriched accessible categories by providing useful recognition and characterization theorems, as well as new examples and applications.

Journal publications

[7] Giacomo Tendas. Flatness, weakly lex colimits, and free exact completions. *Annali di Matematica Pura e Applicata*, to appear, 2023. Available at `https://arxiv.org/abs/2304.09000`.

[6] Stephen Lack and Giacomo Tendas. Accessible categories with a class of limits. *Journal of Pure and Applied Algebra*, Volume 228, Issue 2, February 2024, 107444. Available at `https://doi.org/10.1016/j.jpaa.2023.107444`.

[5] Stephen Lack and Giacomo Tendas. Virtual concepts in the theory of accessible categories. *Journal of Pure and Applied Algebra*, Volume 227, Issue 2, February 2023, 107196. Available at `https://doi.org/10.1016/j.jpaa.2022.107196`.

[4] Stephen Lack and Giacomo Tendas. Flat vs. filtered colimits in the enriched context. *Advances in Mathematics*, Volume 404, Part A, 6 August 2022, 108381. Available at: `https://doi.org/10.1016/j.aim.2022.108381`.

[3] Giacomo Tendas. On continuity of accessible functors. *Applied Categorical Structures*, Volume 30, pp 937-946, 2022. Available at: `https://doi.org/10.1007/s10485-022-09677-x`.

[2] Branko Nikolić, Ross Street, and Giacomo Tendas. Cauchy completeness for DG-categories. *Theory and Applications of Categories*, Volume 37, 2021, No. 28, pp 940-963. Available at: `http://www.tac.mta.ca/tac/volumes/37/28/37-28abs.html`.

[1] Stephen Lack and Giacomo Tendas. Enriched regular theories. *Journal of Pure and Applied Algebra*, Volume 224, Issue 6, June 2020, 106268. Available at: `https://doi.org/10.1016/j.jpaa.2019.106268`.

Preprints

- Jiří Rosický and Giacomo Tendas. Notions of enriched purity. *submitted for publication*, April 2023, `https://arxiv.org/abs/2303.11957`.
- Giacomo Tendas. Dualities in the theory of accessible categories. *submitted for publication*, March 2023, `https://arxiv.org/abs/2302.06273`.

Grants

2024 Engineering and Physical Sciences Research Council (EPSRC) Postdoctoral Fellowship on "Enriched Categorical Logic" (3 years). Grant number: EP/X027139/1. Value: £ 305,460.

Scholarships

2019 International Macquarie University Research Excellence Scholarship (iMQRES) - Ph.D (3 years). Value: $ 132,004.

2018 International Macquarie University Research Excellence Scholarship (iMQRES) - Master of Research (1 year). Value: $ 42,720.

Awards

2022 Vice-Chancellor's Commendation for Academic Excellence - Macquarie University, Australia.

2021 Honourable mention for the B. H. Neumann Prize (best student talk) at the 65th Annual Meeting of the Australian Mathematical Society (AustMS2021).

2021 Best talk at the Australian Kittens 2021 conference.

Invited Talks

- *Equivalent characterizations of accessible $\mathcal{V}$-categories* - ItaCa Fest 2020 Xmas edition (online), 16 December 2020.

Selected Talks

- *Enriched purity: towards enriched model theory* - 108th Peripatetic Seminar on Sheaves and Logic (PSSL108), Palermo, 16-17 September 2023.
- *Flatness, weakly lex colimits, and free exact completions* - International Category Theory Conference (CT2023), UCLouvain (Belgium), 2-8 July 2023.
- *Dualities in the theory of accessible categories* - 107th Peripatetic Seminar on Sheaves and Logic (PSSL107), Athens, 1-2 April 2023.
- *On continuity of functors between locally presentable categories* - 65th Annual Meeting of the Australian Mathematical Society (AustMS2021), University of Newcastle and online, 7-10 December 2021.
- *Flat vs. filtered colimits* - International Category Theory Conference (CT20→21), Università di Genova and online, 30 August to 4 September 2021.
- *Enriched regular theories* - International Category Theory Conference (CT2019), University of Edinburgh, 7-13 July 2019.

Local Talks

Here is a list of talks I gave in the Algebra Seminar at Masaryk University during my postdoc:

- *Notions of enriched purity* - 27 April 2023.
- *Dualities in the theory of accessible categories* - 23 February 2023.
- *Virtual reflectivity and orthogonality for accessible categories* - 3 November 2022.
- *Flat vs. filtered colimits* - 13 October 2021.

While here is the list of talks I gave at the Australian Category Seminar during my PhD.

Events Organized

❑ *Australian Category Seminar* - 2022
`http://web.science.mq.edu.au/groups/coact/seminar/`.

❑ *Categories and Companions Symposium* - June 8-12, 2021
`http://web.science.mq.edu.au/groups/coact/seminar/CaCS2021/`.

Refereeing Activities

I have refereed for the following journals: International Mathematics Research Notices, Mathematical Structures in Computer Science, Theory and Applications of Categories, Applied Categorical Structures, Journal of Mathematics and its Applications.

Teaching Experience

2022, Session 1	Small Group Teaching Activity - MATH1015 Mathematical Modelling IA (Advanced) and MATH1020 Calculus and Linear Algebra II, Macquarie University.
2021, Session 2	Small Group Teaching Activity - MATH1007 Discrete Mathematics I, Macquarie University.
Session 1	Small Group Teaching Activity - MATH1010 Calculus and Linear Algebra I and MATH1020 Calculus and Linear Algebra II, Macquarie University.
2020, Session 2	Small Group Teaching Activity - MATH1010 Mathematical Modelling IA and MATH1020 Mathematical Modelling IB, Macquarie University.
Session 1	Small Group Teaching Activity - MATH1015 Mathematical Modelling IA (Advanced), Macquarie University.
2019, Session 2	Small Group Teaching Activity - MATH135 Mathematics IA, Macquarie University.
Session 1	Small Group Teaching Activity - MATH135 Mathematics IA, Macquarie University.

Languages

Italian: Mother Tongue.
English: Fluent.