

# Curriculum vitæ

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## RESEARCH INTERESTS

Category theory and everything about it.

- Stable  $\infty$ -categories
- Homotopical algebra
- Groth(endieck) derivators
- 2-categories and formal category theory
- locally presentable and accessible categories
- type theory and functional programming.

**Currently working on:** coend calculus; bicategories of generalised profunctors as an axiomatisation of integral kernels; profunctor algebras in functional programming; bicategories of profunctors seen as universal semantics for 2-dimensional algebraic theories (in the large); teaching category theory to computer scientists; ontology, mereology and the Yoneda lemma; formal category theory.


## CURRENT POSITION

- 1 | **Postdoctoral fellow**  
Tallinna Tehnikaülikooli Küberneetika Instituut | Tallinn EE

 Jan 2020 | –

## PAST POSITIONS

- 1 | **Postdoctoral fellow**  
Centro de Matemática da Universidade de Coimbra | Coimbra

 Jul 2019 | Dec 2019

- 2 | **Postdoctoral fellow**  
Max-Planck-Institut für Mathematik | Bonn

 Sep 2018 | Feb 2019

- 3 | **Postdoctoral fellow**  
Masarykova univerzita | Brno

 Mar 2017 | Apr 2018


- 4 | **Postdoctoral fellow and Assistant Professor**  
University of Western Ontario | London

 Sep 2016 | Nov 2016


## EDUCATION

2008 | 2012

- 1 | **Ph.D. in Mathematics**  
SISSA | Trieste  
thesis: *t-structures on stable  $\infty$ -categories* : [arXiv2005.14295](#)

 Oct 2012 | Jun 2016

2 | **M.Sc. in Mathematics**  
Università degli studi di Padova  
thesis: *Orlov reconstruction theorem*

 Oct 2010 | Jul 2012

3 | **B.Sc. in Mathematics**  
Università degli studi di Padova  
thesis: *Monads and Beck's theorem*

 Jan 2008 | Jun 2010

## PUBLICATIONS

- 1 | **Triangulated factorization systems and t-structures** w/S. Virili |  
1705.08565v3 | *Journal of Algebra* | doi:10.1016/j.jalgebra.2019.12.021
- 2 | **Categorical notions of fibration** w/E. Riehl |  
1806.06129 | *Expos. Math.* (2019) | doi:10.1016/j.exmath.2019.02.004
- 3 | **Hearts and towers in stable infinity-categories** w/D. Fiorenza, G. Marchetti |  
1501.04658 | *Journal of Homotopy and Related Structures* 2019 | doi:10.1007/s40062-019-00237-0
- 4 | **A standard theorem on adjunctions in two variables**  
1902.06074 | *Preprints of the MPIM*, 2018 (67)
- 5 | **A Fubini rule for  $\infty$ -coends**  
1902.06086 | *Preprints of the MPIM*, 2018 (68)
- 6 | **Homotopical Algebra is not concrete** w/I. Di Liberti |  
1704.00303 | *Journal of Homotopy and Related Structures* (2017): 1-15 | doi:10.1007/s40062-018-0197-3
- 7 | **Sober Ontic Structural Realism and Yoneda lemma**  
abstract at the *Triennial conference of the SILFS*, Bologna
- 8 | **Coend calculus**  
based on 1501.02503v4 | book to appear for Cambridge University Press (2020?)
- 9 | **t-structures are normal torsion theories** w/D. Fiorenza |  
1408.7003 | *Applied Categorical Structures* 24.2 (2016): 181-208 | doi:10.1007/s10485-015-9393-z







## PREPRINTS

- 1 | **Categorical Ontology I** w/D. Dentamaro |  
<http://philsci-archive.pitt.edu/17136/>
- 2 | **Profunctor optics, a categorical update** w/B. Clarke, et al. |  
2001.07488
- 3 | **On the unicity of formal category theories** w/I. Di Liberti |  
1901.01594v1
- 4 | **Accessibility and presentability in 2-categories** w/I. Di Liberti |  
1804.08710v4
- 5 | **Localization theory for derivators**  
1802.08193v1
- 6 | **Recollements in stable  $\infty$ -categories** w/D. Fiorenza |  
1507.03913v2

## TALKS

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| 1   <b>The art of <math>\int</math></b><br>Invited speaker   ItaCa - Italian Category theorists conference           | Dec 2019 |
| 2   <b>Axiomatic cohesion of toposes</b><br>Invited speaker   Università "La Sapienza" - Rome                        | Dec 2019 |
| 3   <b>The formal category theory of derivators</b><br>Invited speaker   Workshop on Derivators - Regensburg         | Apr 2019 |
| 4   <b>On the unicity of the formal theory of categories</b><br>Talk on 1901.01594   ULB - Bruxelles                 | Dec 2018 |
| 5   <b>Accessibility and Presentability in 2-categories</b><br>Talk on 1804.08710   Università degli studi di Torino | Nov 2018 |
| 6   <b>Homotopical algebra is not concrete</b><br>Contributed talk   <i>British Topology Meeting</i>   Leicester     | Sep 2017 |
| 7   <b>The formal category theory of derivators</b><br>Invited speaker   <i>Some trends in Algebra</i>   Prague      | Sep 2017 |
| 8   <b>Sober Ontic Structural Realism</b><br>Invited speaker   <i>SILFS</i>   Bologna                                | Jun 2017 |
| 9   <b>Model categories</b><br>Invited speaker   <i>A categorical day in Turin</i>   Torino                          | May 2017 |
| 10   <b><math>t</math>-derivators</b><br>Invited speaker   <i>Young researchers in homotopy theory</i> , Bonn        | Feb 2017 |
| 11   <b>Coend calculus</b><br>Lectures on 1501.02503   Leeds   | May 2016 |

## TEACHING & ORGANIZATIONAL ACTIVITIES

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|---|---------------------|
| 1    <b>Organiser of ItaCa Fest</b><br>An online webinar aimed to gather the community of ItaCa.   | June 2020 –         |
| 2    <b>ITI9200 - Introduction to Category Theory</b><br><i>Introduction to Category Theory and its Applications</i> ( <i>Sissejuhatus kategooriateooriasse ja selle rakedustesse</i> ). Part of the MSc in Software Engineering at TalTech. Here you find the <a href="#">course webpage</a> on tallcats.io.                      | Jan 2020   Jun 2020 |
| 3    <b>appointee for Adjoint school 2019</b><br>A webinar and online applied Category Theory reading course. The project name is <i>Traversal optics and profunctors</i> . Led to the development of arXiv:2001.07488.  | Mar 2019   Jun 2019 |
| 4    <b>2-categories</b><br>A short course on 2-dimensional category theory. Tentative program: monoidal and enriched categories, the calculus of coends and Kan extensions, 2-categories, the bicategory of profunctors, the 2-category of derivators, 2-dimensional limits, the formal theory of monads, formal category theory. | Padova - IT         |
| 5    <b>PSSL 103 - Brno</b><br>I have been one of the organizers of 103rd Peripathetic Seminar on Sheaves and Logic.   | MU Brno - CZ        |
| 6    <b>Formal category theory</b><br>A series of lectures having the scope to breach in Riehl-Verity's theory of $\infty$ -cosmoi.  | MU Brno - CZ        |

- 7 | 🎓 **Elements of Finite Mathematics** UWO London - CA  
Techniques of counting, probability, discrete and continuous random variables.
- 8 | 🎓 **Homotopical Algebra** MU Brno - CZ  
A bottom-up introduction to the language of Homotopical Algebra
- 9 | 🗓 **appointee for Kan Extension Seminar I** Jan 2014 | Jul 2014  
A webinar and online Category Theory reading course.
- 10 | 🎓 **supervisor and coadvisor B.Sc. in Mathematics** *student: Giovanni Ronchi*  
*Adjoint Functors* | [amslaurea.unibo.it](https://amslaurea.unibo.it)

## OTHER ACTIVITIES

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- 1 | **Sparse skills**  
I like the art of crafting books and drawing maps; this is not unrelated to my love for Mathematics. I am a pretty decent TeXnic (I maintain this CV as a github repo [here](#)). I know bits of Haskell, Python, and Wolfram. I like artificial languages (mi ŝatus verki vortaron al matematiko, kun terminoj el teoria kategorioj); again, this is not unrelated to my love for Mathematics.
- 2 | **Reviewer for**  
zbMath, AMS Math. Rev.

Foto Loregia