

Curriculum vitæ

last updated **February 16, 2020**

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RESEARCH INTERESTS

Category theory and everything about it.

- Stable ∞ -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: a novel view on the identity principle; 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 PT
- 2 | **Postdoctoral fellow**
Max-Planck-Institut für Mathematik | Bonn D
- 3 | **Postdoctoral fellow**
Masarykova univerzita | Brno CZ
- 4 | **Postdoctoral fellow and Assistant Professor**
University of Western Ontario | London CA

Jul 2019 | Dec 2019

Sep 2018 | Feb 2019

Mar 2017 | Apr 2018

Sep 2016 | Nov 2016

EDUCATION

2008 | 2012

- 1 | **Ph.D. in Mathematics**
SISSA | Trieste
thesis: *t-structures on stable ∞ -categories*
- 2 | **M.Sc. in Mathematics**
Università degli studi di Padova
thesis: *Orlov reconstruction theorem*
- 3 | **B.Sc. in Mathematics**
Università degli studi di Padova
thesis: *Monads and Beck's theorem*

Oct 2012 | Jun 2016

Oct 2010 | Jul 2012

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 ∞ -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 | **Profunctor optics, a categorical update** w/B. Clarke, et al. |
2001.07488
- 2 | **On the unicity of formal category theories** w/I. Di Liberti |
1901.01594v1 | Submitted to TAC, January 2019
- 3 | **Accessibility and presentability in 2-categories** w/I. Di Liberti |
1804.08710v4 | Submitted to JPAA, January 2019
- 4 | **Localization theory for derivators**
1802.08193v1 | Submitted to TAC, March 2018
- 5 | **Recollements in stable ∞ -categories** w/D. Fiorenza |
1507.03913v2

TALKS

- 1 | **The art of \int** Dec 2019
Invited speaker | ItaCa - Italian Category theorists conference
- 2 | **Axiomatic cohesion of toposes** Dec 2019
Invited speaker | Università "La Sapienza" - Rome
- 3 | **The formal category theory of derivators** Apr 2019
Invited speaker | Workshop on Derivators - Regensburg
- 4 | **On the unicity of the formal theory of categories** Dec 2018
Talk on 1901.01594 | ULB - Bruxelles

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| 5 | Accessibility and Presentability in 2-categories
Talk on 1804.08710 Università degli studi di Torino | Nov 2018 |
| 6 | Homotopical algebra is not concrete
Contributed talk <i>British Topology Meeting</i> Leicester | Sep 2017 |
| 7 | The formal category theory of derivators
Invited speaker <i>Some trends in Algebra</i> Prague | Sep 2017 |
| 8 | Sober Ontic Structural Realism
Invited speaker <i>SILFS</i> Bologna | Jun 2017 |
| 9 | Model categories
Invited speaker <i>A categorical day in Turin</i> Torino | May 2017 |
| 10 | <i>t</i>-derivators
Invited speaker <i>Young researchers in homotopy theory</i> , Bonn | Feb 2017 |
| 11 | Coend calculus
Lectures on 1501.02503 Leeds | May 2016 |

TEACHING & ORGANIZATIONAL ACTIVITIES

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|---|---|--------------------------|
| 1 |  ITI9200 - Introduction to Category Theory
<i>Introduction to Category Theory and its Applications</i> (<i>Sissejuhatus kategooriateooriasse ja selle rakendustesse</i>). | Jan 2020 Jun 2020 |
| 2 |  appointee for Adjoint school 2019
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 |
| 3 |  2-categories
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 |
| 4 |  PSSL 103 - Brno
I have been one of the organizers of 103rd Peripathetic Seminar on Sheaves and Logic. | MU Brno - CZ |
| 5 |  Formal category theory
A series of lectures having the scope to breach in Riehl-Verity's theory of ∞ -cosmoi. | MU Brno - CZ |
| 6 |  Elements of Finite Mathematics
Techniques of counting, probability, discrete and continuous random variables. | UWO London - CA |
| 7 |  Homotopical Algebra
A bottom-up introduction to the language of Homotopical Algebra | MU Brno - CZ |
| 8 |  appointee for Kan Extension Seminar I
A webinar and online Category Theory reading course. | Jan 2014 Jul 2014 |
| 9 |  supervisor and coadvisor B.Sc. in Mathematics
<i>Adjoint Functors</i> amslaurea.unibo.it | student: Giovanni Ronchi |

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 |
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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