

# 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: 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

Jul 2019 | Dec 2019

### 2 | **Postdoctoral fellow**

Max-Planck-Institut für Mathematik | Bonn D

Sep 2018 | Feb 2019

### 3 | **Postdoctoral fellow**

Masarykova univerzita | Brno CZ

Mar 2017 | Apr 2018

### 4 | **Postdoctoral fellow and Assistant Professor**

University of Western Ontario | London CA

Sep 2016 | Nov 2016

## EDUCATION

2008 | 2012

### 1 | **Ph.D. in Mathematics**

SISSA | Trieste

**thesis:** *t-structures on stable  $\infty$ -categories*

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 | **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  $\infty$ -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  | <b>Accessibility and Presentability in 2-categories</b><br>Talk on <a href="#">1804.08710</a>   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><i>t</i>-derivators</b><br>Invited speaker   <i>Young researchers in homotopy theory</i> , Bonn                               | Feb 2017 |
| 11 | <b>Coend calculus</b><br>Lectures on <a href="#">1501.02503</a>   Leeds  | May 2016 |

## TEACHING & ORGANIZATIONAL ACTIVITIES

- |   |   |                          |
|---|---|--------------------------|
| 1 |  <b>ITI9200 - Introduction to Category Theory</b><br><i>Introduction to Category Theory and its Applications</i> ( <i>Sissejuhatus kategooriateooriasse ja selle rakendustesse</i> ).  | Jan 2020   Jun 2020      |
| 2 |  <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 <a href="#">arXiv:2001.07488</a> .  | Mar 2019   Jun 2019      |
| 3 |  <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              |
| 4 |  <b>PSSL 103 - Brno</b><br>I have been one of the organizers of 103rd Peripathetic Seminar on Sheaves and Logic.   | MU Brno - CZ             |
| 5 |  <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             |
| 6 |  <b>Elements of Finite Mathematics</b><br>Techniques of counting, probability, discrete and continuous random variables.   | UWO London - CA          |
| 7 |  <b>Homotopical Algebra</b><br>A bottom-up introduction to the language of Homotopical Algebra   | MU Brno - CZ             |
| 8 |  <b>appointee for Kan Extension Seminar I</b><br>A webinar and online Category Theory reading course.  | Jan 2014   Jul 2014      |
| 9 |  <b>supervisor and coadvisor B.Sc. in Mathematics</b><br><i>Adjoint Functors</i>   <a href="#">amslaurea.unibo.it</a>  | student: Giovanni Ronchi |

## OTHER ACTIVITIES

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|---|---|
| 1 | <b>Sparse skills</b><br>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 <a href="#">here</a> ). 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