

# 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

## PRESENT POSITION

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|---|---------------------|
| 1   <b>Postdoctoral fellow</b><br>IoC   Tallinn EE  | Jan 2020            |
| 2   <b>Postdoctoral fellow</b><br>CMUC   Coimbra PT | Jul 2019   Dec 2019 |

## PAST POSITIONS

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|---|---------------------|
| 1   <b>Postdoctoral fellow</b><br>Max Planck Institute for Mathematics   Bonn D                     | Sep 2018   Feb 2019 |
| 2   <b>Postdoctoral fellow</b><br>Masaryk University   Brno CZ                                      | Mar 2017   Apr 2018 |
| 3   <b>Postdoctoral fellow and Assistant Professor</b><br>University of Western Ontario   London CA | Sep 2016   Nov 2016 |

## EDUCATION

2008 | 2012

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|---|---------------------|
| 1   <b>Ph.D. in Mathematics</b><br>SISSA   Trieste<br><i>thesis: <math>t</math>-structures on stable <math>\infty</math>-categories</i> | Oct 2012   Jun 2016 |
| 2   <b>M.Sc. in Mathematics</b><br>Università degli studi di Padova<br><i>thesis: Orlov reconstruction theorem</i>                      | Oct 2010   Jul 2012 |
| 3   <b>B.Sc. in Mathematics</b><br>Università degli studi di Padova<br><i>thesis: Monads and Beck's theorem</i>                         | Jan 2008   Jun 2010 |

## PUBLICATIONS

- 1 | **Factorization systems on (stable) derivators** w/S. Virili |  
1705.08565v3 | to appear on JoA
- 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 | **On the unicity of formal category theories** w/I. Di Liberti |  
1901.01594v1 | Submitted to TAC, January 2019
- 2 | **Accessibility and presentability in 2-categories** w/I. Di Liberti |  
1804.08710v4 | Submitted to JPAA, January 2019
- 3 | **Localization theory for derivators**  
1802.08193v1 | Submitted to TAC, March 2018
- 4 | **Recollements in stable  $\infty$ -categories** w/D. Fiorenza |  
1507.03913v2

## TALKS

- 1 | **The formal category theory of derivators** Apr 2019  
Invited speaker | Workshop on Derivators - Regensburg
- 2 | **On the unicity of the formal theory of categories** Dec 2018  
Talk on 1901.01594 | ULB - Bruxelles
- 3 | **Accessibility and Presentability in 2-categories** Nov 2018  
Talk on 1804.08710 | Università degli studi di Torino
- 4 | **Homotopical algebra is not concrete** Sep 2017  
Contributed talk | *British Topology Meeting* | Leicester
- 5 | **The formal category theory of derivators** Sep 2017  
Invited speaker | *Some trends in Algebra* | Prague
- 6 | **Sober Ontic Structural Realism** Jun 2017  
Invited speaker | *SILFS* | Bologna

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|--|----------|
| 7   <b>Model categories</b><br>Invited speaker   <i>A categorical day in Turin</i>   Torino            | May 2017 |
| 8   <b><i>t</i>-derivators</b><br>Invited speaker   <i>Young researchers in homotopy theory</i> , Bonn | Feb 2017 |
| 9   <b>Coend calculus</b><br>Lectures on <b>1501.02503</b>   Leeds                                     | May 2016 |

## TEACHING & ORGANIZATIONAL ACTIVITIES

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|--|--------------------------|
| 1   <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> . In functional programming, optics are ways to zoom into a specific part of a given data type and mutate it. Optics come in many flavors such as lenses and prisms and there is a well-studied categorical viewpoint, known as profunctor optics. Of all the optic types, only the traversal has resisted a derivation from first principles into a profunctor description. This project aims to do just this. | Mar 2019                 |
| 2   <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              |
| 3   <b>PSSL 103 - Brno</b><br>I have been one of the organizers of 103rd Peripathetic Seminar on Sheaves and Logic.  | MU Brno - CZ             |
| 4   <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             |
| 5   <b>Elements of Finite Mathematics</b><br>Techniques of counting, probability, discrete and continuous random variables.  | UWO London - CA          |
| 6   <b>Homotopical Algebra</b><br>A bottom-up introduction to the language of Homotopical Algebra  | MU Brno - CZ             |
| 7   <b>appointee for Kan Extension Seminar I</b><br>A webinar and online Category Theory reading course.   | Jan 2014   Jul 2014      |
| 8   <b>supervisor and coadvisor B.Sc. in Mathematics</b><br><i>Adjoint Functors</i>   <a href="http://amslaurea.unibo.it">amslaurea.unibo.it</a>   | student: Giovanni Ronchi |
| 9   <b>supervisor and coadvisor B.Sc. in Physics</b><br><i>Bohr toposes</i>   Università di Milano Bicocca   | student: Davide Bosetti  |

## 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 artificial languages (mi ŝatus verki vortaron al matematiko, kun terminoj el teoria kategorioj); again, this is not unrelated to my love for Mathematics. |
| 2   <b>Reviewer for</b><br>zbMath, AMS Math. Rev.   |

*Foto Loregia*