Curriculum vitæ

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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.

Present position

1 | **Postdoctoral fellow** — Jan 2020 | —
IoC | Tallinn EE

Past positions

1 | **Postdoctoral fellow** — Jul 2019 | Dec 2019
CMUC | Coimbra PT

2 | **Postdoctoral fellow** — Sep 2018 | Feb 2019
Max Planck Institute for Mathematics | Bonn D

3 | **Postdoctoral fellow** — Mar 2017 | Apr 2018
Masaryk University | Brno CZ

4 | **Postdoctoral fellow and Assistant Professor** — Sep 2016 | Nov 2016
University of Western Ontario | London CA

Education 2008 | 2012

1 | **Ph.D. in Mathematics** — Oct 2012 | Jun 2016
SISSA | Trieste
thesis: *t-structures on stable ∞-categories*

2 | **M.Sc. in Mathematics** — Oct 2010 | Jul 2012
Università degli studi di Padova
thesis: *Orlov reconstruction theorem*

3 | **B.Sc. in Mathematics** — Jan 2008 | Jun 2010
Università degli studi di Padova
thesis: *Monads and Beck's theorem*

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, D. Elkins, J. Gibbons, B. Milewski, E. Pillmore and M. Román |
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

5 | **Accessibility and Presentability in 2-categories** Nov 2018
Talk on 1804.08710 | Università degli studi di Torino

6 | **Homotopical algebra is not concrete** Sep 2017
Contributed talk | *British Topology Meeting* | Leicester

7 | **The formal category theory of derivators** Sep 2017
Invited speaker | *Some trends in Algebra* | Prague

8 | **Sober Ontic Structural Realism** Jun 2017
Invited speaker | *SILFS* | Bologna

9 | **Model categories** May 2017
Invited speaker | *A categorical day in Turin* | Torino

10 | **t-derivators** Feb 2017
Invited speaker | *Young researchers in homotopy theory*, Bonn

11 | **Coend calculus** May 2016
Lectures on 1501.02503 | Leeds

Teaching & Organizational activities

1 | **Teacher for ITI9200** Jan 2020 | Jun 2020
Introduction to Category Theory and its Applications (Sissejuhatus kategooriateooriasse ja selle rakendustesse). Part of the MSc in Software Engineering at TalTech. Here you find the course syllabus, and the course webpage on tallcats.io. The course is an introduction to the basic concepts of Category Theory (categories, functors, natural transformations, universal properties, limits, colimits, monoidal categories, string diagrams…) and some applications in Computer Science.

2 | **appointee for Adjoint school 2019** Mar 2019 |
A webinar and online applied Category Theory reading course. The project name is *Traversal optics and profunctors*. Led to the development of arXiv:2001.07488.

3 | **2-categories** Padova - IT
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.

4 | **PSSL 103 - Brno** MU Brno - CZ
I have been one of the organizers of 103rd Peripathetic Seminar on Sheaves and Logic.

5 | **Formal category theory** MU Brno - CZ
A series of lectures having the scope to breach in Riehl-Verity's theory of ∞-cosmoi.

6 | **Elements of Finite Mathematics** UWO London - CA
Techniques of counting, probability, discrete and continuous random variables.

7 | **Homotopical Algebra** MU Brno - CZ
A bottom-up introduction to the language of Homotopical Algebra

8 | **appointee for Kan Extension Seminar I** Jan 2014 | Jul 2014
A webinar and online Category Theory reading course.

9 | **supervisor and coadvisor B.Sc. in Mathematics** *student: Giovanni Ronchi*
Adjoint Functors | amslaurea.unibo.it

Other activities

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.