Curriculum vitæ

last updated **May 28, 2021**

fosco.loregian@gmail.com

Fosco Loregian
github.com/tetrapharmakon
fosco.loregian

Research Interests

Category theory and everything about it.

- 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** — Jan 2020 | –
Tallinna Tehnikaülikooli Küberneetika Instituut | Tallinn EE

Past positions

1 | **Postdoctoral fellow** — Jul 2019 | Dec 2019
Centro de Matemática da Universidade de Coimbra | Coimbra

2 | **Postdoctoral fellow** — Sep 2018 | Feb 2019
Max-Planck-Institut für Mathematik | Bonn

3 | **Postdoctoral fellow** — Mar 2017 | Apr 2018
Masarykova univerzita | Brno

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

Education 2008 | 2012

1 | **Ph.D. in Mathematics** — Oct 2012 | Jun 2016
SISSA | Trieste
thesis: *t-structures on stable ∞-categories : arXiv2005.14295*

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 | **A Categorical Semantics for Hierarchical Petri Nets** w/F. Genovese, J. Herold, D. Palombi |
2102.00096 | *Graph Computation Models*, Proc. of 12th International Workshop on Graph Computation Models, 2021 Springer.

2 | **Nets with Mana: A Framework for Chemical Reaction Modelling** w/F. Genovese, D. Palombi |
2101.06234 | *Graph Transformation*, Proc. ICGT, 2021 Springer.

3 | **Functorial semantics for partial theories** w/I. Di Liberti, et al. |
doi:10.1145/3434338 | Proc. ACM Program. Lang. 5, POPL, 2021.

4 | **Triangulated factorization systems and *t*-structures** w/S. Virili |
1705.08565v3 | *Journal of Algebra* | doi:10.1016/j.jalgebra.2019.12.021

5 | **Categorical notions of fibration** w/E. Riehl |
1806.06129 | *Expos. Math.* (2019) | doi:10.1016/j.exmath.2019.02.004

6 | **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

7 | **A standard theorem on adjunctions in two variables**
1902.06074 | Preprints of the MPIM, 2018 (67)

8 | **A Fubini rule for ∞-coends**
1902.06086 | Preprints of the MPIM, 2018 (68)

9 | **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

10 | **Sober Ontic Structural Realism and Yoneda lemma**
abstract at the *Triennial conference of the SILFS*, Bologna

11 | **Coend calculus**
1501.02503 | LMS Lecture Note Series 468. Cambridge University Press. 2021. ISBN 9781108778657.

12 | **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 | **Escrows are optics** w/F. Genovese, D. Palombi |
2105.10028

2 | **Differential 2-rigs** w/F. Genovese |
2103.00938

3 | **A Categorical Semantics for Bounded Petri Nets** w/F. Genovese, D. Palombi |
2101.09100

4 | **Rosen's no-go theorem for regular categories**
2012.11648

5 | **Functorial Erkennen** w/D. Dentamaro |
`http://philsci-archive.pitt.edu/18519/`

6 | **Coends of higher arity** w/T. de Oliveira Santos |
2011.13881

7 | **Categorical Ontology I** w/D. Dentamaro |
http://philsci-archive.pitt.edu/17136/

8 | **Profunctor optics, a categorical update** w/B. Clarke, et al. |
2001.07488

9 | **On the unicity of formal category theories** w/I. Di Liberti |
1901.01594v1

10 | **Accessibility and presentability in 2-categories** w/I. Di Liberti |
1804.08710v4

11 | **Localization theory for derivators**
1802.08193v1

12 | **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 | **ITI9200 - Introduction to Category Theory** Jan 2021 | May 2021
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 webpage on tallcats.io.

2 | **ITI9200 - Introduction to Category Theory** Jan 2020 | May 2020
Introduction to Category Theory and its Applications (*Sissejuhatus kategooriateooriasse ja selle rakendustesse*). Part of the MSc in Software Engineering at TalTech.

3 | **Organiser of ItaCa Fest** June 2020 –
An online webinar aimed to gather the community of ItaCa.

4 | **appointee for Adjoint school 2019** Mar 2019 | Jun 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.

5 | **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.

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

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

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

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

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

11 | **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.