

Lyne Moser | Curriculum Vitae

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Academic Positions

- Since **Research assistant**, Universität Regensburg, Germany.
- Oct. 2022 Research and teaching position in the group of Denis-Charles Cisinski, in the collaborative research center “SFB 1085 Higher Invariants” funded by the Deutsche Forschungsgemeinschaft (DFG).
- Feb. 2021 – **Postdoctoral fellow**, Max Planck Institute for Mathematics, Bonn, Germany.
- Sep. 2022 Research position.

Education

- March 2017 – **Ph.D.**, *Homotopical relations between 2-dimensional categories and their ∞ -analogues*, EPFL, Switzerland.
Feb. 2021 Thesis under the supervision of Jérôme Scherer and Kathryn Hess.
- Aug. – **Master thesis**, *Basic localizers and derivators*, Johns Hopkins University, Baltimore, US.
Dec. 2016 Thesis under the supervision of Emily Riehl.
- Sep. 2012 – **B.Sc. and M.Sc. in Mathematics**, EPFL, Switzerland.
Feb. 2017

Scholarship

- Jan. – June 2020 **Doc.Mobility fellowship**, *Swiss National Science Foundation (SNSF)*, grant number 188039.
Swiss fellowship for Ph.D. students to fund a research stay at MSRI, Berkeley, US, during the emphasis semester on “Higher Categories and Categorification”.

Extended research stays

- July 2024 **Algebraic K-theory of Lawvere Theories** (Two weeks), Banff International Research Institute, Banff, Canada.
- June 2024 **Topology, representation theory and higher structures** (One month), Sabhal Mor Ostaín, Isle of Skye, Scotland.
Funded by Isaac Newton Institute for Mathematical Sciences.
- June 2022 **Higher Categories and Categorification, Part Two** (One month), Math Institute of the National Autonomous University of Mexico, Cuernavaca, Mexico.
Funded by MSRI.
- Jan.–June 2020 **Higher Categories and Categorification** (Six months), MSRI, Berkeley, US.
Funded by a personal Doc.Mobility grant from the SNSF.

Publications and preprints

Published papers

- June 2023 **A model structure for Grothendieck fibrations**, joint with Maru Sarazola, In: *Journal of Pure and Applied Algebra*, Vol. 228.10 (2024), paper no. 107692, 29 pp., doi:10.1016/j.jpaa.2024.107692.
- July 2024 **A homotopy coherent nerve of (∞, n) -categories**, joint with Nima Rasekh and Martina Rovelli, In: *Journal of Pure and Applied Algebra*, Vol. 228.7 (2024), paper no. 107620, 64 pp., doi:10.1016/j.jpaa.2024.107620.
- June 2023 **A model structure for weakly horizontally invariant double categories**, joint with Maru Sarazola and Paula Verdugo, In: *Algebraic and Geometric Topology*, Vol. 23.4 (2023), pp. 1725–1786, doi:10.2140/agt.2023.23.1725.

- Sep. 2022 **2-limits and 2-terminal objects are too different**, joint with tsilil clingman, In: *Cahiers de Topologie et Géométrie Différentielle Catégoriques*, Vol. LXIII-3 (2022), pp. 1283–1304, doi:10.1007/s10485-022-09691-z.
- July 2022 **Bi-initial objects and bi-representations are not so different**, joint with tsilil clingman, In: *Applied Categorical Structures*, Vol. 30 (2022), pp. 259–330, cahierstgdc:volume-lxiii-2022.
- June 2022 **Stable homotopy hypothesis in the Tamsamani model**, joint with Viktoriya Ozornova, Simona Paoli, Maru Sarazola, and Paula Verdugo, In: *Topology and Its Applications*, Women in Topology III proceedings, Vol. 316 (2022), pp. 1–40, doi:10.1016/j.topol.2022.108106.
- Apr. 2022 **A 2Cat-inspired model structure for double categories**, joint with Maru Sarazola and Paula Verdugo, In: *Cahiers de Topologie et Géométrie Différentielle Catégoriques*, Vol. LXIII-2 (2022), pp. 184–236, cahierstgdc:volume-lxiii-2022.
- Mar. 2019 **Injective and projective model structures on enriched diagram categories**, In: *Homology, Homotopy, and Applications*, Vol. 21.2 (2019), pp. 279–300, doi:10.4310/HHA.2019.v21.n2.a15.
- [Submitted preprints](#)
- Aug. 2024 **(∞, n) -Limits II: Comparison across models**, joint with Nima Rasekh and Martina Rovelli, preprint on arXiv:2408.04742.
- Feb. 2024 **Yoneda lemma and representation theorem for double categories**, joint with Benedikt Fröhlich, preprint on arXiv:2402.10640.
- Dec. 2023 **(∞, n) -Limits I: Definition and first consistency results**, joint with Nima Rasekh and Martina Rovelli, preprint on arXiv:2312.11101.
- Aug. 2023 **Internal Grothendieck construction for enriched categories**, joint with Maru Sarazola and Paula Verdugo, preprint on arXiv:2308.14455.
- July 2023 **An (∞, n) -categorical straightening-unstraightening construction**, joint with Nima Rasekh and Martina Rovelli, preprint on arXiv:2307.07259.
- Jan. 2023 **Fibrantly-induced model structures**, joint with Léonard Guetta, Maru Sarazola, and Paula Verdugo, preprint on arXiv:2301.07801.
- June 2022 **Model independence of $(\infty, 2)$ -categorical nerves**, joint with Viktoriya Ozornova and Martina Rovelli, preprint on arXiv:2206.00660.
- July 2020 **A double $(\infty, 1)$ -categorical nerve for double categories**, preprint on arXiv:2007.01848, To appear in: *Annales de l'Institut Fourier*.

Organization of conferences

- Aut. 2023 **Workshop on $(\infty, 2)$ -categories**, online.
Workshop for master and Ph.D. students. Students are paired with a junior researcher expert to prepare a talk on a topic of $(\infty, 2)$ -category theory.
- July 2019 **Young Topologists Meeting 2019**, EPFL, Switzerland.
Conference for graduate students, PhDs, and junior researchers in topology.

Teaching activities

Seminars

- Sum. 2023 **Topics in $(\infty, 2)$ -categories**, Universität Regensburg, Germany.
Organization of a seminar for master and Ph.D. students.

Courses as a head teaching assistant

- Sum. 2023 **Probability theory**, Universität Regensburg, Germany.
- Win. 2022 **Algebraic K-theory and localizing invariants**, Universität Regensburg, Germany.
- Win. 2022 **Algebraic Topology**, Universität Regensburg, Germany.
- Aut. 2019–20 **Group Theory**, EPFL, Switzerland.
- Spr. 2017–19 **Topology**, EPFL, Switzerland.

- Aut. 2017-18 **Linear Algebra**, EPFL, Switzerland.
[Courses as a student teaching assistant](#)
- Spr. 2014-15 **Advanced Calculus II** for physicians or mathematicians, EPFL, Switzerland.
- Aut. 2014-15 **Calculus I** for engineers, EPFL, Switzerland.
- Spr. 2015-16 **Calculus II** for engineers, EPFL, Switzerland.
- Aut. 2015 **Linear Algebra**, EPFL, Switzerland.
[Others](#)
- 2017 – 2019 **Occasional teaching for the Euler course**, EPFL, Switzerland.
 Teaching theory and exercise sessions for an accelerated mathematics program for gifted youth.

Supervision of students

- Winter 2023 **Enriched models of $(\infty, 2)$ -categories**, Francesca Pratali, Workshop on $(\infty, 2)$ -category.
 Mentoring for preparing a talk in an online workshop.
- Winter 2023 **Grothendieck construction and representability for double categories**, Benedikt Fröhlich, Universität Regensburg, Germany.
 Supervision of a master thesis.
- Fall 2020 **Grothendieck topoi**, Cloé Pointet, EPFL, Switzerland.
 Supervision of a bachelor thesis.
- Spring 2019 **A model structure on the category of simplicial sets**, Dolores Dupont, EPFL, Switzerland.
 Supervision of a bachelor thesis.
- Spring 2018 **Topological K-Theory**, Aurel Pichollet–Mugnier, EPFL, Switzerland.
 Supervision of a bachelor thesis.

Talks

[Conference talks](#)

- August 2024 **Fibrantly-induced model structures**, invited, *Homotopical Algebra and Higher Structures*, MFO, Oberwolfach, Germany.
- June 2024 **Defining limits in (∞, n) -categories**, contributed, *Topology, representation theory and higher structures*, Sabhal Mor Ostaín, Isle of Skye, Scotland.
- Apr. 2024 **(∞, n) -Limits III: Comparison across models**, invited, *Conference on (∞, n) -categories*, Utrecht University, Netherlands.
- Dec. 2023 **2-limits and 2-terminal objects are too different**, invited, *Subfactors and Fusion (2-)Categories*, Banff International Research Institute, Banff, Canada.
- Oct. 2023 **Model structures for double categories**, invited, *Homotopy theory day*, New York University Abu Dhabi, UAE.
- July 2023 **New methods for constructing model categories**, contributed, *International Category Theory Conference*, Université catholique de Louvain, Belgium.
- June 2023 **Straightening-unstraightening for (∞, n) -categories**, invited, *Homotopy Theory in Trondheim*, NTNU, Trondheim, Norway.
- Dec. 2022 **Representation theorem for enriched categories**, invited, *YaMCATS*, University of Manchester, UK.
- Nov. 2022 **Representation theorem for enriched categories**, invited, *Virtual double categories workshop*, online.
- Oct. 2022 **Defining limits in (∞, n) -categories**, invited, *GDR de topologie algébrique*, Nantes Université, France.
- Sep. 2022 **Defining limits in (∞, n) -categories**, invited, *Follow-up Workshop to JTP “Topology”*, HIM, Bonn, Germany.
- Feb. 2022 **Defining limits in $(\infty, 2)$ -categories**, invited, *Logic and higher structures*, CIRM, Marseille, France.

- June 2021 **Defining limits in the ∞ -world**, invited, *Viva Talbot! A virtual Talbot Workshop retrospective*, MIT, Boston, US.
- Feb. 2020 **2-fold complete Segal spaces and Θ_2 -spaces**, contributed, *Higher Categories and Categorification*, MSRI, Berkeley, US.
- Nov. 2019 **2-limits are double terminal**, invited, *Postgraduate Conference in Category Theory and its Applications*, University of Leicester, UK.
- July 2018 **Injective and projective model structures on enriched diagram categories**, contributed, *Young Topologists Meeting*, University of Copenhagen, Denmark.
- June 2018 **Injective and projective model structures on enriched diagram categories**, invited, *Métodos categóricos y homotópicos en álgebra, geometría y topología*, Almería, Spain.

Seminar talks

- May 2024 **New methods to construct model categories**, *Higher Categories, Polygraphs and Homotopy Seminar*, IRIF, Université Paris Cité, France.
- Apr. 2024 **Representation theorem for enriched categories**, *Séminaire AGATA*, Université de Montpellier, France.
- Nov. 2023 **Representation theorem for enriched categories**, *Atlantic Category Theory Seminar*, Dalhousie University, Halifax, Canada.
- Nov. 2023 **Defining limits in (∞, n) -categories**, *Séminaire d'Homotopie et Géométrie Algébrique*, Université Paul Sabatier, Toulouse, France.
- Oct. 2023 **Model structures for double categories**, *Séminaire de Théorie des Catégories*, Université catholique de Louvain, Belgium.
- June 2023 **Limits in a 2-category**, *Seminar: Topics in $(\infty, 2)$ -categories*, Universität Regensburg, Germany.
- Feb. 2023 **Nerve for 2-dimensional categories**, *Geometry and Topology Seminar*, UMass Amherst, US.
- April 2022 **Homotopy coherent nerve for (∞, n) -categories**, *TopICS: Topology Intercity Seminar*, Utrecht-Nijmegen, Utrecht University, Netherlands.
- April 2022 **Defining limits in $(\infty, 2)$ -categories**, *Homotopy Theory Seminar*, University of Pennsylvania, Philadelphia, US.
- June 2021 **Higher categories and the (∞, n) -category of bordisms**, *Topology Seminar*, MPIM, Bonn, Germany.
- June 2021 **Towards a construction of limits in $(\infty, 2)$ -categories**, *Topology Seminar*, MPIM, Bonn, Germany.
- Feb. 2021 **A double $(\infty, 1)$ -categorical nerve for double categories**, *Algebra/Topology Seminar*, University of Copenhagen, Denmark.
- Sep. 2020 **A double $(\infty, 1)$ -categorical nerve for double categories**, *AG Seminar*, Universität Regensburg, Germany.
- July 2020 **A double $(\infty, 1)$ -categorical nerve for double categories**, *Topology Seminar*, EPFL, Switzerland.
- June 2019 **An adventure toward $(\infty, 2)$ -limits**, *Topology Seminar*, EPFL, Switzerland.
- Apr. 2018 **Injective and projective model structures on enriched diagram categories**, *Oberseminar Topologie*, Universität Osnabrück, Germany.
- Dec. 2017 **Introduction to model categories**, *Category theory seminar*, Johns Hopkins University, Baltimore, US.
- Nov. 2017 **Injective and projective model structures on enriched diagram categories**, *Topology Seminar*, EPFL, Switzerland.

Workshop talks

- July 2019 **Truncated spaces and spectra**, *Utrecht Infinity Workshop*, Utrecht University, Netherlands.

- May 2018 **The universal properties of adjunctions, limits and colimits in an ∞ -cosmos**, *MIT Talbot Workshop*, Portland, US.
- Mar. 2018 **Symmetric monoidal ∞ -categories**, *Utrecht Infinity Workshop*, Utrecht University, Netherlands.
- Aug. 2017 **Straightening-unstraightening in 2-categories**, *Utrecht Infinity Workshop*, Utrecht University, Netherlands.