

Vladimir Sosnilo

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Personal Information

nationality: Russian
date of birth: 21.08.1994

Research interests

- Category theory and ∞ -category theory, homotopy type theory.
- Algebraic K-theory, stable ∞ -categories, noncommutative motives.
- Classical and derived algebraic geometry, motivic homotopy theory, descent conditions for cohomology theories.

Employment

- 2022-2025 **Regensburg University**, Regensburg, Germany.
Research assistant
- 2018- **Laboratory of Modern Algebra and Applications**, *Department of Mathematics & Computer Science of SPbU*, St. Petersburg, Russia.
Research Engineer
- 2013-2018 **Chebyshev Laboratory**, *Mathematics & Mechanics Faculty of SPbU*, St. Petersburg, Russia.
Research Engineer
- 2011-2012 **LoyaltyPlant company**, St. Petersburg, Russia.
Software Developer

Education

- 2018-2022 **Phd in Mathematics**, *St. Petersburg Department of Steklov Institute*, St. Petersburg, Russia.
Advisor: Ivan Panin
- 2016-2017 **Master of Mathematics**, *University of Duisburg-Essen*, Essen, Germany.
Advisor: Marc Levine
- 2011-2015 **Bachelor of Mathematics**, *St. Petersburg State University*, St. Petersburg, Russia.
Advisor: Mikhail Bondarko

Publications

- 2021 Elden Elmanto, Marc Hoyois, Adeel A. Khan, Vladimir Sosnilo, Maria Yakerson. Motivic infinite loop spaces. *Accepted to Cambridge Journal of Mathematics*. arXiv:1711.05248
- Elden Elmanto, Vladimir Sosnilo. On nilpotent extensions of ∞ -categories and the cyclotomic trace. *Accepted to International Mathematics Research Notices*. arXiv:2010.09155

- Tom Bachmann, Elden Elmanto, Marc Hoyois, Adeel A. Khan, Vladimir Sosnilo, Maria Yakerson. On the infinite loop spaces of algebraic cobordism and the motivic sphere. *Épjournal de Géométrie Algébrique*, 5, published online. arXiv:1911.02262
- Mikhail Bondarko, Vladimir Sosnilo. On Chow-weight homology of geometric motives. *Accepted to Transactions of the AMS*. arXiv:1411.6354
- Vladimir Sosnilo. Regularity of spectral stacks and discreteness of weight-hearts. *Quarterly Journal of Mathematics*, published online. arXiv:1901.02431
- 2020 Elden Elmanto, Marc Hoyois, Adeel A. Khan, Vladimir Sosnilo, Maria Yakerson. Modules over algebraic cobordism. *Forum of Mathematics, Pi*, 8, published online. arXiv:1908.02162
- Elden Elmanto, Marc Hoyois, Adeel A. Khan, Vladimir Sosnilo, Maria Yakerson. Framed transfers and motivic fundamental classes. *Journal of Topology*, 13(2):460-500. arXiv:1809.10666
- 2019 Vladimir Sosnilo. Theorem of the heart in negative K-theory for weight structures. *Documenta Mathematica*, 24, 2137-2158. arXiv:1705.07995
- Mikhail Bondarko, Vladimir Sosnilo. On purely generated α -smashing weight structures and weight-exact localizations. *Journal of Algebra*, 535, 407-455. arXiv:1712.00850
- Sergei O. Ivanov, Roman Mikhailov, Vladimir Sosnilo. Higher colimits, derived functors and homology. *Sbornik Mathematics*, 210(9), 1222-1258. arXiv:1805.07754
- 2018 Mikhail Bondarko, Vladimir Sosnilo. On the weight lifting property for localizations of triangulated categories. *Lobachevskii Journal of Mathematics*, 39, 970-984. arXiv:1510.03403
- Mikhail Bondarko, Vladimir Sosnilo. On constructing weight structures and extending them to idempotent extensions. *Homology, Homotopy and Applications*, 20(1), pp.37-57. arXiv:1605.08372
- 2016 Mikhail Bondarko, Vladimir Sosnilo. Non-commutative localizations of additive categories and weight structures; applications to birational motives. *Journal of the Institute of Mathematics of Jussieu*, 17(4), 785-821. arXiv:1304.6059
- 2015 Mikhail Bondarko, Vladimir Sosnilo. A Nullstellensatz for triangulated categories. *Algebra and Analysis*, 27(6), 41-56. arXiv:1508.04427

Preprints

Andrey Druzhinin, Vladimir Sosnilo. Zariski-local framed \mathbb{A}^1 -homotopy theory. arXiv:2108.08257

Tom Bachmann, Adeel A. Khan, Charanya Ravi, Vladimir Sosnilo. Categorical Milnor squares and K-theory of algebraic stacks. arXiv:2011.04355

PhD thesis

Weighted methods in noncommutative geometry. *Defended at the HSE in Moscow*. [pdf](#)

Invited Talks

- Jan, 2021 **On nilpotent extensions of ∞ -categories and the cyclotomic trace.**
AG seminar, Regensburg University, online
- Oct, 2020 **Comparing Nisnevich descent, Milnor excision, and the pro-cdh excision.**
AG seminar, St. Petersburg State University, online

- Sep, 2020 **Excision for algebraic K-theory with respect to categorical Milnor squares.**
Seminar on A1-topology, motives and K-theory, St. Petersburg State University, online
- Jun, 2020 **Pro-excision for stacks**, [link](#).
Conference “Motives and What Not”, online
- Dec, 2019 **Milnor squares and Weibel’s conjecture.**
Seminar on A1-topology, motives and K-theory, St. Petersburg State University
- Nov, 2019 **Regularity of spectral stacks, their algebraic K-theory, and weight structures**, [link](#).
AG seminar, Regensburg University
- May, 2018 **K-theory of the category of Voevodsky motives.**
St. Petersburg algebraic geometry symposium for young mathematicians, St. Petersburg State University
- Dec, 2018 **Weight structures on stable infinity-categories.**
Algebra/Topology seminar, University of Copenhagen
- Nov, 2017 **Comparing different framed transfers.**
Seminar on A1-topology, motives and K-theory, St. Petersburg State University
- Jun, 2017 **Theorem of the heart for weight structures.**
AG seminar, Regensburg University
- Sep, 2016 **Non-commutative localizations of additive categories and weight structures.**
Harish-Chandra Research Institute
- Apr, 2015 **Noncommutative localizations of additive categories and weight structures.**
Faddeev seminar, St. Petersburg Department of Steklov Institute

Awards

- 2013, 2017 **Rokhlin grant**, awarded by St. Petersburg Department of Steklov Institute.

Teaching experience

- Winter, 2021 **Sheaves and the continuum hypothesis**, short course for the Winter School in Mathematics and Theoretical Computer Science, [link](#).
online
- Fall, 2015 **Algebraic topology and vector bundles**, joint with Alexey Ananyevskiy, course for sophomore undergraduate students.
St. Petersburg State University
- Fall, 2014 **Linear algebra**, problem sessions for sophomore undergraduate students.
St. Petersburg State University
- Fall, 2013 **Introduction to commutative algebra**, course for high school students.
Laboratory of Continuous Mathematical Education

Supervising students

- 2015-2016 A high school student of “Laboratory of Continuous Mathematical Education”, Gleb Novikov, completed a research project under my supervision and presented it at the International Science and Engineering Fair in Pittsburgh, Pennsylvania, USA

Organizing seminars

- Fall, 2020 **Homotopy type theory**, *joint with Valery Isaev*, [recordings](#) (in Russian).
online
- Spring, 2020 **Higher category theory**, *joint with Andrei Lavrenov*.
online
- Fall, 2019 **Type theory**, *joint with Dmitry Shtukenberg*.
St. Petersburg State University

Refereeing for mathematical journals

Algebraic & Geometric Topology

Languages

English: fluent
Japanese: intermediate
Russian: native