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

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. *Épijournal 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