

# CURRICULUM VITAE

Alexander Petrov

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**Research interests:** algebraic geometry, number theory, homological algebra.

## Employment:

2022—2027: Clay Research Fellow, based at:

- 2022—2023 Max Planck Institute for Mathematics, Bonn
- 2023—2024 Institute for Advanced Study, Princeton

## Education:

- 2017—2022 Ph. D. in Mathematics, Harvard University
- 2013—2017 B. Sc. in Mathematics, Higher School of Economics, Moscow

## Papers and preprints:

- *Universality of the Galois action on the fundamental group of  $\mathbb{P}^1 \setminus \{0, 1, \infty\}$* , [arxiv:2109.09301](#)
- appendix for *Hodge numbers are not derived invariants in positive characteristic* by N. Addington and D. Bragg, [arxiv:2106.09949](#)
- *Geometrically irreducible  $p$ -adic local systems are de Rham up to a twist*, to appear in *Duke Math. J.*, [arxiv:2012.13372](#)
- *Rigid-analytic varieties with projective reduction violating Hodge symmetry*. *Compositio Mathematica*, 157(3), 625-640. [doi:10.1112/S0010437X20007708](#), [arxiv:2005.02226](#)
- with V. Vologodsky, *On the periodic topological cyclic homology of DG categories in characteristic  $p$* , [arxiv:1912.03246](#)
- with D. Vaintrob and V. Vologodsky, *The Gauss-Manin Connection on periodic cyclic homology*, *Sel. Math. New Ser.* (2018) 24: 531. [doi:10.1007/s00029-018-0388-0](#)

## Talks: (past and future)

- Regensburg AG-Seminar, November 2022
- London Geometry & Topology seminar, October 2022
- Azat Miftakhov days against the war, July 5th 2022
- Franco-Asian School on Arithmetic Geometry, CIRM, June 2022
- Berkeley Arithmetic Geometry and Number Theory Seminar, November 2021
- Algebra-Number Theory Seminar at the University of Maryland, November 2021
- *Automatic de Rham-ness of  $p$ -adic local systems and Galois action on the pro-algebraic completion of the fundamental group*, Geometric Langlands Seminar, University of Chicago, October 2021, online, ([link to the recordings](#))
- *Galois action on the pro-algebraic completion of the fundamental group*, Harvard Number Theory Seminar, September 2021
- *Automatic de Rhamness of arithmetic local systems*, "Séminaires de Géométrie Arithmétique et Motivique" at Université Sorbonne Paris Nord, May 2021, online
- *Geometrically irreducible  $p$ -adic local systems are de Rham up to a twist*, Recent Advances in Modern  $p$ -Adic Geometry (RAMpAGe) Seminar, March 2021, online

- *Geometrically irreducible  $p$ -adic local systems are de Rham up to a twist*, "Arbeitsgemeinschaft Arithmetische Geometrie" in Bonn, January 2021, online
- *Geometrically irreducible  $p$ -adic local systems are de Rham up to a twist*, University of Georgia algebraic geometry seminar, December 2020, online
- *Irreducible  $p$ -adic local systems are de Rham up to a twist*, University of Michigan algebraic geometry seminar, October 2020, online
- *Periodic cyclic crystalline cohomology*, Geometric Langlands Seminar, University of Chicago, February 2020
- *Crystalline cohomology of DG categories*, Algebra seminar, University of Oregon, March 2017

**Teaching:**

- Math 157, "Mathematics in the world", Spring 2022, Harvard
- Math 157, "Mathematics in the world", Spring 2021, Harvard (remotely)
- Math 1b, Fall 2020, Harvard (remotely)
- Math 1b, Fall 2019, Harvard
- Math 1b, Fall 2018, Harvard

**Awards:**

- Harvard University Certificate of Distinction in Teaching x3: Fall 2019, Fall 2020, Spring 2021
- Daniel and Raphael Salem Fellowship, 2020-21
- Pierce Fellowship, 2017
- Arnold stipend, 2016-2017
- Dobrushin stipend (second half of 2015, first half of 2016, second half of 2016, first half of 2017)

**Personal data:** Born in Moscow, Russia, October 1998. Russian citizen.