Curriculum Vitae of Fedor Petrov

Full Name Fedor Vladimirovich Petrov

Born 08 Feb. 1983, Leningrad, USSR

Citizenship Russian Federation

Employment Saint Petersburg State University (since 2008), Associate Professor
Saint Petersburg Department of Steklov Institute of Mathematics (since 2007), Senior Researcher

Diploma Limit Shapes of Combinatorial Partitions and Integer Convex Polygons, 2004, Saint-Petersburg State University, Mathematics and Mechanics Faculty.

PhD On the Number of Rational Points on Convex Curves and Surfaces, 2007, Saint-Petersburg Department of Steklov Institute of Mathematics. Advisor: Anatoly Moiseevich Vershik

Habilitation Problems of Continuous and Polynomial Combnatorics, Saint Petersburg State University, 2018

Fields of Interest Combinatorics, Geometry of Numbers, Convex Geometry, Functional Analysis

Teaching

- Faculty of Physics of Saint-Petersburg University (2004,2005,2008). Courses given: Algebra, Analysis and Topology.

- Faculty of Mathematics and Mechanics of Saint-Petersburg University (since 2010). Courses given: Mathematical Analysis, Linear Algebra, Combinatorics, Analytic Number Theory, Lie Groups and Lie Algebras, Functional Analysis

- Educational center of PDMI RAS (since 2007). Courses given: Probablistic Method, Ramsey Theory, Additive Combinatorics, Finite Metric Spaces, Tauberian Theory, Concentration of Measure, Additional Chapters of Combinatorics

- Academic University RAS (since 2010). Courses given: Combinatorics and Graph Theory, Convex Geometry

- Teaching mathematics for high school students in 239 Lyceum (St. Petersburg) (since 2000)

- Preparing Russian IMO team (since 2014)

Mathematical contests activity

- Jury member of St. Petersburg Mathematical Olympiad (since 2000), of All-Russian Mathematical Olympiad (since 2001), of International Olympiad of Metropolises (since 2016) and other high school olympiads.

- Head of Jury of St. Petersburg University Olympiad Petrpolitan Science (Re)Search for university students (since 2017)

- Head of Jury of St. Petersburg Mathematical Society Contest for university students (2010, 2013, 2015)

- Head of St. Petersburg State University team on international mathematical contests (since 2009)

Advising

Pavel Zatitskiy (PhD in 2014)

Danila Cherkashin (PhD in 2018, joint advising with Andrei Raigorodskii)

Expertise

- St. Petersburg Mathematical Journal, editorial board member
- expert of Russian Science Foundation
- expert of Russian Academy of Sciences
- member of Council of the St. Petersburg Mathematical Society (since 2018)

Awards

- International Mathematical Olympiad for high schools students (Bucharest, Romania, 1999) - Gold Medal
- Moebius Contest (hold by Independent University of Moscow) — Third Prize for postgraduate students, 2005
- Euler Contest (hold by Euler Foundation, Saint-Petersburg) — Second Prize for postgraduate students, 2007
- St. Petersburg Mathematical Society "Young Mathematician" award, 2011
- St. Petersburg Government Euler Prize, 2017

Publications

1. Ф. В. Петров, С. Е. Рукшин. Две теоремы о выпуклых многогранниках. *Труды Санкт.-Петерб. Мат. Общ.* **8** (2001)

2. A. Alekseev, F. Petrov. A principle of variations in representation theory, in *The orbit method in geometry and physics* (Marseille, 2000), 1–7, Progr. Math., 213, Birkhauser Boston, Boston, MA. (2003)

3. Ю. К. Демьянович, Ф. В. Петров. Некоторые тождества и P-сплайны. *Вестник СПбГУ, сер. мат.* **9**, 2, 5–9 (2002)

4. Ф. В. Петров. Предельная форма диаграмм Юнга для мультипликативных статистик суперполиномиального роста. *Зап. Научн. Сем. ПОМИ* **301**, 219–228. (2003)

5. Ф. В. Петров. О количестве рациональных точек на строго выпуклой кривой. *Функ. Анал. Прил.*, **40**, 1, 30–42. (2006)

6. А. И. Назаров, Ф. В. Петров. О гипотезе С. Л. Табачникова *Алгебра и Анализ*, **19**, 1, 175-190. (2007)

7. G. Andrews, H. Eriksson, F. Petrov, D. Romik. Integrals, partitions and MacMahon's theorem. *J. Comb. Theor. A.* **114**, 3, 545-554. (2007)

8. J. Melleray, F. Petrov, A. Vershik. Espaces métriques linéairement rigides. *C. R. Math. Acad. Sci. Paris.* **344**, 4, 235-240. (2007)

9. Ф. В. Петров. Оценки количества рациональных точек на выпуклых кривых и поверхностях. *Зап. Научн. Сем. ПОМИ*, **344**, 174-189. (2007).

10. J. Melleray, F. V. Petrov and A. M. Vershik. Linearly rigid metric spaces and the embedding problem, *Fund. Math.*, **199**, No. 2, 177–194. (2008)

11. Ф. В. Петров. Два элементарных подхода к предельным формам диаграмм Юнга. *Зап. Научн. Сем. ПОМИ*, **370**, 111-131. (2009)

12. F. V. Petrov, D. M. Stolyarov, P. B. Zatitskiy. On embeddings of finite metric spaces in l_∞^n. *Mathematika*, **56**, 1, 135-139. (2010)

13. F. Petrov, A. Vershik. Uncountable Graphs and Invariant Measures on the Set of Universal Countable Graphs. *Random Structures and Algorithms*, **37** (3), 389–406. (2010)

14. F. Nazarov, F. Petrov, D. Ryabogin, A. Zvavitch. A remark on the Mahler conjecture: Local minimality of the unit cube. Duke Math. J. **154**, No. 3, 419-430. (2010)

15. Е. Е. Горячко, Ф. В. Петров. Неразложимые характеры группы рациональных перекладываний отрезка. *Зап. Научн. Сем. ПОМИ* **378**, 17-31. (2010)

16. Ning Chen, Edith Elkind, Nick Gravin, Fedor Petrov. Frugal Mechanism Design via Spectral Techniques. FOCS 2010, proceedings of 51st Annual Symposium on Foundations of Computer Science, 755-764. (2010)

17. Ж. Кассень, Ф. В. Петров, А. Э. Фрид. О возможных скоростях роста языков Тёплица. *Сиб. Мат. Журн.* **52**, 81-94. (2011)

18. П. Б. Затицкий, Ф. В. Петров. Об исправлении метрик. *Зап. научн. сем. ПОМИ* **390**, 201-209. (2011)

19. R. Karasev, F. Petrov. Partitions of nonzero elements of a finite field into pairs. *Isr. J. Math.* **192**, 143–156. (2012)

20. A. M. Vershik, P. B. Zatitskiy, F. V. Petrov. Geometry and dynamics of admissible metrics in measure spaces, *Cent. Eur. J. Math.* **11**, 3, 379-400. (2013)

21. F. Petrov, P. Zusmanovich. On Shirshov bases of graded algebras. *Isr. J. Math.* **197**, 23-28. (2013)

22. V. V. Volkov, F. V. Petrov. On the interpolation of integer-valued polynomials. *J. Numb. Theor.* **133** (12), 4224–4232. (2013)

23. А. М. Вершик, П. Б. Затицкий, Ф. В. Петров. Виртуальная непрерывность измеримых функций многих переменных и теоремы вложения. Функц. анализ и его прил. **47** (3), 1–11. (2013)

24. N. Gravin, F. Petrov, S. Robins, D. Shiryaev. Convex curves and a Poisson imitation of lattices. *Mathematika* **60** (1), 139-152. (2014)

25. F. Petrov. Combinatorial Nullstellensatz approach to polynomial expansion. *Acta Arith.* **165**, 279-282. (2014)

26. А. М. Вершик, П. Б. Затицкий, Ф. В. Петров. Виртуальная непрерывность измеримых функций многих переменных и ее приложения. *Усп. мат. наук* **69** (6), 81-114. (2014)

27. В. В. Волков, Ф. В. Петров. Некоторые обобщения теоремы Коши–Дэвенпорта. *Зап. научн. сем. ПОМИ* **432**, 105-110. (2015)

28. G. Károlyi, Z.-L. Nagy, F. V. Petrov, V. Volkov. A new approach to constant term identities and Selberg-type integrals. *Adv. Math.* **277**, 252-282. (2015)

29. П. Б. Затицкий, Ф. В. Петров. О субаддитивности масштабирующей энтропийной последовательности. *Зап. Научн. Сем. ПОМИ* **436**, 167–173. (2015)

30. А. М. Вершик, П. Б. Затицкий, Ф. В. Петров. Интегрирование виртуально непрерывных функций по бистохастическим мерам и формула следа ядерных операторов. *Алгебра и Анализ*, **27** (3), 66–74. (2015)

31. F. Petrov. Polynomial approach to explicit formulae for generalized binomial coefficients. *Europ. J. of Math.* **2** (2), pp. 444–458. (2016)

32. Ф. В. Петров. Исправление непрерывных гиперграфов. *Алгебра и Анализ*, **28** (6), 84–90. (2016)

33. Ф. В. Петров, В. В. Соколов. Асимптотика жордановой формы случайной ниль-потентной матрицы. *Зап. Научн. Сем. ПОМИ* **448**, 252–262. (2016)

34. J. Gordon, F. Petrov. Combinatorics of the Lipschitz polytope. *Arnold Math. J.* **3** (2), 205–218. (2017)

35. F. Petrov. Restricted product sets under unique representability, *Mosc. J. Comb. Numb. Th.* **7** (1), 73–78. (2017)

36. F. Petrov. General parity result and cycle-plus-triangles graphs. *J. Graph Th.* **85** (4), 803–807. (2017)

37. F. Petrov. Combinatorial and Probabilistic Formulae for Divided Symmetrization. *Discr. Math.* **341** (2), 336–340. (2018)

38. Ф. В. Петров. Асимптотика следов путей на графах Юнга и Шура. *Зап. Научн. Сем. ПОМИ* **468**, 126–137. (2018)

39. D. Cherkashin, F. Petrov. On small n-uniform hypergraphs with positive discrepancy. *J. Comb. Ser. B* (2019, published online)

Preprints

1. A. Akopyan, R. Karasev, F. Petrov. Bang's problem and symplectic invariants. arXiv:1404.0871

2. F. Petrov. Combinatorial results implied by many zero divisors in a group ring. arXiv:1606.03256

3. F. Petrov, C. Pohoata. Improved Bounds for Progression-Free Sets in C_8^n. arXiv:1805.05549

4. D. Cherkashin, F. Petrov. Regular behaviour of the maximal hypergraph chromatic number. arXiv:1808.01482

5. D. Krachun, F. Petrov, Z.-W. Sun, M. Vsemirnov. On some determinants involving Jacobi symbols. arXiv:1812.08080

6. D. Cherkashin, F. Petrov, V. Sokolov. On a question of Sidorenko. arXiv:1901.00440

7. J.-C. Liu, F. Petrov. Congruences on sums of q-binomial coefficients. arXiv:1902.03851

8. I. Pak, F. Petrov, V. Sokolov. Hook inequalities. arXiv:1903.11828

9. F. Petrov, A. Tarasov. Uniqueness of a 3D ellipsoid with given intrinsic volumes. arXiv:1905.01728