# NATALIA TSILEVICH

### Home page: http://www.pdmi.ras.ru/~natalia E-mail: natalia.tsilevich@gmail.com

### **Research Interests:**

• Asymptotic representation theory, asymptotic combinatorics, mathematical physics, random processes.

### **Family Status:**

• Married, 2 children.

## **Education and Degrees:**

- Habilitation (Doctor of Sciences in Mathematics), St. Petersburg Department of Steklov Institute of Mathematics, 2015. Thesis: Asymptotic theory of unitary representations of symmetric groups and its applications. Referees: Boris Feigin, Yuri Neretin, Nicolai Reshetikhin.
- Ph.D. in Mathematics, St. Petersburg Department of Steklov Institute of Mathematics, 1998. Thesis: Poisson-Dirichlet measures and virtual permutations. Advisor: Anatoly Vershik. Referees: Grigori Olshanski, Vladimir Sudakov.
- M.Sc. in Mathematics (summa cum laude), St. Petersburg State University, 1995. Thesis: Statistics of virtual permutations. Advisor: Anatoly Vershik. Referee: Sergey Kerov.

## **Employment:**

- 2024–present: Bar-Ilan University, Shapira Research Associate (host: Yuval Roichman).
- 2022–2024: University of Haifa, Shapira Research Associate (host: Anna Melnikov).
- 2001–2022: St. Petersburg Department of Steklov Institute of Mathematics, Russian Academy of Sciences, Laboratory of Representation Theory and Dynamical Systems; last position: Senior Researcher (*tenured*).
- 1999–2020: St. Petersburg State University; last position: Associate Professor.

### Short-Term Research Visits:

- Weizmann Institute of Sciences, Rehovot, Israel, 2022.
- Northeastern University, Boston, USA, 2010.
- Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, 2003.
- University of Bielefeld, Bielefeld, Germany, 2001.
- University of Bielefeld, Bielefeld, Germany, 2000.
- Weizmann Institute of Sciences, Rehovot, Israel, 1998.
- Institut de Mathématiques de Luminy, Luminy, Marseille, France, 1997.

#### **Professional Membership:**

• St. Petersburg Mathematical Society (1998 – present).

### <u>Awards</u>:

• Young Mathematician Prize of the St. Petersburg Mathematical Society, 1999.

### **Teaching Experience:**

At the University of Haifa I taught the following courses:

- Selected Topics in Geometry (undergraduate), in Hebrew,
- reading course in *Enumerative Combinatorics* (undergraduate),

In 1999–2022, I had been teaching a number of courses at St. Petersburg State University. Some of the courses I taught:

- Symmetric Functions (graduate) at the Department of Mathematics and Computer Science (student evaluations: 5.0 out of 5.0),
- Representation Theory of Symmetric Groups (graduate) at the Department of Mathematics and Computer Science (student evaluations: 5.0 out of 5.0),
- Complex Analysis (undergraduate) at the Department of Mathematics and Mechanics,
- Involution Algebras (undergraduate) at the Department of Mathematics and Mechanics,
- *Ergodic Theory* (undergraduate student research seminar) at the Department of Mathematics and Mechanics.

### **Editorial Boards:**

- European Journal of Mathematics, editor, 2014 present.
- Notes of Mathematical Seminars of St.Petersburg Department of Steklov Institute of Mathematics, coeditor for the series Representation Theory, Dynamical Systems, Combinatorial Methods, 2007–2022.
- Central European Journal of Mathematics, editor, 2010–2014.

#### **Organization of Conferences:**

- Representations, Dynamics, Combinatorics: in the Limit and Beyond, St. Petersburg, Russia, 2014.
- Representation Theory, Dynamical Systems, and Asymptotic Combinatorics, St. Petersburg, Russia, 2004.

#### <u>Grants</u>:

- RSF 21-11-00152 (2021), senior investigator.
- 15+ RFBR and "Leading Scientific School" grants (1996–2019), participant.
- CRDF RUM1-2622-ST.042 (2005–2007), participant.
- International Science Foundation grant MQV-000 (1995), individual.

## <u>Selected Publications</u> (for the full list of publications see a separate file):

- 1. The intrinsic hyperplane arrangement in an arbitrary irreducible representation of the symmetric group (with A.M.Vershik and S.Yuzvinsky). Arnold Math. J. 6 (2020), 173–187.
- 2. The serpentine representation of the infinite symmetric group and the basic representation of the affine Lie algebra  $\widehat{sl}_2$  (with A.M.Vershik). Lett. Math. Phys. 105, No. 1 (2015), 11–25.
- 3. Quantum inverse scattering method for the q-boson model and symmetric functions. Funct. Anal. Appl. 40, No. 3 (2006), 207–217.
- Fock factorizations, and decompositions of the L<sup>2</sup> spaces over general Lévy processes (with A.M.Vershik). Russian Math. Surveys 58, No. 3 (2003), 427–472.
- Quasi-invariance of the gamma process and multiplicative properties of the Poisson-Dirichlet measures (with A.M.Vershik). C. R. Acad. Sci. Paris 329, Serie I (1999), 163–168.

#### **Translations:**

My favorite professional hobby is translating math and popular science books.

#### English to Russian translations:

- 1. H.Weyl, Mind and Nature. MCCME, Moscow, 2019.
- 2. P.Etingof et al., Introduction to Representation Theory. MCCME, Moscow, 2019.
- S.L.Glashow, From Alchemy to Quarks: The Study of Physics as a Liberal Art. MCCME, Moscow, 2018.
- 4. M.Gromov, The Ring of Mysteries: Universe, Mathematics, Mind. MCCME, Moscow, 2017.
- 5. T.Tao, Structure and Randomness. MCCME, Moscow, 2014.
- 6. M.L.Mehta, Random Matrices. MCCME, Moscow, 2012.
- 7. D.Fuchs and S.Tabachnikov, *Mathematical Omnibus* (Chapters 3 and 8). MCCME, Moscow, 2011.

- 8. D.Mumford, C.Series, and D.Wright, *Indra's Pearls: The Vision of Felix Klein* (Introduction, Chapters 1 and 2). MCCME, Moscow, 2011.
- 9. J.F.C.Kingman, Poisson Processes. MCCME, Moscow, 2007.
- 10. R.Stanley, Enumerative Combinatorics, Vol. 2 (partially). Mir, Moscow, 2005.

### Russian to English translations:

- 1. B.Makarov and A.Podkorytov, Smooth Functions and Maps. Springer, 2020.
- 2. S.Lvovski, Principles of Complex Analysis. Springer, 2020.
- 3. S.Natanzon, Complex Analysis, Riemann Surfaces and Integrable Systems. Springer, 2019.
- M.E.Kazaryan, S.K.Lando, and V.V.Prasolov, Algebraic Curves: Towards Moduli Spaces. Springer, 2018.
- B.Makarov and A.Podkorytov, Real Analysis: Measures, Integrals and Applications (Chapters 1–4, Appendices). Springer, 2013.
- S.V.Kerov, Asymptotic Representation Theory of the Symmetric Group and its Applications in Analysis. Translations of Mathematical Monographs, Vol. 219. American Mathematical Society, 2003.