

Curriculum Vitae

Personal information:

Name: Yaroslav Vorobets
Address: Department of Mathematics, Texas A&M University,
College Station, TX 77843–3368
E-mail: yvorobet@math.tamu.edu
Web page: <http://www.math.tamu.edu/~yvorobet/>

Education and degrees:

1988–90: Lviv State University, Lviv, Ukraine;
1990–97: Moscow State University, Moscow, Russia.
M.S. in Mathematics: 1994, Moscow State University (diploma with honors);
Ph.D. in Mathematics: 1998, Moscow State University.
Ph.D. thesis “Periodic trajectories of billiards in polygons and geodesic flows on surfaces with flat structures”, advisor Anatoli Stepin.

Professional experience:

Since 2009: Texas A&M University, Associate Professor;
2006–2009: Texas A&M University, Assistant Professor;
2005–2006: Texas A&M University, Research Assistant;
2005–2006: Clay Mathematics Institute, Research Scholar;
June–July 2004: Max Planck Institute for Mathematics in Bonn, Visiting Scholar (within the MPIM program on algebraic and topological dynamics);
2002–2006: Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of Ukrainian NAS, Senior Scientific Researcher;
1998–2002: Lviv Ivan Franko National University, Scientific Researcher.

Teaching experience:

Since 2006: Texas A&M University.
Courses taught: MATH 304 (Linear Algebra), MATH 311 (Topics in Applied Mathematics), MATH 409 (Advanced Calculus I), MATH 412 (Theory of Partial Differential Equations), MATH 423 (Linear Algebra II), MATH 433 (Applied Algebra).

Membership:

American Mathematical Society (since 2007).
Shevchenko Scientific Society (since 2008).

Grants, awards and honors:

NSF grant DMS-0701298, 2007–2010.
Clay Research Scholarship, 2005–2006.
Soros Graduate Student, 1995.

Research interests:

Billiard flows, especially in polygons;
surfaces with flat structure;
self-similar groups and groups defined by finite automata;
actions of finitely generated groups and semigroups on homogeneous spaces.

Publications:

1. On growth of random groups of intermediate growth (with M. G. Benli and R. Grigorchuk). *Groups Geom. Dynamics* **8** (2014), no. 3, 643–667.
2. Notes on the Schreier graphs of the Grigorchuk group. In *L. Bowen et al. (eds.), Dynamical systems and group actions*, 221–248. Contemp. Math. **567**, Amer. Math. Soc., Providence, RI, 2012.
3. Automata generating free products of groups of order 2 (with D. Savchuk). *J. of Algebra* **336** (2011), 53–66.
4. Automata over a binary alphabet generating free groups of even rank (with B. Steinberg and M. Vorobets). *Int. J. of Algebra and Comput.* **21** (2011), nos. 1–2, 329–354.
5. On a substitution subshift related to the Grigorchuk group. *Proc. Steklov Inst. Math.* **271** (2010), 306–321.
6. Fermat’s spiral and the line between Yin and Yang (with T. Banakh and O. Verbitsky). *Amer. Math. Monthly* **117** (2010), no. 9, 786–800.
7. On a series of finite automata defining free transformation groups (with M. Vorobets). *Groups, Geom. and Dynamics* **4** (2010), no. 2, 377–405.
8. On a free group of transformations defined by an automaton (with M. Vorobets). *Geom. Dedicata* **124** (2007), 237–249.
9. Periodic geodesics on generic translation surfaces. In *S. Kolyada et al. (eds.), Algebraic and topological dynamics*, 205–258. Contemp. Math. **385**, Amer. Math. Soc., Providence, RI, 2005.
10. On the uniform distribution of orbits of finitely generated groups and semigroups of plane isometries. *Sb. Math.* **195** (2004), no. 2, 163–186.
11. Actions of finitely generated groups and semigroups on a plane by means of isometries. *Math. Notes* **75** (2004), no. 4, 489–512.
12. On faithful actions of groups and semigroups by orientation-preserving plane isometries. *Algebra & Discrete Math.* No. 4 (2003), 118–125.
13. A Ramsey treatment of symmetry (with T. Banakh and O. Verbitsky). *Electron. J. Comb.* **7** (2000), no. 1. Research paper R52, 25 p.
14. Ramsey problems for spaces with symmetries (with T. O. Banakh and O. V. Verbitsky). *Izv. Math.* **64** (2000), no. 6, 1091–1127.
15. On the uniform distribution of orbits of free group and semigroup actions on a plane. *Proc. Steklov Inst. Math.* **231** (2000), 59–89.
16. Isospectrality and Galois projective geometries (with A. M. Stepin). *Math. Notes* **63** (1998), no. 5, 582–585.
17. Billiards in rational polygons: periodic trajectories, symmetries and d-stability. *Math. Notes* **62** (1997), no. 1, 56–63.
18. Ergodicity of billiards in polygons. *Sb. Math.* **188** (1997), no. 3, 389–434.

19. Asymptotics of the spectrum of the Laplace-Beltrami operator on tori with Liouville and infra-Liouville metrics. *Russ. Math. Surv.* **52** (1997), no. 2, 430–431.
20. Planar structures and billiards in rational polygons: the Veech alternative. *Russ. Math. Surv.* **51** (1996), no. 5, 779–817.
21. Ergodicity of billiards in polygons: Explicit examples. *Russ. Math. Surv.* **51** (1996), no. 4, 756–757.
22. Planar structures and billiards in rational polygons. *Russ. Math. Surv.* **51** (1996), no. 1, 177–178.
23. On the measure of the set of periodic points of the billiard. *Math. Notes* **55** (1994), no. 5, 455–460.
24. Periodic billiard trajectories in polygons: Birth mechanisms (with G. A. Gal’perin and A. M. Stepin). *Russ. Math. Surv.* **47** (1992), no. 3, 5–80.
25. Periodic billiard trajectories in polygons (with G. A. Gal’perin and A. M. Stepin). *Russ. Math. Surv.* **46** (1991), no. 5, 204–205.

Talks on conferences:

- Joint Mathematics Meeting, San Antonio, TX, January 2015.
- Rice Dynamics Meetings, Houston, TX, May 2013.
- Groups, geometry, and random structures, College Station, TX, March 2012.
- Applied inverse problems conference, College Station, TX, May 2011.
- Group actions on measure spaces, College Station, TX, March 2011.
- Self-similarity and branching in group theory, Banff, Canada, October 2008.
- AMS sectional meeting #1033, section on billiards and related topics, Murfreesboro, TN, November 2007.
- Geometric groups on the Gulf coast, New Orleans, LA, January 2007.
- Self-similar groups and conformal dynamics, Palo Alto, CA, June 2006.
- Geometric and probabilistic methods in group theory and dynamical systems, College Station, TX, November 2005 (plenary talk).
- ESF exploratory workshop “Dynamical systems: from algebraic to topological dynamics”, Bonn, Germany, July 2004 (plenary talk).
- Dynamics in the Teichmüller space and applications to rational billiards, Luminy, France, July 2003 (plenary talk).
- International conference on group theory: combinatorial, geometric, and dynamical aspects of infinite groups, Gaeta, Italy, June 2003.
- Conference on functional analysis and its applications dedicated to the 110th anniversary of Stefan Banach, Lviv, Ukraine, May 2002.
- International conference dedicated to the 90th anniversary of L. S. Pontryagin, Moscow, September 1998.
- Workshop on one-dimensional dynamics, Warsaw, October 1997.
- Polish-German workshop on ergodic theory and dynamical systems, Szklarska Poreba, Poland, September 1997.

Professional activities:

Refereed papers for the following journals: “Ergodic Theory and Dynamical Systems”, “Geometriae Dedicata”, “Journal of Modern Dynamics”, “Sbornik. Mathematics”.

Co-edited volume 567 of the AMS Contemporary Mathematics series.

Member of the Award Committee of the mathematics competition for young mathematicians in Ukraine sponsored by Shevchenko Sci. Soc. and the U.S.-Ukraine Foundation.