

Anastasiia Tsvietkova**Personal Information**

US citizen

atsvietk@rutgers.edu

Appointments**Current**

Assistant Professor, Rutgers University, Newark

September 2016 – present

Assistant Professor, OIST, Japan

starting August 2017

(and Adjunct Assistant Professor in November 2016 – July 2017)

Past

Krener Assistant Professor (non t.-track), University of California, Davis

January, 2014 – August 2016

Postdoctoral Fellow, ICERM, Brown University (Semester program in
Low-dimensional Topology, Geometry, and Dynamics)

Fall 2013

VIGRE Postdoctoral Researcher, Louisiana State University

August 2012 – August 2013

Education

PhD in Mathematics, University of Tennessee, 05/2012

Thesis: *Hyperbolic structures from link diagrams*. Advisor: Prof. Morwen Thistlethwaite.

Master's degree with honors in Applied Mathematics, Kiev National University, Ukraine, 07/2007

Thesis: *Decomposition of cellular balleans into direct products*. Advisor: Prof. Ihor Protasov.

Bachelor's degree with honors in Applied Mathematics, Kiev National University, Ukraine, 05/2005

Thesis: *Asymptotic Rays*. Advisor: Prof. Ihor Protasov.**Research Interests**

Geometric Topology

Hyperbolic Geometry

Geometric Group Theory

Knot theory

Computational Topology

Quantum Topology

Low-dimensional manifolds

Academic Honors and Grants

- NSF grant (sole PI), Hyperbolic Structures from Link Diagrams, DMS 1406588, total of \$113,000, 2014-2017
- Geometric Structures and Representation Varieties (GEAR) network member, 2012 - present. The network is funded by the NSF grant DMS 1107452, total of \$5 000 000. It brings together researchers from US, Canada, Europe and Asia. Research visits supported by individual subawards from GEAR:
 - 12/2012, Columbia University
 - 10/2015, Institute of Advanced Study, Princeton University
- NSF-AWM Mathematics Mentoring Travel Grant recipient (the grant funded research visits to the University of Oxford), total of \$5,000, 2013
- University of Tennessee Graduate Student Academic Achievement Award, 04/2012
- USTARS Distinguished Graduate Student Award, 04/2012
- AMS Travel Grants recipient, 10/2011 and 01/2012
- AWM Travel Grant recipient, 01/2012
- University of Tennessee Travel Awards, 01/2011 and 05/2011
- University of Tennessee Science Alliance Fellowship, 2006-2008, 2009-2011
- A winner of the Microsoft Imagine Cup competition, Software design category, Ukraine, 2006
- Presidential Fellowship for exceptional undergraduate students (full scholarship covering tuition, fees, housing and stipend), Ukraine, 2001-2005
- A winner of Math Olympiads in Ukraine, 1998-2001 (placed 1st, 2nd and 3rd in different years)

Publications and Preprints

Published/Accepted

15. *Determining isotopy classes of crossing arcs in alternating links*, to appear in Asian Journal of Mathematics, ArXiv: math.GT/1411.0231
14. *The number of incompressible surfaces in an alternating link complement*, with J. Hass and A. Thompson, International Mathematics Research Notices 6 (2017), 1611-1622
13. *Simplicial volume of links from link diagrams*, with O. Dasbach, to appear in Mathematical Proceedings of Cambridge Philosophical Society, ArXiv: math.GT/1512.08316
12. *Intercusp geodesics and the invariant trace field of hyperbolic 3-manifolds*, with W. Neumann, Proceedings of the American Mathematical Society 14 (2016), No. 2, 887-896
11. *A refined upper bound for the hyperbolic volume of alternating links and the colored Jones polynomial*, with O. Dasbach, Mathematical Research Letters 22 (2015), No. 4, 1047-1060
10. *Exact volume of hyperbolic 2-bridge links*, Communications in Analysis and Geometry 22 (2014), No. 5, 881-896
9. *An alternative approach to hyperbolic structures on link complements*, with M. Thistlethwaite, Algebraic & Geometric Topology 14 (2014), 1307-1337
8. *Hyperbolic Structures from Link Diagrams*, Ph.D. Thesis, University of Tennessee (2012), 77 pp.
7. *Decomposition of Cellular Balleans*, with. I. Protasov, Topology Proceedings 36 (2010), 77-83
6. *Asymptotic Rays*, with O. Kuchaiev, International J. of Pure and Applied Math. 56, No. 3 (2009), 353-358

Preprints

5. *The number of spanning surfaces in an alternating link complement*, with J. Hass and A. Thompson
4. *Prime tangle decompositions of alternating links*, with J. Hass and A. Thompson

Selected Software

3. *Hyperbolic structures from alternating link diagrams*. Implementation of an alternative method for computing hyperbolic structures of alternating links with small regions (written in C++)
<https://www.math.ucdavis.edu/~tsvietkova/Research.html>
2. Computing invariant trace field from a link diagram, with no approximation involved. Worksheet constructing the polynomial for the invariant trace field of a hyperbolic 2-bridge link (written in Mathematica)
<https://www.math.ucdavis.edu/~tsvietkova/Research.html>
1. *Footstep*, with O. Kuchaiev, P. Protsyk, P. Shelyazhenko. Software system written as part of Microsoft Imagine Cup competition (placed first in Ukraine in 2006)

Research Talks

Conference Talks

- 51st Spring Topology and Dynamic Conference, NJ, Session on Geometric Topology, 03/2017
- Redbud Triangulations conference, Oklahoma State University, OK, 11/2016
- AMS meeting at Bowdoin College, Special Session on Decomposing 3-manifolds, Brunswick, Maine, 09/2016
- Knots in Hellas, Ancient Olympia, Greece, 07/2016
- Chico Topology Conference, California State University, Chico, California, 05/2016
- Workshop on Geometric Structures on 3-Manifolds, IAS, Princeton University, NJ, 10/2015
- AMS Meeting, California State University, Fullerton, Special Session on Algebraic and Combinatorial Structures in Knot Theory, 10/2015
- AMS Meeting, University of Nevada, Las Vegas, Special Session on Knots and 3-manifolds, 04/2015
- The Thin Manifold conference, University of Iowa, 08/2014
- Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI, Bilbao, Spain, Special session on Geometric Topology, 07/2014

- AMS Meeting, University of Tennessee, TN, Special Session on Number Theory and Topology, 03/2014
- AMS Meeting, Washington University, St. Louis, Missouri, Special Session on Geometric Aspects of 3-Manifold Invariants, 10/2013
- AMS Meeting, Temple University, Philadelphia, PA, Special session on Geometric topology of knots and 3-manifolds, 10/2013
- Low dimensional topology, knots, and orderable groups, International Center of Mathematical Meetings, Luminy-Marseille, 07/2013
- Low-dimensional Topology and Geometry in Toulouse, Toulouse mathematics Institute, 06/2013
- Knots in Washington XXXIV, Special Sessions on Geometric Aspects of Knot Theory, George Washington University, 12/2012
- AMS Meeting, Special Session on Combinatorial Methods in Knot Theory, Tulane University, New Orleans, LA, 10/2012
- GEAR Network Retreat, University of Illinois, Urbana-Champaign, 08/2012
- USTARS, University of Iowa, Distinguished Graduate Student talk, 04/2012
- Moab Topology Conference, Utah State University, Moab, 05/2012
- 46th Spring Topology and Dynamics, low-dimensional topology section, Universidad Nacional Autónoma de México, Mexico, 03/2012
- Knots in Washington XXXIII, George Washington University, 12/2011
- Geometric Topology of Knots Workshop, Centro di Ricerca Matematica, Pisa, Italy, 05/2011
- 12th Chico Topology Conference, California State University, Chico, 06/2010

Colloquia

- Monash University (through video system), Melbourne, Australia, 4/2016
- University of Sydney, Sydney, Australia, 3/2016
- University of Queensland, Brisbane, Australia, 2/2016
- Dartmouth College, New Hampshire, 2/2016
- Rutgers University, Newark, New Jersey, 2/2016
- Oklahoma State University, Oklahoma, 2/2016
- California State University, Chico, California, 2/2016
- Okinawa Institute and Science and Technology, Japan, 1/2016
- New College of Florida, Florida, 11/2015
- Mathematics Department colloquium, Brigham Young University, Utah, 10/2014
- Women Advancing Arizona Mathematics Colloquium, University of Arizona, Arizona, 03/2014
- University of Louisiana, Lafayette, Louisiana, 01/2013

Departmental Seminars

- PATCH seminar (organized by Bryn Mawr, Haverford, Penn, and Temple Universities), 03/2017
- GEAR seminar at Rutgers University, Newark, 01/2017
- CUNY Graduate Center geometry and topology seminar, New York. 12/2016
- Rutgers University geometry and topology seminar, New Brunswick, NJ, 10/2016
- California Institute of Technology topology seminar, 12/2015
- University at Buffalo (SUNY) topology seminar, 11/2015
- Michigan State University geometric topology seminar, 11/2015
- University of California, Los Angeles, topology seminar, 10/2015
- University of South California topology seminar, 10/2015
- University of California, Davis topology seminar, 10/2015

- Columbia University topology seminar, 10/2015
- Temple University topology seminar, 09/2015
- University of California, Davis topology seminar, 06/2015
- Stanford University topology seminar, 10/2014
- Brigham Young University topology seminar, 10/2014
- University of Texas, Austin, topology seminar 09/2014
- University of California Santa Barbara topology seminar, 02/2014
- University of California Davis topology seminar, 02/2014
- Brown University topology seminar, 12/2013
- ICERM seminar, Brown University, 11/2013
- City University of New York geometry and topology seminar, 12/2012
- Louisiana State University/University of Iowa/University of Pennsylvania/University of Memphis/University of Arkansas virtual topology seminar, 09/2012
- University of Virginia geometry seminar, 01/2012
- Brigham Young University topology seminar, 11/2011
- University of Texas, Austin, topology seminar, 10/2011
- Columbia University geometric topology seminar, New York, 09/2011
- University of Tennessee topology seminar, Knoxville, 02/2011

Mentoring Student and Postdoc Research

Postdocs

- Starting 09/2017, a mentor to 4 postdocs (Dale Koenig, Tirasan Khandawit, Nikolas Owad, Robert Tang) working in low-dimensional topology and geometry at OIST, Japan

Graduate students

- Kimberly Sevin D'Souza, Daniel Guillot, Ying Hu, Jun Peng, Chris Penn at Louisiana State University (joint research through NSF VIGRE program), Fall 2012 and Spring 2013.

Undergraduate students

- Ruying Bao, University of California, Davis, Winter, Spring and Fall 2014. Currently is a graduate student in Applied Mathematics, Princeton University.
- Sarah Seger at Louisiana State University, Fall 2012 and Spring 2013. Currently is a graduate student in Mathematics, Rice University.

Other Selected Professional Activities and Services

Conference/colloquia/seminar organization

- Co-organizer of "Geometry and Topology of 3-manifolds" workshop, scheduled 05/2018, OIST, Japan
- Mathematics Colloquium chair, Rutgers University, Newark, Fall 2016-Spring 2017
- Co-organizer of GEAR seminar at Rutgers University, Newark, Fall 2016-Spring 2017
- Co-organizer of "Invariants in low-dimensional topology" session at the AMS Meeting, New York, 05/2017
- Co-organizer of "Geometry, Topology and Complexity of Manifolds, and applications to Biology", 05/2016, University of California, Berkeley
- Co-organizer of "Knots and 3-manifolds" session at the AMS Meeting, Las Vegas, NV, 04/2015

Reviewer/Referee/Panelist

- Reviewer for NSF proposals
- Served on an NSF panel, 2015

- Refereed for journals: Algebraic and Geometric Topology (x 2), Communications in Analysis and Geometry, Geometriae Dedicata
- Reviewer for MathSciNet

Work with high school students

- Helped to organize California State Summer School for Math and Science for talented High School students, Summer 2015
- Helped to organize the UT Pro2Serve Math Contest for talented High School Students, annually 2006-2011
- Helped to organize and conduct Math Olympiads in Ukraine, annually 2001-2006

Advancing participation of women in math

- Mentor for a graduate student, Lorinda Leshock (University of Delaware), through AWM mentor network, Fall 2016

Teaching-related

- Mentor for a new graduate teaching assistant, University of Tennessee, Fall 2011
- Completed "The Best Practices in Teaching" program, The University of Tennessee, Fall 2006

Teaching Experience

Rutgers University, Newark

- *Knot Theory*, special undergraduate seminar, Spring 2017
- *Calculus II*, Fall 2016

University of California, Davis

- *Geometric Topology (graduate course)*, Spring 2016
- *Topology*, Spring 2016
- *Euclidean and non-Euclidean geometry*, about 60 third and fourth-year students, Winter 2016
- *History of Mathematics*, about 65 third and fourth-year students, Winter 2016
- *Topics in hyperbolic geometry and hyperbolic 3-manifolds*, graduate course, instructor, 6 PhD students, Spring 2015
- *Mini course on hyperbolic geometry* for COSMOS (California State Summer School for Math and Science for 18 talented High School students), 07/2015
- *Calculus III*, instructor (a large lecture, about 100 second and third-year students), Spring 2014
- *Calculus II*, instructor (a large lecture, about 100 first and second-year students), Spring 2014
- *Real Analysis III*, instructor, about 45 fourth-year students, Winter 2014

Louisiana State University

- *VIGRE Research Seminar: Algorithms in Knot Theory*, co-instructor, about 20 graduate and advanced undergraduate students, Fall 2012 and Spring 2013,
- *History of Mathematics*, instructor, about 35 third and fourth-year students and math teachers, Spring 2013
- *Calculus I and Analytic Geometry*, instructor, about 30 first-year students, Fall 2012

University of Tennessee

- *Statistical Reasoning*, instructor, about 30 first-year students, Spring 2012
- *Calculus II*, instructor, about 30 first and second-year students, Fall 2011, Spring 2011 and Fall 2010
- *Matrix Algebra*, teaching assistant, Fall 2011
- *Calculus I*, instructor, Spring 2010 and Fall 2009
- *Finite Mathematics*, about 30 first-year students, instructor, Spring 2009
- *Precalculus*, instructor, about 30 first-year students, Fall 2008
- *Basic Calculus*, instructor in Spring 2008, about 30 first-year students; teaching assistant in Spring and Fall 2007 (leading practice sessions)
- *College Algebra*, teaching assistant (leading practice sessions), Fall 2006

Selected Workshop/Conference Participation

- PIMS Symposium on the Geometry and Topology of 3-manifolds, University of British Columbia, Vancouver, Canada, 07/2015
- Groups, Geometry and 3-manifolds, University of California, Berkeley, 05/2014
- Dynamics on Moduli Spaces of Geometric Structures workshop, MSRI, University of California, Berkeley, 01/2014
- Wasatch Topology Conference, Park City, Utah, 08/2014
- The Second GEAR Network Retreat, University of Maryland, 03/2014
- Topology, Geometry and Group Theory, Informed by Experiment, ICERM, Brown University, 10/2013
- Exotic Geometric Structures workshop, ICERM, Brown University, 09/2013
- Geometric Topology in Cortona INdAM Meeting, Italy, 06/2013
- The Topology of 3-dimensional Manifolds, Centre de Recherches Mathématiques, Montréal, Canada, 05/2013
- Recent Progress on Hyperbolic 3-Manifolds, University of Michigan, Ann Arbor, 05/2012
- The Tech Topology Conference, Georgia Institute of Technology, 12/2011
- Geometry and Topology Down Under, University of Melbourne, Australia, 08/2011

Professional Memberships

- Geometric Structures and Representation Varieties network
- American Mathematical Society
- Association for Women in Mathematics

Languages: English, Ukrainian, Russian, basic French

Programming experience: C/C++, Pascal, SQL, Delphi, Matlab, Mathematica, Maple, Pari, HTML

References

Available upon request