

Curriculum Vitae

Vladimir V. Chernov (Tchernov)

Department of Mathematics
6188 Kemeny Hall
Dartmouth College
Hanover, NH 03755-3551
USA

Phone: (+1)-(603) 646 24 21
Fax: (+1)-(603) 646 13 12
e-mail: Vladimir.Chernov@dartmouth.edu

Personal information

Other spelling of the last name: Tchernov

Date of birth: January 9, 1972

Research interests

Contact and Symplectic Topology, specifically:

Legendrian and transverse knots (57R17) and their relations to wave front propagation (78A05); Bennequin-type inequalities; Legendrian and Lagrangian immersions and embeddings.

Geometric and Low-Dimensional Topology, specifically:

knots and links in manifolds (57M27); Vassiliev invariants of knots; invariants of immersed curves and surfaces; higher dimensional link theory (57Q45); generalized linking numbers.

Algebraic Topology and Global Analysis, specifically:

spaces of embeddings and immersions (58D10) and their homotopy groups; manifolds of mappings (58D15).

Interactions between link theory, Lorentz manifolds (53C50), contact and symplectic topology, and mathematical physics, specifically:

relations between causality and linking in strongly causal and globally hyperbolic spacetimes (83C75); nonrefocussing spacetimes; Legendrian and Lagrangian submanifolds in manifolds of geodesics for semi-Riemannian manifolds.

Degrees

Ph.D. in Mathematics. Uppsala University, Sweden, May 1998.

Advisor: Professor Oleg Ya. Viro.

Thesis: *Arnold-type invariants of curves and wave fronts on surfaces.*

Ph.D. in Mathematics. University of California at Riverside (UCR), June 1997. ¹

Advisor: Professor Oleg Ya. Viro.

Thesis: *Vassiliev invariants of degree one of knots and links in \mathbb{R}^1 - and in S^1 -fibrations.*

M.Sci. in Mathematics. University of California at Riverside (UCR), 1994.

¹Since my scientific advisor held positions at both Universities, I had to enroll into Graduate Programs at both Universities and to defend a Ph.D. at both places. The theses for the two Ph.D.s are based on different material.

Academic Positions

Dartmouth College, Mathematics Department, Hanover NH, USA. Summer 2007 – Now
Associate Professor; Summer 2001 – Summer 2007, Assistant Professor.

Zürich University, Mathematics Department, Zürich, Switzerland. Fall 2000 – Summer 2001.
Postdoc.

Max-Planck-Institut für Mathematik, Bonn, Germany. Fall 1999 – Fall 2000. Scientific Visitor.

ETH Zürich, Zürich, Switzerland. Fall 1998 – Summer 1999. Postdoc.

Teaching the following Dartmouth courses

Math 8 Calculus of Functions of One and Several Variables: Spring 2002;

Math 9 Calculus of Functions of One and Several Variables, Honors Section: Fall 2001, Fall 2002, Fall 2003;

Math 11 Multivariable Calculus for Two-Term Advanced Placement First-Year Students: Fall 2004;

Math 12 Calculus Plus: Fall 2007, Fall 2009, Fall 2012;

Math 13 Calculus of Vector-Valued Functions: Winter 2004, Winter 2008, Fall 2011;

Math 14 Calculus of Vector-Valued Functions, Honors Section: Winter 2002, Winter 2003, Winter 2011;

Math 23 Differential Equations: Spring 2002, Winter 2006, Spring 2009, Fall 2010, Fall 2011, Fall 2012;

Math 31 Topics in Algebra: Winter 2004;

Math 35 Real Analysis Winter: 2007;

Math 43 Functions of a Complex Variable: Spring 2007;

Math 46 Introduction to Applied Mathematics: Spring 2010;

Math 63 Real Analysis Winter: 2009;

Math 73 Multi-Variable Analysis: Winter 2003;

Math 103 Topics in Analysis: Fall 2004, Fall 2005, Fall 2007, Fall 2009;

Math 104 Topics in Topology: Winter 2009;

Math 124 Current Problems in Topology: Fall 2002, Fall 2003, Fall 2005, Fall 2010, Winter 2012, Winter 2013.

Current and Former Ph.D Students:

Allison Henrich, Ph. D. (2008) Ph. D. Thesis Title: “A sequence of degree one Vassiliev invariants for virtual knots.” Currently a tenure track Assistant Professor at Seattle University.

Paul Kinlaw, Ph. D. (2010) Ph. D. Thesis Title: “Refocusing of null geodesics in Lorentz manifolds.” Currently an Assistant Professor at Husson University.

Patricia Cahn, Ph. D. (2012) Ph. D. Thesis Title: “Algebras counting self-intersections of curves.” Currently a Lecturer of Mathematics at the University of Pennsylvania.

Asa Levi, expected to defend his PhD thesis in Spring (2014)

Grants A five year “Collaboration Grants for Mathematicians” from the Simons Foundation awarded in 2012, award number 235674. Grant amount \$35000. Project title: “Causality and Legendrian Linking”.

Refereed Research works that were published or accepted for publication

Note for non mathematicians: in Mathematics the order of the names of the authors on papers is alphabetical. It does not reflect the degree of contribution of each author. For each paper I have listed the alternative spelling of the authors' names in parentheses.

1. V. Chernov (Tchernov): *Some Corollaries of Manturov's Projection Theorem*, preprint arXiv:1209.0178 at www.arxiv.org, 5 pages (2012), accepted for publication at the Journal of Knot Theory and Its Ramifications,
2. V. Chernov (Tchernov), S. Nemirovski: *Cosmic censorship of smooth structures*, preprint arXiv:1201.6070 at www.arxiv.org, 5 pages (2012), accepted for publication at the Communications in Mathematical Physics
3. P. Cahn, V. Chernov (Tchernov): *Intersections of Loops and the Andersen-Mattes-Reshetikhin Algebra*, preprint arXiv:1105.4638 at www.arxiv.org, 20 pages (2011), accepted for publication at the Journal of the London Mathematical Society
4. V. Chernov (Tchernov); P. Kinlaw, Paul; R. Sadykov, *Topological properties of manifolds admitting a Y^x -Riemannian metric*. J. Geom. Phys. **60** (2010), no. 10, pages 1530–1538
5. V. Chernov (Tchernov) and S. Nemirovski: *Non-negative Legendrian isotopy in ST^*M* , Geometry and Topology **14**, no. 1, (2010), pp. 611-626
6. V. Chernov (Tchernov) and S. Nemirovski: *Legendrian links, causality and the Low conjecture*, Geom. Funct. Anal. **19**, no. 5, (2010), pp. 1320-1333
7. E. Byberi and V. Chernov (Tchernov): *Virtual bridge number one knots*. Commun. Contemp. Math. **10** (2008), suppl. 1, pp. 1013-1021
8. V. Chernov (Tchernov): *Mapped Null Hypersurfaces and Legendrian Maps*, Journal of Geometry and Physics, **57**, no 10, (2007), pp. 2114-2123
9. V. Chernov (Tchernov) and Yu. Rudyak: *On generalized Winding Numbers*. Algebra i Analysis, **20**, no 5, (2008), pp. 217-233
10. V. Chernov (Tchernov) and Yu. Rudyak: *Linking and Causality in Globally Hyperbolic Space-times*, Communications in Mathematical Physics, **279**, no 2, (2008), pp. 309-354
11. V. Chernov (Tchernov) and Yu. Rudyak: *Toward a General Theory of Linking Invariants*, Geometry and Topology, Vol. 9 (2005) Paper no. 42, pp. 1881–1913
12. V. Chernov (Tchernov): *Framed knots in 3-manifolds and Affine Self-linking numbers*. J. Knot Theory Ramifications, **14** (2005), no. 6, pp. 791-819
13. V. Chernov (Tchernov): *Relative framing of transverse knots*, Int. Math. Res. Not., 2004:52 (2004), pp. 2773-2795
14. V. Tchernov (Chernov): *Vassiliev invariants of Legendrian, transverse, and framed knots in contact three-manifolds*, Topology, **42** (2003), no. 1, pp. 1–33
15. V. Tchernov (Chernov): *Isomorphism of the groups of Vassiliev invariants of Legendrian and of Pseudo-Legendrian knots*, Compositio Mathematica, **135** (1) (2003), pp. 103-122
16. V. Chernov (Tchernov): *The Universal order one Vassiliev invariant of framed knots in most S^1 -bundles over orientable surfaces*, Algebraic and Geometric Topology, **3** (2003), pp. 89-101
17. V. Tchernov (Chernov) *Arnold-type invariants of wave fronts on surfaces*, Topology, **41**, no. 1, (2002), pp. 1–45

18. A. Stoimenow, V. Tchernov (Chernov), A. Vdovina: *The Canonical Genus of a Classical and Virtual Knot*, Proceedings of the Conference on Geometric and Combinatorial Group Theory, Part II (Haifa, 2000). *Geometriae Dedicata*, **95** (1) (2002), pp. 215-225
19. V. Tchernov (Chernov): *Homotopy Groups of the Space of Curves on a Surface*, *Math. Scand.*, Vol. 86 (2000), No. 1, pp. 36-44
20. V. Tchernov (Chernov): *Arnold-type Invariants of Curves on Surfaces*, *J. Knot Theory Ramifications*, 8 (1999), no. 1, pp. 71-97
21. V. Tchernov (Chernov): *Shadows of Wave Fronts and Arnold-Bennequin Type Invariants of Fronts on Surfaces and Orbifolds*, in the refereed Volume of Amer. Math. Soc. Transl. (2), Vol. 190 (1999), pp. 153-184
22. V. Tchernov (Chernov): *The Most Refined Invariant of Degree One of Knots and Links in R^1 -Fibrations Over a Surface*, *J. Knot Theory Ramifications*, 7 (1998), No. 2, pp. 257-266

Minicourses

A three lecture minicourse “Causality and Legendrian Linking” at the VI International Meeting on Lorentzian Geometry, Granada Spain, September 6-9, 2011

Talks at Conferences and Seminars

Note: the exact talk titles and dates are given when this information is available.

1. A talk “Cosmic censorship of smooth structures” on December 20 at the “Analysis and singularities” conference dedicated to the 75th anniversary of Vladimir Igorevich Arnold held at the Steklov Mathematical Institute, Moscow, Russia December 17-21, 2012
2. A talk “Linking and causality” at the “Economical cybernetics and economico-mathematical methods” department of the St Petersburg State University of Economics and Finance on December 6, 2012
3. A talk “Linking and causality” at the Rokhlin Topology Seminar, St. Petersburg Department of the Steklov Institute of Mathematics, St Petersburg, Russia on December 3, 2012
4. A Colloquium talk “Link theory and general relativity” at Sienna College, October 5, 2012
5. A talk “Smooth Cosmic Censorship and determining causality from linking” on August 20 at the “Fourth Geometry Meeting dedicated to the centenary of A.D. Alexandrov” held at the Euler International Mathematical Institute held August 20-25, 2012
6. A talk “Cosmic censorship of smooth structures and integer valued metrics on spacetimes” on August 8, 2012 at the “Geometric Topology” Seminar of the Steklov Mathematical Institute, Moscow Russia
7. A talk “Legendrian linking and causal structure in a spacetime” on March 24 at the “46th Annual Spring Topology and Dynamics Conference” held at Universidad Nacional Autonoma de Mexico (UNAM) Mexico City, Mexico, March 22-24, 2012
8. A Colloquium talk “Smooth Cosmic Censorship and determining causality from linking” on March 21, 2012 at the Depto. de Matemticas, CINVESTAV, Mexico City, Mexico
9. A talk “Computing causal relation between events from the set of points where the events are visible at a given time moment” on March 17 at the “Special Session on Mathematics Applied in the Sciences: From Statistics to Topology” session of the 2012 Spring Eastern Sectional Meeting #1080 held at the George Washington University, Washington, DC March 17-18, 2012
10. A talk “Smooth Cosmic Censorship” on March 15 at the XXXIV Knots in Washington Conference held at George Washington University, Washington DC, March 14-16, 2012
11. An invited one hour talk “Low conjecture, linking and causality in global hyperbolic Lorentz spacetimes” on June 16 at the The 87th Encounter between Mathematicians and Theoretical Physicists “Lorentz geometry in Mathematics and in Physics” dedicated to Norbert A Campo for his 70th birthday, June 16-18, 2011

12. A talk "Causality in spacetimes and Legendrian linking" on March 17, 2011 at the Thursday Seminar on Topology, at SUNY Stony Brook
13. A talk "Causality, Low Conjecture and globally hyperbolic spacetimes" on February 15, 2011 at the Topology Seminar, Brandeis University
14. A talk "Causality, Low conjecture and the partial order on the space of Legendrian spheres" on November 19, 2010 at the Analysis-Geometry Seminar, Northeastern University
15. A talk "Causality, Low conjecture and the partial order on the space of Legendrian spheres" on September 24, 2010 at the Gauge Theory and Topology Seminar, Harvard University
16. A talk "Algebras detecting minimal intersection and self intersection numbers of curves on a surface" on September 15, 2010 at the Geometry Luncheon Seminar, Penn State University, State College, PA
17. A talk "Legendrian linking, refocussing and causality in spacetimes" on September 15, 2010 at the Center for Dynamics and Geometry Seminar, Penn State University, State College, PA
18. A talk "Causality in space-times, Low conjecture and the partial order on Legendrian spheres" on August 18, 2010 at the International Conference "Geometry, Topology, Algebra and Number Theory, Applications" dedicated to the 120th anniversary of Boris Delone, Steklov Mathematical Institute, Moscow, Russia
19. A talk "Refocussing and Y^x -manifolds" on June 18, 2010 at the Moscow - St Petersburg seminar of Low-dimensional Mathematics, POMI, St Petersburg, Russia
20. A talk "Topological Properties of Manifolds admitting a Y^x -Riemannian metric" on January 26, 2010 at the Analysis seminar of the Department of Mathematics, University of Western Ontario, London, Canada
21. A Colloquium talk "Legendrian links, causality, and the Low conjecture" on January 28, 2010 at the Department of Mathematics, University of Western Ontario, London, Canada
22. An invited talk "Legendrian links, causality, and the Low conjecture" on October 30; at the special session on Geometry and Topology of the 2009 Fall Southeastern AMS Sectional #1053 Meeting held in Boca Raton, Florida on October 30 - November 1, 2009
23. A talk "Legendrian links, causality, and the Low conjecture" at the seminar "Mnogooobraziya i ih otobrazheniya" ("Manifolds and their mappings") at the Mechanics and Mathematics Department of the Moscow State University, Moscow, Russia on September 11, 2009
24. A talk "Legendrian links, causality, and the Low conjecture" at the D. Sokolov seminar "Cosmic electrodynamics and dynamo theory" at the "Research Computing Center" of the Moscow State University, Moscow, Russia on September 10; 2009
25. A talk "Legendrian links, causality, and the Low conjecture" at the symplectic geometry seminar of the Department of Mathematics, Columbia University, on April 24, 2009
26. A talk "Linking, Causality and Refocusing" at the Rokhlin Topology Seminar at the St. Petersburg Department of the Steklov Institute of Mathematics, St Petersburg, Russia, on September 8, 2008
27. A talk "Linking, Causality and Refocusing" at E. A. Kudryavtseva and S. A. Bogaty seminar "Mnogooobraziya i ih otobrazheniya" ("Manifolds and their mappings") at the Mechanics and Mathematics Department of the Moscow State University, Moscow, Russia on September 4, 2008
28. A talk "Selflinking invariant for nonzerohomologous framed knots in 3-manifolds" at the Shepin Topology seminar at the Steklov Mathematical Institute of the Russian Academy of Sciences, Moscow, Russia on September 3, 2008
29. A talk "Vassiliev invariant estimates for unknotting numbers of virtual knots." at the V. Manturov "Knots and Representation Theory" at the Mechanics and Mathematics Department of the Moscow State University, Moscow, Russia on September 2, 2008
30. A talk "Linking of skies and causality in globally hyperbolic spacetimes" on July 3, 2008 at the "Differential Geometry and General Relativity" section of the Fifth World Congress of Nonlinear Analysts held July 2 – 9 in Orlando, Florida
31. A talk "Linking of skies and causality in globally hyperbolic spacetimes" at the Topology Seminar of the University of Tennessee, Knoxville on April 4, 2008

32. An invited talk “Causality and linking in space-times” on February 24 at the Texas Geometry and Topology Conference, held February 22 – 24, 2008 at the Texas Tech University, Lubbock, Texas
33. A talk “Causality, linking and refocussing space-times” on September 14 at the “Algebra and Geometry Around Knots and Braids” conference, held September 10 – 14, 2007 in the Euler Institute, St Petersburg, Russia
34. A talk “Linking and causality in globally hyperbolic spacetimes” on August 21 at the “Analysis and singularities” conference, held August 21 – 24, 2007 in the Steklov Mathematical Institute, Moscow, Russia
35. A talk “Garlands, graded Poisson algebras, and applications.” at the Topology and Dynamical Systems Seminar, University of Florida, Gainesville, March 20, 2007
36. A talk “Some applications of the Graded Poisson algebras on bordism groups of garlands.” at the Topology Seminar, Mathematics Department, Ohio State University, October 31, 2006
37. An invited talk “Poisson and other algebras on bordism groups of garlands.” on October 29, 2006 at the “Special Session on Homotopy Theory of Compactified Moduli Spaces” at the AMS 2006 Fall Eastern Section #1021 Meeting, Storrs CT, held October 28 – 29, 2006
38. A talk “Graded Poisson algebras, bordism groups, affine linking numbers and applications.” at the Gauge Theory and Topology Seminar, Department of Mathematics, Harvard University, October 20, 2006
39. A talk “Graded Poisson algebras on bordism groups of garlands and minimizing intersection of loops on a surface.” at the Topology Seminar, Mathematics Department, Brandeis University, October 17, 2006
40. An invited talk “Graded Poisson algebras on bordism groups of odd-dimensional garlands and minimizing the intersection of loops on a surface.” on October 8, 2006 at the “Special Session on Floer Methods in Low -dimensional Topology” of the AMS 2006 Fall Western Section Meeting #1019, Salt Lake City, UT, held October 7 – 8, 2006
41. A talk “Graded Poisson algebras on bordism groups of garlands.” at the “Rokhlin Topology Seminar”, the St. Petersburg Department of the Steklov Institute of Mathematics, St Petersburg, Russia, September 11, 2006
42. A talk “Applications of the Ω_* -algebra of the space of garlands.” on June 9, 2006 at the Lehigh University Geometry and Topology Conference, held June 8 – 10, 2006
43. A talk “Generalized strings algebra.” at the Geometry and Topology seminar, Department of Mathematics and Statistics, University of Calgary, Canada, May 10, 2006
44. Colloquium talk “Affine linking numbers and their applications to the study of wave front propagation.” Department of Mathematics and Statistics, University of Calgary, Canada, May 5, 2006
45. A talk “Relative framing of transverse knots.” at the Symplectic Topology Seminar, Department of Mathematics and Statistics, University of Calgary, Canada, May 1, 2006
46. A talk “New algebraic structures on the generalized string algebra.” on December 4, 2005 at the “Algebraic Topology” section of the Union College Mathematics Conference, Union College, Schenectady NY, held December 3 – 4, 2005
47. A talk “Framed knots in 3-manifolds and affine self-linking numbers.” at the “Rokhlin Topology Seminar”, Steklov Institute of Mathematics at St Petersburg, Russia, September 12, 2005
48. A talk “Relative framings of transverse knots.” at the “Moscow-Petersburg Seminar on Low-Dimensional Mathematics”, Steklov Institute of Mathematics at St Petersburg, Russia, September 9, 2005
49. A talk “Generalizations of Chas-Sullivan string homology and applications to link and coincidence theories.” on July 26, 2005 at the 5 International Siegen Topology Symposium “Manifolds and Their mappings” held at Siegen University, Germany, on July 25 – 29, 2005
50. A talk “Relative framing of transverse knots and Vassiliev invariants of transverse and pseudo-Legendrian knots.” on June 5, 2005 at the AMS-IMS-SIAM Summer Research Conference “Quantum Topology-Contemporary Issues and Perspectives” held at Snowbird Utah, June 5 – 9, 2005

51. A talk "Relative framing of transverse knots." on November 7, 2004 at the "Special Session on Invariants of knots and 3-manifolds" of the 2004 Fall Eastern Section Meeting of the AMS #1042, Pittsburgh, PA, November 6 – 7, 2004
52. A talk "Algebraic structures on generalized strings and applications." at the Differential Geometry and Topology Seminar of the Universite du Quebec a Montreal, Montreal, Canada, September 17, 2004
53. A talk "Relative framings of transverse knots." on August 26, 2004 at the "L.V. Keldysh Centennial Conference in Geometric Topology, Discrete Geometry and Set Theory" held August 24 – 28, 2004 at the Steklov Mathematics Institute of the Russian Academy of Science and at the Moscow State University, Moscow, Russia
54. A talk "Affine linking numbers, their applications, and operations on generalized strings." at the Geometry and Topology seminar, Department of Mathematics, University of Pennsylvania, April 8, 2004
55. An invited talk "Algebraic structures on generalized strings." on April 18, 2004 at the Special "Homotopical Physics" Section of the Spring Eastern AMS Section Meeting #997, Lawrenceville NJ, held on April 17 – 18, 2004
56. A talk "Affine linking numbers and generalized string homology." on December 5, 2003 at the "Borders in 3-dimensional topology" conference held at the Ohio State University, Columbus, December 5 – 7, 2003
57. A talk "Vassiliev invariants of Legendrian, pseudo-Legendrian, transverse, and framed knots in contact 3-manifolds." at the Geometry and Topology seminar, Mathematics Department, SUNY Buffalo, November 14, 2003
58. A talk "Affine linking numbers, their applications and algebraic structures on generalized strings." on November 8, 2003 at the "Algebraic Topology" Section of the Union College Mathematics Conference, Union College, Schenectady, NY, held on November 8 – 9, 2003
59. A talk "Affine linking and winding numbers and the study of front propagation." on October 25, 2003 at the "Homological Physics" Section of the Fall AMS Southeastern Section Meeting #991, at the University of North Carolina, Chapel Hill NC, October 24 – 25, 2003
60. A talk "Vassiliev invariant of Legendrian, pseudo-Legendrian and framed knots in contact 3-manifolds." at the "Gauge Theory and Topology Seminar", Department of Mathematics, Harvard University, October 10, 2003
61. A talk "Vassiliev invariants of Legendrian, pseudo-Legendrian, transverse and framed knots in contact 3-manifolds." at the Geometric Topology Seminar, Department of Mathematics, Columbia University, September 19, 2003
62. A talk "Affine linking and winding numbers and their applications to the study of causality and of front propagations." at the "Arnolds Seminar on Singularity Theory", Mathematics Department of Moscow State University, Moscow, Russia, September 9, 2003
63. A talk "Affine linking numbers and their application to the study of front propagations." at the "Moscow-Petersburg Seminar on Low-Dimensional Mathematics", Steklov Institute of Mathematics at St Petersburg, Russia, September 5, 2003
64. A talk "Algebraic structures on generalized strings and the general theory of affine linking numbers." at the "Rokhlin Topology Seminar", Steklov Institute of Mathematics at St Petersburg, Russia, September 1, 2003
65. A talk "Affine linking and winding numbers and the study of front propagation." on July 18, 2003 at the "XII Oporto meeting in Geometry Topology and Physics", Universidade do Porto, Portugal, held July 17 – 20, 2003
66. A talk "Affine linking and winding numbers and the study of front propagation." at the Mathematical Physics Seminar, Departamento de Matematica Instituto Superior Tecnico Lisboa, Portugal, July 17, 2003
67. A talk "Affine linking and winding numbers and the study of front propagation." on July 12, 2003 at the "Topological Dynamics and Ergodic Theory" session of the "2003 Summer Conference on Topology and its Applications", Howard University, held on July 9 – 12, 2003
68. A talk "Affine linking and winding numbers and the study of front propagation." on June 13, 2003 at the Lehigh University Geometry and Topology Conference, held on June 12 – 14, 2003

69. A talk “Vassiliev invariants of Legendrian, Pseudo-Legendrian and framed knots in contact 3-manifolds.” on June 6, 2003 at the “NSF-NSA Conference on Interactions between Representation Theories, Knot Theory, Topology, Quantum Field Theory, Category Theory and Mathematical Physics”, held at SUNY Potsdam on June 2 – 6, 2003
70. A talk “Affine linking numbers and their applications to the study of wave front propagation and causality.” on June 4 2003 at the “NSF-NSA conference on Interactions between Representation Theories, Knot Theory, Topology, Quantum Field Theory, Category Theory and Mathematical Physics”, held at SUNY Potsdam, NY, on June 2 – 6, 2003
71. Colloquium talk “Affine Linking Numbers and the Causality Relation for Wave Fronts.” at the Department of Mathematics, Boise State University, Boise, ID, May 13, 2003
72. A talk “Vassiliev-Goussarov invariants of Legendrian pseudo-Legendrian and framed knots.” at the Topology Seminar, Department of Mathematics, Boise State University, May 12, 2003
73. A talk “Affine linking numbers and causality relations for wave fronts.” at the Topology Seminar, Mathematics Department, Yale University, March 27, 2003
74. A talk “Vassiliev invariants of Legendrian, Pseudo-Legendrian and framed knots in contact 3-manifolds.” at the Topology Seminar, Mathematics Department, Brandeis University, February 12, 2003
75. A talk “The universal order one invariant of framed knots in the total spaces of S^1 -bundles over orientable surfaces $F^2 \neq S^2, S^1 \times S^1$.” on November 10, 2002 at the special session on “Invariants of knots and low-dimensional manifolds” of the AMS Southeastern Section meeting #982 at Orlando Florida, held on November 9 – 10, 2002
76. An invited talk “Affine linking Numbers and Causality relations for wave fronts.” on November 10, 2002 at the special session on “Homotopy Theory and Geometric Topology” at the AMS Southeastern Section meeting #982 at Orlando Florida, held on November 9 – 10, 2002
77. A talk “Universal order one Vassiliev invariants of framed knots in the total spaces of S^1 -bundles over surfaces.” at the “Rokhlin Topology Seminar”, Steklov Institute of Mathematics at St. Petersburg, Russia, September 9, 2002
78. A talk “The causality relation and affine linking numbers.” at the “Rokhlin Topology Seminar”, Steklov Institute of Mathematics at St. Petersburg, Russia, July 8, 2002
79. A talk “Framed knots in 3-manifolds and the natural framings of transverse knots.” on March 8, 2002 at the “Workshop in Geometric Topology and Geometric Group Theory”, University of Florida, Gainesville held on March 3 – 10, 2002
80. A talk “Vassiliev invariants of Framed, Pseudo-Legendrian and Legendrian knots in contact 3-manifolds.”, on March 4, 2002 at the “Workshop in Geometric Topology and Geometric Group Theory”, University of Florida, Gainesville, held on March 3 – 10, 2002
81. A talk “Vassiliev invariants of Framed, Pseudo-Legendrian and Legendrian knots in contact 3-manifolds.” at the Geometry-Topology Seminar, Department of Mathematical Sciences, Binghamton University, Binghamton NY, February 14, 2002
82. A talk “Legendrian and Pseudo-Legendrian knots and Vassiliev invariants for them.” at the Rokhlin Topology Seminar, St Petersburg Department of Steklov Institute of Mathematics, St Petersburg, Russia, December 17, 2001
83. Two talks “Finite order invariants of Legendrian, Transverse and framed knots in contact 3-manifolds, parts I and II.” at the “Rokhlin Topology Seminar”, Steklov Institute of Mathematics at St. Petersburg, Russia, September 3 and 10, 2001
84. A talk at the Mathematical Physics seminar at the ETH Zurich, Switzerland, 2001
85. Invited speaker at the Contact Geometry Workshop at Stanford University, December 13 – 17, 2000
86. A talk at the Oberseminar in Complex Geometry, University of Zurich, Zurich, Switzerland, 2000
87. A talk at the Topology Seminar at the Max-Planck-Institut für Mathematik, Bonn, Germany, 2000
88. Colloquium Talk, at the Mathematics Department, University of Siegen, Siegen, Germany, 2000

89. A talk at the Geometry Seminar at the Institute of Mathematics of the University of Basel, Switzerland, 2000
90. A talk at the Geometry seminar at the Ruhr-Universitat, Bochum, Germany, 2000
91. A talk at the Geometry seminar at the Albrecht-Ludwigs-Universitat, Freiburg, Germany, 2000
92. A talk at the Geometry Seminar at the Bonn University, Bonn, Germany, 2000
93. A talk at the Geometry and Topology Seminar, University Paul Sabatier, Toulouse, France, 2000
94. A talk at the Topology seminar, Strasbourg University, Strasbourg, France, 2000
95. A talk at the Oberseminar, at the Max-Planck-Institut für Mathematik, Bonn, Germany, 1999
96. Invited speaker at the "Geometric and symplectic topology" program, Pisa University, Pisa, Italy, 1999
97. A talk at the "Sur les singularités" seminar at the l'Ecole Normale Supérieure in Paris, France, 1999
98. Speaker at the "VIII OPORTO Meeting in Geometry Topology and Physics", Porto, Portugal, 1999
99. Two talks at the Symplectic Geometry Seminar at the ETH Zurich, Switzerland, 1998 – 1999
100. A talk at the Geometry Seminar at the Institute of Mathematics of the University of Basel, Switzerland, 1999
101. A talk at the "V.I. Arnold's seminar on Singularity Theory", Moscow State University, Russia, 1999
102. Colloquium talk, Department of Mathematics at the University of California Riverside, CA, 1997
103. A talk at the AMS meeting #920 at the University of Maryland, College Park MD, 1997
104. Principal speaker at the MSRI workshop "Combinatorial Problems Arising in Knots and 3-manifolds", Berkeley, CA 1997

Seminar Talks at Dartmouth

1. A talk "Some Corollaries of Manturov's projection Theorem" at the Geometry and Topology seminar, Mathematics Department, Dartmouth College, October 2, 2012
2. A talk "Smooth Cosmic Censorship" at the Geometry and Topology seminar, Mathematics Department, Dartmouth College, April 3, 2012
3. A talk "Conformal maps from spacetimes to the space of Legendrian submanifolds and causality on causally simple spacetimes" at the Geometry and Topology seminar, Mathematics Department, Dartmouth College, October 11, 2011
4. A talk "Causal structure on the space of Legendrian spheres isotopic to a sky and some open questions" at the Geometry and Topology seminar, Mathematics Department, Dartmouth College, October 5, 2010
5. A talk "Legendrian links, causality, and the Low conjecture" at the Geometry and Topology seminar, Mathematics Department, Dartmouth College, April 10, 2009
6. A sequence of four talks "Algebra on Bordism groups of garlands" at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, on April 25, May 3, May 17, May 24 2007.
7. Two talks "Affine linking number and causality in globally hyperbolic Lorentz manifolds and a roundtrip journey from singular null surfaces to Legendrian mappings, part I." and "A roundtrip journey from singular null surfaces to Legendrian mappings, part II." at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, April 20 and May 18, 2006
8. Two talks "Applications of Vassiliev invariants to distinguishing pseudo-Legendrian knots, parts I and II." at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, May 26 and June 2, 2005

9. A talk “Generalizations of the complex analysis Cauchy integral formula and related algebraic structures on generalized string homology.” at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, March 9, 2004
10. A talk “Affine linking numbers and their applications to the causality relation.” at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, November 21, 2003
11. A talk “Universal order one Vassiliev invariants of framed knots in the total spaces of S^1 -bundles over surfaces.” at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, November 14, 2003
12. Two talks “Affine winding numbers and their applications to wave propagations, part I” and “Towards the general theory of affine linking numbers part II : Relations with winding numbers and front propagation.” at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College, On February 20 and March 13, 2003
13. Two talks “Affine linking number and the Causality Relation invariant, parts I and II.” at the Geometry and Topology seminar, Department of Mathematics, Dartmouth College on May 14 and 21, 2002
14. Two talks “Framed knots in 3-manifolds and some new invariants of transverse knots, parts I and II.” at the Geometry and Topology Seminar, Department of Mathematics, Dartmouth College, October 4 and 11, 2001

Talks at Undergraduate Conferences

1. A talk “Smooth Structures on Spacetimes” at the XIX Hudson River Undergraduate Mathematics Conference, held at the Western New England University in Springfield, MA April 21, 2012
2. A talk “Smooth structures on a spacetime.” at the XVIII Hudson River Undergraduate Mathematics Conference, held at the Union College, Schenectady NY, April 16, 2011
3. A talk “Causality and Linking.” at the XVI Hudson River Undergraduate Mathematics Conference, held at the Union College, Schenectady NY, April 18, 2009
4. A talk “Knot Theory and the Study of Wave Front Propagation.” at the XIII Hudson River Undergraduate Mathematics Conference, Westfield, MA, April 8, 2006

Undergraduate Research Supervised

Greg Elliot '12, Senior Thesis, Winter-Spring 2012.

Yong Su '09, Dartmouth Presidential Scholar student in Fall 2007, Winter 2008.

Evarist Byberi '08, Dartmouth Presidential Scholar student in Fall 2006 and Spring 2007. In Fall 2007 we wrote a joint paper published in “Communication in Contemporary Mathematics” and in the Winter-Spring 2008 he wrote a senior thesis with me.

College Service

The Faculty Advisor to the “Dartmouth Undergraduate Mathematics Society” (DMS) 2004–2012. (Professor Rosa Orellana is my co-advisor for the DMS.) In 2002 – 2004, before DMS was officially registered with the Council on Student Organizations, I jointly with Peter Doyle conducted regular unofficial meetings, where invited faculty, graduate and undergraduate students were giving Mathematics talks for Dartmouth undergraduates. In the Spring 20010–Winter 2013 we had multiple events, including lectures by undergraduate students, graduate students, alumni and more than 20 lectures by Dartmouth Faculty members. I gave three of the faculty lectures. We also organized a trip to the undergraduate math conference and I drove students to the conference. More information about the past events of the Dartmouth mathematics Society can be found at <http://www.math.dartmouth.edu/~mathteam/archive.html>

Dartmouth College Putnam Mathematics Exam coach in 2001 – 2007; one of the two Putnam Coaches in Fall 2010, Fall 2011 (the other coach was Sergi Elizalde) and Mathematics fun problem solving session organizer in 2002–2004, 2006, Winter 2008.

Mathematics Department Graduate Representative in Fall 2008 – Spring 2010.

Member of the Council on Libraries in Fall 2009 – Spring 2012.

The Advisor to Mathematics Majors in Fall 2005 – Winter 2006. Secondary advisor to Mathematics Majors Fall 2009 – Now.

Main Professional Activities

Member of the “Mathematics in Moscow Committee” of the American Mathematical Society, Fall 2007–2008, Chair of the Committee Fall 2008–Spring 2010 and Fall 2011– Spring 2012

Reviewer for the American Mathematical Society publications database Mathematical Reviews and for the European database Zentralblatt. I have written about 50 reviews for Mathematical Reviews and about 25 for Zentralblatt.