

Curriculum Vitae

Vladimir V. Chernov (Tchernov)

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Personal information

Previous spelling of the last name: Tchernov

Date of birth: January 9, 1972

Citizenship: Russian citizen, US permanent resident

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); graded Poisson algebras (17B63) on bordism and homology groups of mappings spaces; algebras a la Chas-Sullivan.

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; Arnold invariants of wave fronts.

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;

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

Math 14 Calculus of Vector-Valued Functions, Honors Section: Winter 2002, Winter 2003,
Winter 2004;

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

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.

Former Ph.D Students:

Allison Henrich, Ph. D. (2008) Ph. D. Thesis Title: “A sequence of degree one Vassiliev
invariants for virtual knots.” Currently an 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.

Current Ph.D Students:

Patricia Cahn

Asa Levi

Refereed Research Publications

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) and S. Nemirovski: "Non-negative Legendrian isotopy in ST^*M ", *Geometry and Topology*, **14**, no. 1, (2010) pages 611-626
2. ★ V. Chernov (Tchernov) and S. Nemirovski: "Legendrian links causality and the Low conjecture", *GAFA (Geometric and Functional Analysis)*, **19**, no. 5, (2010) pages 1320-1333
3. ★ V. Chernov, P. Kinlaw and R. Sadykov: "Topological properties of manifolds admitting a Y^x -Riemannian metric", *J. Geom. Phys.* **60**, no. 10 (2010) pages 1530-1538
4. V. Chernov (Tchernov) and Yu. Rudyak: *On generalized Winding Numbers*. published in *Algebra i Analysis*, **20**, no 5, (2008) pages 217-233
5. E. Byberi and V. Chernov (Tchernov): *Virtual bridge number one knots*. *Commun. Contemp. Math.* 10 (2008), suppl. 1, pages 1013-1021
6. V. Chernov (Tchernov) and Yu. Rudyak: *Linking and Causality in Globally Hyperbolic Space-times*, *Communications in Mathematical Physics*, **279**, no 2, (2008) pages 309-354
7. Vladimir Chernov (Tchernov): *Mapped Null Hypersurfaces and Legendrian Maps*, *Journal of Geometry and Physics*, **57**, no 10, (2007) pages 2114-2123
8. 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
9. V. Chernov (Tchernov): *Framed knots in 3-manifolds and Affine Self-linking numbers*. *J. Knot Theory Ramifications*, **14** (2005), no. 6, pp. 791-819
10. V. Chernov (Tchernov): *Relative framing of transverse knots*, *Int. Math. Res. Not.*, 2004:52 (2004), pp. 2773-2795
11. V. Tchernov (Chernov): *Vassiliev invariants of Legendrian, transverse, and framed knots in contact three-manifolds*, *Topology*, **42** (2003), no. 1, pp. 1–33
12. 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
13. 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
14. V. Tchernov (Chernov) *Arnold-type invariants of wave fronts on surfaces*, *Topology*, **41**, no. 1, (2002), pp. 1–45
15. 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
16. V. Tchernov (Chernov): *Homotopy Groups of the Space of Curves on a Surface*, *Math. Scand.*, Vol. 86 (2000), No. 1, pp. 36–44
17. V. Tchernov (Chernov): *Arnold-type Invariants of Curves on Surfaces*, *J. Knot Theory Ramifications*, 8 (1999), no. 1, pp. 71–97

18. 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
19. V. Tchernov (Chernov): *The Most Refined Invariant of Degree One of Knots and Links in \mathbb{R}^1 -Fibrations Over a Surface*, J. Knot Theory Ramifications, 7 (1998), No. 2, pp. 257–266

Talks at Conferences and Seminars

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

1. ★ 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
2. ★ 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
3. ★ 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
4. ★ 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
5. ★ 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
6. ★ 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
7. ★ 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
8. ★ 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
9. 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
10. A talk “Legendrian links, causality, and the Low conjecture” at the seminar “Mnogoobraziya i ih otobrazheniya” (“Manifolds and their mappings”) at the Mechanics and Mathematics Department of the Moscow State University, Moscow, Russia on September 11, 2009
11. 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
12. 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
13. 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
14. A talk Linking, Causality and Refocusing at E. A. Kudryavtseva and S. A. Bogatyi seminar “Mnogoobraziya i ih otobrazheniya” (Manifolds and their mappings) at the Mechanics and Mathematics Department of the Moscow State University, Moscow, Russia on September 4, 2008
15. 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
16. 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

17. 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
18. 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
19. 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
20. 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
21. 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
22. A talk “Garlands, graded Poisson algebras, and applications.” at the Topology and Dynamical Systems Seminar, University of Florida, Gainesville, March 20, 2007
23. 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
24. 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
25. 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
26. 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
27. 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
28. 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
29. 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
30. A talk “Generalized strings algebra.” at the Geometry and Topology seminar, Department of Mathematics and Statistics, University of Calgary, Canada, May 10, 2006
31. 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
32. A talk “Relative framing of transverse knots.” at the Symplectic Topology Seminar, Department of Mathematics and Statistics, University of Calgary, Canada, May 1, 2006
33. 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
34. 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
35. 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
36. 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

37. 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
38. 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
39. 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
40. 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
41. 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
42. 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
43. 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
44. 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
45. 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
46. 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
47. 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
48. 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
49. 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
50. 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
51. 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
52. 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
53. 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

54. 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
55. 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
56. 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
57. 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
58. 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
59. 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
60. A talk “Affine linking numbers and causality relations for wave fronts.” at the Topology Seminar, Mathematics Department, Yale University, March 27, 2003
61. 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
62. 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
63. 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
64. 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
65. 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
66. 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
67. 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
68. 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
69. 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
70. 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
71. A talk at the Mathematical Physics seminar at the ETH Zurich, Switzerland, 2001
72. Invited speaker at the Contact Geometry Workshop at Stanford University, December 13 – 17, 2000

73. A talk at the Oberseminar in Complex Geometry, University of Zurich, Zurich, Switzerland, 2000
74. A talk at the Topology Seminar at the Max-Planck-Institut für Mathematik, Bonn, Germany, 2000
75. Colloquium Talk, at the Mathematics Department, University of Siegen, Siegen, Germany, 2000
76. A talk at the Geometry Seminar at the Institute of Mathematics of the University of Basel, Switzerland, 2000
77. A talk at the Geometry seminar at the Ruhr-Universität, Bochum, Germany, 2000
78. A talk at the Geometry seminar at the Albert-Ludwigs-Universität, Freiburg, Germany, 2000
79. A talk at the Geometry Seminar at the Bonn University, Bonn, Germany, 2000
80. A talk at the Geometry and Topology Seminar, University Paul Sabatier, Toulouse, France, 2000
81. A talk at the Topology seminar, Strasbourg University, Strasbourg, France, 2000
82. A talk at the Oberseminar, at the Max-Planck-Institut für Mathematik, Bonn, Germany, 1999
83. Invited speaker at the "Geometric and symplectic topology" program, Pisa University, Pisa, Italy, 1999
84. A talk at the "Sur les singularités" seminar at the l'Ecole Normale Supérieure in Paris, France, 1999
85. Speaker at the VIII OPORTO Meeting in Geometry Topology and Physics, Porto, Portugal, 1999
86. Two talks at the Symplectic Geometry Seminar at the ETH Zurich, Switzerland, 1998 – 1999
87. A talk at the Geometry Seminar at the Institute of Mathematics of the University of Basel, Switzerland, 1999
88. A talk at the "V.I. Arnold's seminar on Singularity Theory", Moscow State University, Russia, 1999
89. Colloquium talk, Department of Mathematics at the University of California Riverside, CA, 1997
90. A talk at the AMS meeting #920 at the University of Maryland, College Park MD, 1997
91. Principal speaker at the MSRI workshop "Combinatorial Problems Arising in Knots and 3-manifolds", Berkeley, CA 1997

Seminar Talks at Dartmouth

1. ★ "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
2. "Legendrian links, causality, and the Low conjecture" at the Geometry and Topology seminar, Mathematics Department, Dartmouth College, April 10, 2009
3. 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.
4. 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
5. 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
6. 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

7. 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
8. 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
9. 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
10. 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
11. 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 “Causality and Linking.” at the *XVI* Hudson River Undergraduate Mathematics Conference, held at the Union College, Schenectady NY, April 18, 2009
2. 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

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 2008 he wrote a senior thesis under my supervision. In Fall 2007 we wrote a joint paper that was published in *Commun. Contemp. Math.* in 2008.

Main Professional Activities

Member of the “Mathematics in Moscow Committee” of the American Mathematical Society, Fall 2007-Now, Chair of the Committee Fall 2008-Now

Reviewer for the American Mathematical Society publications database *Mathematical Reviews*

Reviewer for the European mathematical publication database *Zentralblatt*.