Stavros Garoufalidis

Curriculum Vitae

SUSTech International Center for Mathematics
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Education

Ph.D. in Mathematics, University of Chicago 1992
Thesis title: *Relations among 3-manifold invariants*
Thesis advisor: Melvin Rothenberg
M.S. in Mathematics, University of Chicago 1988
B.S. in Mathematics, University of Athens, Greece 1987

Research interests

Quantum topology and geometry in dimension 3

Employment

Chaired Professor, Southern University of Science and Technology 2021-present
External Scientific Member, Max Planck Institute for Mathematics 2019-present
Professor, Southern University of Science and Technology 2019-21
Hirzebruch Research Chair, Max Planck Institute for Mathematics 2018-19
Professor, Georgia Institute of Technology 2003-19
Associate Professor, Georgia Institute of Technology 2001-02
Lecturer, University of Warwick 2001-02
Assistant Professor, Georgia Institute of Technology 1999-00
Assistant Professor, Harvard University 1998-99
Assistant Professor, Brandeis University 1997-98
Assistant Professor, Harvard University 1996-97
Tamarkin Instructor, Brown University 1995-96
CLE Moore Instructor, MIT 1993-95
MSRI member 1992-93

Professional Awards and Honors

John Simon Guggenheim Fellowship 2012-13
Simons Foundation Fellow 2013-14
American Mathematical Centennial Fellowship 1998-00
Alfred Sloan Dissertation Fellowship 1991-92
Franz and Gertrude Meyer Prize for excellence in the
Master's Oral Examination, University of Chicago 1988
Bronze Medal and Special Solution Award in the
24th International Mathematical Olympiad, Paris 1983
Gold Medal in the National Competition of the Hellenic Academic Society 1983
Silver Medal in the National Competition of the Hellenic Academic Society 1982

Research Funding

National Science Foundation Grant DMS-18-11114	PI	$\$440,000$	2018-21
National Science Foundation Grant DMS-14-06419	PI	$\$377,059$	2014-17
National Science Foundation Grant DMS-11-05678	PI	$\$374,397$	2011-14
National Science Foundation Grant DMS-08-05078	PI	$\$429,715$	2008-11
National Science Foundation Grant DMS-05-05445	PI	$\$258,828$	2005-08
National Science Foundation Grant DMS-01-01626	PI	$\$135,357$	2002-05
National Science Foundation Grant DMS-98-00703	PI	$\$83,470$	1998-01
National Science Foundation Grant DMS-95-05105	PI	$\$70,000$	1995-98
USA-Israel Binational Science Foundation Grant 20-00334	PI	$\$62,100$	2001-04
USA-Israel Binational Science Foundation Grant 97-00398	PI	$\$61,200$	1998-01

Conference Funding

National Science Foundation DMS-19-12700 Quantum Topology and Hyperbolic Geometry, Da Nang, Vietnam	co-PI	$\$43,459$	2019
National Science Foundation DMS-18-41116 Classical and Quantum Topology Melbourne, Australia	co-PI	$\$30,000$	2018
National Science Foundation DMS-16-42515 Topological recursion Melbourne, Australia	co-PI	$\$40,000$	2016
National Science Foundation DMS-12-51399 Quantum Topology & Hyperbolic Geometry, Nha Trang, Vietman	PI	$\$25,000$	2012
National Science Foundation DMS-11-06739 Diablerets Spring School, Switzerland	PI	$\$27,076$	2011
European Science Foundation Diablerets Spring School, Switzerland	co-PI	$\$15,000$	2011
National Science Foundation SCREMS Grant DMS-10-26243	co-PI	$\$115,000$	2010
National Science Foundation Grant DMS-08-13619 Levine Conference in Boston, Massachusetts	co-PI	$\$34,000$	2008
National Science Foundation Grant DMS-07-15254 Quantum Topology Conference, Hanoi, Vietnam	PI	$\$21,000$	2007
ICTP Trieste Quantum Topology Conference in Hanoi, Vietnam	co-PI	$\in 3,000$	2007

Graduate students/thesis supervision

An, Ni, SUSTech	current
Campbell Wheeler, MPIM	Ph.D. 2023
Thao Vuong, Georgia Tech	Ph.D. 2014
Roland van der Veen, University of Amsterdam	Ph.D. 2010
Iain Moffatt, University of Warwick	Ph.D. 2005

Scholarly Visiting Positions

ICTP Trieste, Italy	11/17

Professor Invité, Institute Henri Poincare, Paris, France	3/17
Professor Invité, Paris VII, France	7/13
Max Planck Institute for Mathematics, Bonn, Germany	3/18, 8/17, 6/17, 3/16 10/15, 5/14, 1-3/13, 3/12, 6/11, 4/11, 9/10, 5/09, 6/08
IHES, France	10/07
Université Orsay, France	10/06
Université Paris VII, France	6-7/05
University of Crete, Greece, Pichorides Fellow	6-7/03

Personal Data

Date of birth: May 1965. Marital status: Married.
Citizenship: USA, Greek. Languages: Greek, English, French.

Publications

1. *Knots and their related q-series*, (with D. Zagier), SIGMA, **19** (2023) 082, 39 pages.
2. *Twisted Neumann–Zagier matrices*, (with S. Yoon), Research in Mathematical Sciences, **10** (2023), no. 4, Paper No. 37.
3. *Peacock patterns and resurgence in complex Chern-Simons theory*, (with J. Gu and M. Mariño), Research in Mathematical Sciences, **10** (2023), no. 3, Paper No. 29.
4. *Hyperbolic 3-manifolds, the Bloch group, and the work of Walter Neumann*, (With D. Zagier), Celebratio Mathematica, *in press*.
5. *The descendant colored Jones polynomials*, (with R. Kashaev), Pure and Applied Mathematics Quarterly, *in press*.
6. *On the quantum K-theory of the quintic*, (with E. Scheidegger), SIGMA, **18** (2022) 021, 20 pages.
7. *Counting essential surfaces in 3-manifolds*, (with N. Dunfield and H. Rubinstein), Inventiones Math. **228** (2022), no. 2, 717–775.
8. *Bloch groups, algebraic K-theory, units and Nahm's Conjecture*, (with F. Calegari and D. Zagier), Ann. Sci. Éc. Norm. Supér. (4) 56 (2023), no. 2, 383–426.
9. *The resurgent structure of quantum knot invariants*, (with J. Gu and M. Mariño), Comm. Math. Phys. **386** (2021), no. 1, 469–493.
10. *The FKB invariant is the 3d index*, (with R. van der Veen), J. Quantum Topology, **13** (2022), no. 3, 525–538.
11. *Resurgence of Faddeev's quantum dilogarithm*, (with R. Kashaev), IRMA Lect. Math. Theor. Phys., 33, Eur. Math. Soc., Zürich, (2021), 257–271.
12. *A diagrammatic approach to the AJ Conjecture* (with R. Detcherry), Math. Annalen, **378** (2020), no. 1-2, 447–484.
13. *The Slope Conjecture for Montesinos knots* (with R. van der Veen and C. Lee), International J. Mathematics, Internat. J. Math. **31** (2020), no. 7, 2050056, 66 pp.
14. *Asymptotics of Nahm sums at roots of unity*, (with D. Zagier), Ramanujan J. **55** (2021), no. 1, 219–238.
15. *A meromorphic extension of the 3D Index*, (with R. Kashaev), Research in Mathematical Sciences, **6** (2019) no. 1, 6:8.
16. *Quantum modularity and complex Chern-Simons theory*, (with T. Dimofte), Commun. Number Theory Phys., **12** (2018) 1–52.
17. *The colored HOMFLY-PT polynomial is q-holonomic*, (with A. Lauda and T.T.Q. Lê), Duke Math. J., **167** (2018) 397–447.
18. *Constructing 1-cusped isospectral non-isometric hyperbolic 3-manifolds*, (with A. Reid), J. of Topology and Analysis, **10** (2018) 1–25.
19. *A survey of q-holonomic functions*, (with T.T.Q. Lê), L' Enseignement Mathematique, **62** (2) (2016) 501–525.
20. *Quadratic integer programming and the slope conjecture*, (with R. van der Veen), New York J. Math. **22** (2016) 907–932.
21. *The 3D-index and normal surfaces*, (with C. Hodgson, N. Hoffman and H. Rubinstein), Illinois J. of Mathematics, **60** (2016) 289–353.
22. *Knots, BPS states, and algebraic curves*, (with P. Kucharski, and P. Sułkowski), Commun. Math Physics, **346** (2016) 75–113.

23. *The 3D-index of an ideal triangulation and angle structures*, Ramanujan J. **40** (2016), 573–604.
24. *A stability conjecture for the colored Jones polynomial*, (with T. Vuong), Topology Proc. **49** (2017), 211–249.
25. *A census of tetrahedral hyperbolic manifolds*, (with E. Fominykh, M. Goerner, V. Tarkaev and A. Vesnin), Experimental Math. **25** (2016) 466–481.
26. *Exact computation of the n-loop invariants of knots*, (With E. Sabo and S. Scott), Experimental Math. **25** (2016) 125–129.
27. *Evaluation of state integrals at rational points*, (with R. Kashaev), Commun. Number Theory Phys. **9** (2015) no. 3, 549–582.
28. *Flag algebras and the stable coefficients of the Jones polynomial*, (with S. Norin and T. Vuong), European J. Combinatorics, **51** (2016) 165–189.
29. *The symplectic properties of the $\mathrm{PGL}(n,\mathbb{C})$-gluing equations*, (with C. Zickert), Quantum Topol., **7** (2016), no. 3, 505–551.
30. *1-efficient triangulations and the index of a cusped hyperbolic 3-manifold*, (with C. Hodgson, H. Rubinstein and H. Segerman), Geometry and Topology, **19** (2015) 2619–2689.
31. *Gluing equations for $\mathrm{PGL}(n,\mathbb{C})$-representations of 3-manifolds* (with M. Goerner and C. Zickert), Alg. Geom. Topology, **15** (2015) 565–622.
32. *Links with trivial Alexander module and nontrivial Milnor invariants*, Chelyabinsk Math Journal, **3 (358)** (2015) 41–49.
33. *Algebraic G-functions of matrices over a group-ring*, (with J. Bellissard), Chelyabinsk Math Journal, **3 (358)** (2015) 50–61.
34. *The complex volume of $\mathrm{SL}(n,\mathbb{C})$ representations of 3-manifolds* (with D.P. Thurston and C. Zickert), Duke Math. J., **164** (2015) 2099–2160.
35. *Recurrent sequences of polynomials in 3-dimensional topology*, Acta Math. Vietnamica, **39** (2014) 541–548.
36. *The Ptolemy field of 3-manifold-representations*, (with M. Goerner and C.Zickert), Alg. Geom. Topology, **15** (2015) 371–397.
37. *Nahm sums, stability and the colored Jones polynomial*, (with T.T.Q. Lê), Research in Mathematical Sciences, **2** (2015) 55 pp.
38. *A generating series for Murakami-Ohtsuki-Yamada graph evaluations*, (with R. van der Veen), Acta Math. Vietnamica, **39** (2014) 529–539.
39. *From state integrals to q-series*, (with R. Kashaev), Math. Research Letters, **24** 3 (2017) 781–801.
40. *Alternating knots, planar graphs and q-series*, (with T. Vuong), Ramanujan J., **36** (2015) 501–527.
41. *Irreducibility of q-difference operators and the knot 7_4* (with C. Koutschan), Alg. Geom. Topology, **13** (2013) 3261–3286.
42. *Rationality of the $\mathrm{SL}(2,\mathbb{C})$-torsion in dimension three* (with J. Dubois), Topology Proceedings, **47** (2016) 115–134.
43. *The quantum content of the gluing equations*, (with T. Dimofte), Geometry and Topology, **17** (2013) 1253–1315.
44. *Asymptotics of classical spin networks*, (with R. van der Veen), Geometry and Topology, **17** (2013) 1–37.

45. *Analyticity of the planar limit of a matrix model*, (with I. Popescu), Annales Henri Poincaré, **14** (2013) 499–565.
46. *Quantum Knot Invariants*, Mathematische Arbeitstagung (2011), Research in the Mathematical Sciences, **5** (2018) 5:11.
47. *Twisting q-holonomic sequences by complex roots of unity*, (with C. Koutschan), ISSAC 2012 Proceedings of 37th International Symposium on Symbolic and Algebraic Computation, (2012) 179–186.
48. *The non-commutative A-polynomial of the $(-2,3,n)$ pretzel knots*, (with C. Koutschan), Experimental Math, **21** (2012) 241–251.
49. *The SL_3 colored Jones polynomial of the trefoil* (with H. Morton and T. Vuong), Proceedings of the AMS, **141** (2013) 2209–2220.
50. *Asymptotics of the colored Jones function of a knot*, (with T.T.Q. Lê), Geometry and Topology, **15** (2011) 2135–2180.
51. *Incompressibility criteria for spun-normal surfaces*, (with N. Dunfield), Transactions of the AMS, **364** (2012) 6109–6137.
52. *The A-polynomial of the $(-2,3,n)$ pretzel knots*, (with T. Mattman), New York J. Math. **17** (2011) 269–279.
53. *The SL_3 Jones polynomial of the trefoil: a case study of q-holonomic sequences*, (with C. Koutschan), Advances in Applied Math. **47** (2011) 829–839.
54. *The degree of a q-holonomic sequence is a quadratic quasi-polynomial*, Electronic J. Combinatorics, **18** (2011) research article P4, 23 pages.
55. *Asymptotics of the instantons of Painlevé I*(with A. Its, A. Kapaev and M. Mariño), Int. Math. Res. Not. IMRN **3** (2012) 561-–606.
56. *Asymptotics of quantum spin networks at a fixed root of unity*, (with R. van der Veen), Math. Annalen, **352** (2012) 987–1012.
57. *What is a sequence of Nilsson type?*, Contemporary Mathematics, **541** (2011) 145–157.
58. *Knots and tropical curves*, Contemporary Mathematics, **541** (2011) 83–111.
59. *The Jones slopes of a knot*, Quantum Topol., **2** (2011) 43–69.
60. *Sum-integral interpolators and the Euler-Maclaurin formula for polytopes*, (with J. Pommersheim), Transactions of the AMS **364** (2012) 2933–2958.
61. *Behavior of knot invariants under genus 2 mutation* (with N. Dunfield, S. G., A. Shumakovitch and M. Thislethwaite), New York J. Mathematics **16** (2010) 99–123.
62. *An algorithm for the recursion of hypergeometric multisums*(with X. Sun), Contemporary Mathematics, AMS **517** (2010) 143–156.
63. *Universality and asymptotics of graph counting problems in nonorientable surfaces*, (with M. Mariño) J. Combin. Theory A **117** (2010) 715–740.
64. *The non-commutative A-polynomial of twist knots*(with X. Sun), Journal of Knot Theory and its Ramifications, **19** (2010) 1571–1595.
65. *Analytiticy of the free energy of a closed 3-manifold* (with T.T.Q. Lê and M. Mariño) SIGMA, **4** (2008) 080, 20 pages.
66. *G-functions and multisum versus holonomic sequences*, Advances in Mathematics **220** (2009) 1945–1955.
67. *Chern-Simons theory, analytic continuation and arithmetic*, Acta Math. Vietnamica, **33** (2008) 335–362.

68. *Resurgence of the fractional polylogarithms*, (with O. Costin), Mathematical Research Letters **16** (2009) 817–826.
69. *Resurgence of the Kontsevich-Zagier series*, (with O. Costin), Annales de l' Institut Fourier, **61** (2011) 1225–1258.
70. *An ansatz for the asymptotics of hypergeometric multisums*, Advances in Applied Mathematics, **41** (2008) 423–451.
71. *An extended version of additive K-theory*, Journal of K-theory **4** (2009) 391–403.
72. *Resurgence of the Euler-MacLaurin summation formula*, (with O. Costin), Annales de l' Institut Fourier **58** (2008) 893–914.
73. *Gevrey series in quantum topology*, (with T.T.Q. Lê), J. Reine Angew. Math., **618** (2008) 169–195.
74. *Difference and differential equations for the colored Jones function*, Journal of Knot Theory and its Ramifications, **17** (2008) 495–510.
75. *The C-polynomial of a knot*, (with X. Sun), Alg. Geom. Topology, **6** (2006) 1001–1031.
76. *Is the Jones polynomial of a knot really a polynomial?* (with T.T.Q. Lê), Journal Knot Theory and its Ramifications, **15** (2006) 1–18.
77. *Asymptotics of q-difference equations* (with J. Geronimo), Contemporary Math. AMS **416** (2006) 83–114.
78. *A non-commutative formula for the colored Jones function*, (with M. Loebl), Math. Annalen, **336** (2006) 867–900.
79. *Experimental evidence for the Volume Conjecture of the simplest hyperbolic non-2-bridge knot*, (with Y. Lan), Algebr. Geom. Topol. **5** (2005) 379-403.
80. *The colored Jones function is q-holonomic* (with T.T.Q. Lê), Geom. and Topology **9** (2005) 1253–1293.
81. *A conjecture on Khovanov's invariants*, Fundamenta Mathematicae, **184** (2004) 99–101.
82. *Nontriviality of the A-polynomial of knots in S^3* (joint with N. Dunfield), Alg. and Geom. Topology, **4** (2004) 1145–1153.
83. *The quantum MacMahon Master Theorem* (with T.T.Q. Lê and D. Zeilberger), Proc. Natl. Academy USA, **103** (2006) 13928–13931.
84. *Random walks and the colored Jones function* (with M. Loebl), Combinatorica, **25** (2005) 651–671.
85. *Whitehead doubling persists*, Algebraic and Geometric Topology, **4** (2004) 935–942.
86. *Finite type invariants of cyclic branched covers* (with A. Kricker), Topology, **43** (2004) 1247–1283.
87. *A rational noncommutative invariant of boundary links* (with A. Kricker), Geometry and Topology, **8** (2004) 115–204.
88. *The loop expansion of the Kontsevich integral, abelian invariants of knots and S-equivalence* (with L. Rozansky), Topology, **43** (2004) 1183-1210.
89. *On the characteristic and deformation varieties of a knot*, Proceedings of the Casson Fest, Geometry and Topology Monographs **7** (2004) 291–309.
90. *On knots with trivial Alexander polynomial* (with P. Teichner), Journal of Diff. Geometry, **67** (2004) 763–789.

91. *Tree-level invariants of 3-manifolds, Massey products and the Johnson homomorphism* (with J. Levine), Graphs and Patterns in Mathematics and Theoretical Physics, Proceedings Symp. Pure Math. **73** (2005) 173–205.
92. *The Århus integral of rational homology 3-spheres III: The Relation with the Le-Murakami-Ohtsuki Invariant* (D. Bar-Natan, L. Rozansky and D. Thurston), Selecta Math. **10** (2004) 305–324.
93. *A surgery view of boundary links* (with A. Kricker), Math. Annalen, **327** (2003) 103-115.
94. *Periodicity of Goussarov-Vassiliev knot invariants*, Geom. and Topology Monographs, **4** (2002) 43–54.
95. *Concordance and 1-loop clovers* (with J. Levine), Algebraic and Geometric Topology, **1** (2001) 687–697.
96. *Analytic invariants of boundary links* (with J. Levine), Journal of Knot Theory and its Rami., **11** (2002) 283–293.
97. *Homology surgery and invariants of 3-manifolds* (with J. Levine), Geometry and Topology, **5** (2001) 551–578.
98. *The mystery of the brane relation*, Journal of Knot Theory and its Rami., **11** (2002) 725–738.
99. *Calculus of clovers and finite type invariants of 3-manifolds* (with M. Goussarov and M. Polyak), Geometry and Topology, **5** (2001) 75–108.
100. *Signatures of links and finite type invariants of cyclic branched covers*, Contemporary Math. **231** (1999) 87–97.
101. *Applications of the lantern identity*, Journal of Knot Theory and its Rami., **10** (2001) 303–307.
102. *The Alexander polynomial and finite type 3-manifold invariants* (with N. Habegger), Math. Annalen, **316** (2000) 485–497.
103. *The Århus integral of rational homology 3-spheres II: Invariance and Universality* (with D. Bar-Natan, L. Rozansky and D. Thurston), Selecta Mathematica, **8** (2002) 341–371.
104. *The Århus integral of rational homology 3-spheres I: a highly non-trivial flat connection on S^3* (with D. Bar-Natan, L. Rozansky and D. Thurston), Selecta Mathematica, **8** (2002) 315–339.
105. *Zeta functions at negative integers, Dedekind sums and toric geometry* (with J. Pommesrsheim), Journal of AMS, **14** (2001) 1–23.
106. *A reappearance of wheels*, Journal of Knot Theory and its Rami., **7** (1998) 1065–1071.
107. *Some IHX-type relations and symplectic representation theory* (with H. Nakamura), Math. Research Letters **5** (1998) 391–402.
108. *Wheels, wheeling and the Kontsevich integral of the unknot* (with D. Bar-Natan, L. Rozansky and D. Thurston), Israel Journal of Mathematics, **119** (2000) 217–238.
109. *Finite type 3-manifold invariants and the Torelli group I* (with J. Levine), Inventiones Math. **131** (1998) 541–594.
110. *Finite type 3-manifold invariants, the Torelli group and blinks* (with J. Levine), Journal of Diff. Geometry, **47** (1997) 257–320.

111. *On finite type 3-manifold invariants V: rational homology spheres* (with T. Ohtsuki), Proceedings of the Aarhus Conference, Geometry and Physics, Marcel Dekker (1996) 445-457.
112. *On finite type 3-manifold invariants IV: comparison of definitions* (with J. Levine), Math. Proc. Cambridge Phil. Society **122** (1997) 291–300.
113. *On finite type 3-manifold invariants III: manifold weight systems* (with T. Ohtsuki), Topology **37** (1998) 227–244.
114. *On finite type 3-manifold invariants II* (with J. Levine), Math. Annalen **306** (1996) 691-718.
115. *On finite type 3-manifold invariants I*, Journal of Knot Theory and its Rami., **5** (1996) 441-462.
116. *On the Melvin-Morton-Rozansky conjecture* (with D.Bar-Natan), Inventiones Math. **125** (1996) 103-133.
117. *Applications of TQFT invariants to low dimensional topology*, Topology **37** (1998) 219–224.
118. *Relations among 3-manifold invariants*, Thesis, Univ. of Chicago, 1992.

Submitted for publication

1. *Multivariable knot polynomials from braided tensor algebras with automorphisms*, (with R. Kashaev),
preprint 2023, arXiv:2311.11528.
2. *From 3-dimensional skein theory to functions near* $\mathbb{Q}$, (with T.T.Q. Lê),
preprint 2023, arXiv:2307.09135.
3. *Quantum dilogarithms of local fields and invariants of 3-manifolds*, (with R. Kashaev),
preprint 2023, arXiv:2306.01331.
4. *Topological invariance of complex Chern-Simons and Teichmüller TQFT perturbation theory*, (with M. Storzer and C. Wheeler),
preprint 2023, arXiv:2305.14884.
5. *1-loop equals torsion equals for fibered 3-manifolds*, (with N. Dunfield and S. Yoon),
preprint 2023, 2304.00469.
6. *The descendants of the 3d-index*, (with Z. Duan and J. Gu),
preprint 2023, 2301.00098.
7. *Super-representations of 3-manifolds and torsion polynomials*, (with S. Yoon),
preprint 2022, 2301.11018.
8. *Asymptotically multiplicative quantum invariants*, (with S. Yoon),
preprint 2022, 2211.00270.
9. *Factorization of polynomials in hyperbolic geometry and dynamics*, (with M. Filaseta),
preprint 2022, 2209.08449.
10. *Periods, the meromorphic 3D-index and the Turaev–Viro invariant*, (with C. Wheeler),
preprint 2022, 2209.02843.
11. *Modular q-holonomic modules*, (With C. Wheeler),
preprint 2022, 2203.17029.
12. *Knots, perturbative series and quantum modularity*, (with D. Zagier),
preprint 2021, arXiv:2111.06645.

13. *On the trace fields of hyperbolic Dehn fillings*, (with B. Jeon), preprint 2021, arXiv:2103.00767.
14. *Resurgence of Chern–Simons theory at the trivial flat connection*, (with J. Gu, M. Mariño and C. Wheeler), preprint 2021, arXiv:2111.04763.
15. *The ADO Invariants are a q-Holonomic Family*, (with J. Brown, T. Dimofte and N. Geer), preprint 2020, arXiv:2005.08176.
16. *Graph complexes and Mumford's conjecture* (with E. Getzler), preprint 2017, arXiv:1712.03606.
17. *Non-peripheral ideal decompositions of alternating knots*, (with I. Moffatt and D. Thurston), preprint 2016, arXiv:1610.09901.
18. *A construction of the graphic matroid from the lattice of integer flows*, (with Z. Dansco), preprint 2016, arXiv:1611.06282.

Preprints

1. *The volume conjecture for the KLV state-integral*, (With J. Andersen and R. Kashaev), preprint 2021.
2. *Counting genus 2 surfaces in 3-manifolds*, (with N. Dunfield, C. Hodgson and H. Rubinstein), preprint 2016.
3. *The Newton polytope of a recurrent sequence of polynomials*, preprint 2014.
4. *The colored HOMFLY polynomial is q-holonomic*, preprint 2012, arXiv:1211.6388.
5. *q-terms, singularities and the extended Bloch group*, preprint 2007, arXiv:0708.0018.
6. *Resurgence of series of 1-dimensional sum-product type*, (with O. Costin), preprint 2007.
7. *On Chern-Simons Matrix Models*, (with M. Mariño), preprint 2005, arXiv:math/0601390.
8. *Does the Jones polynomial determine the signature of a knot?* preprint 2003, arXiv:math/0310203.
9. *Beads: From Lie algebras to Lie groups*, preprint 2002, arXiv:math/0201056.

Invited Conference Lectures

International Conference on Topology and Applications, Nafpaktos, Greece 7/2023
Spectral theory, geometry and strings, Mainz, Germany 6/2023
Workshop on Quantization and Resurgence, Les Diablerets, Switzerland 2/2023
Physical resurgence, on quantum gauge and stringy, ISAAC Institute Cambridge, UK 9/2022
SUSTech-Nagoya workshop on Quantum Science, Nagoya, Japan 6/2022
Quantum Topology Conference, Institute Henri Poincare, Paris, France 6/2022
Intelligence in Low Dimensional Topology, RIMS, Kyoto, Japan, 5/2022
17th East Asian Conference on Geometric Topology, Seoul, Korea 1/2022
16th East Asian Conference on Geometric Topology, Tokyo, Japan 1/2021
Topological and Geometric Recursion in Interaction with Resurgence, Miami, USA 2/2020
Topological recursion, MPIM, Bonn, Germany 8/2019
Number Theoretic Methods in Quantum Physics, University of Bonn, Bonn, Germany 7/2019
Resurgence in mathematics and physics, IHES, France 9/2018
Quantum Knot Invariants and Supersymmetric Gauge Theories, Kavli, Santa Barbara, USA 11/2018
Quantum fields, knots, and strings, University of Warsaw, Warsaw, Poland 9/2018
Workshop on the Volume Conjecture, Tokyo University, Tokyo, Japan 7/2018
First Congress of Greek Mathematicians, Athens, Greece 6/2018
Modular Forms and Quantum Knot Invariants, Banff, Canada 3/2018
Low dimensional Topology and Number Theory, Oberwolfach, Germany 8/2017
SIAM Conference on Applied Algebraic Geometry (AG17), Altanta 7/2017
Modular forms are everywhere, ZagierFest, Bonn, Germany 6/2017
Quantum Topology and Geometry in Toulouse, Toulouse, France 6/2017
Enumerative geometry and combinatorics of moduli spaces, Institute Henri Poincare, Paris, France 3/2017
MATRIX Conference in topological recursion, Melbourne, Australia 1/2017
Volume Conjecture 20 years later, Tokyo, Japan 9/2016
Knots in Hellas, Olympia, Greece 7/2016
Quantum Topology, Moscow, Russia 6/2016
Winter School on Volume Conjecture, Chern-Simons theory and contact homology (6 lectures), Pohang, S. Korea 12/2015
Invariants in Low Dimensional Geometry, Ankara, Turkey 8/2015
New developments in TQFT, Aarhus Denmark 7/2015
CURVE conference, Paris France 6/2015
AMS regional meeting in Greensboro, North Carolina, Invited Address 11/2014
Low dimensional Topology and Number Theory, Oberwolfach, Germany 8/2014
Quantum Topology, Magnitogorsk, Russia (2 lectures) 7/2014
Geometry, Quantum Topology and Asymptotics, University of Geneva, Switzerland 6/2014
Quantum Curves and Quantum Knot Invariants, Banff, Canada 5/2014

Geometric Topology in New York, Columbia University, New York 8/2013
Centre for Quantum Geometry of Moduli spaces, Aarhus, Denmark
(2 lectures) 1/2013
Low dimensional Topology and Number Theory, Oberwolfach, Germany 8/2012
Clay Research Conference, Oxford, UK 6/2012
SIAM Conference in Computational Algebraic Geometry, North Carolina 10/2011
Mathematische Arbeitstagung, Bonn, Germany 6/2011
Jourńees Solstice 2011, Paris, France 6/2011
Spring School in Quantum Geometry, Les Diablerets, Switzerland 3/2011
Quantum Topology Workshop, Amsterdam, Netherlands 9/2010
Low dimensional topology and Number Theory, Oberwolfach, Germany 8/2010
JacoFest, Stillwater, Oklahoma, USA 6/2010
From $A = B$ to $Z = 60$, Zeilberger Fest, Rutgers, New Jersey, USA 5/2010
Workshop on TQFTs and Knot Homologies, Hahei, New Zealand (2 lectures) 1/2010
Chern-Simons Workshop, Hausdorff Institute, Germany (opening lecture) 8/2009
Hyperbolic Geometry and Number Theory Summer School, Columbia
University, New York, USA (5 lectures including the opening lecture) 6/2009
Low dimensional topology and number theory, Fukuoka, Japan 4/2009
Knot Theory Workshop in Heidelberg, Germany 12/2008
8th Panhellenic Conference in Algebra, Athens, Greece plenary talk 5/2008
Journées ANR sur la Conjecture du Volume, Strasbourg, France (2 lectures) 9/2007
International Conference on Quantum Topology, Hanoi, Vietnam 8/2007
CTQM Workshop, Aarhus University, Denmark (2 talks) 6/2007
Around the Volume Conjecture, Luisiana State University, USA 5/2007
Barrett Lectures, University of Tennessee, Knoxville, USA 4/2006
International Conference on the Volume Conjecture,
Columbia University, New York, USA (2 lectures) 3/2006
Workshop on the Volume Conjecture, Columbia University, New York, USA 9/2005
Workshop on Classical and Quantum Gravity in 3-dimensions, Pisa, Italy 9/2005
Oberwolfach Topology Conference, Germany 6/2005
Quantum Topology Conference, Snowbird, Utah (2 lectures) 6/2005
Midwest Topology Conference, Chicago, USA 4/2005
Spring Topology and Dynamics Conference, Berry College, Georgia, USA 3/2005
Knots XX in Washington, L. Kauffman's 60th birthday, USA 2/2005
Knots and 3-manifolds in Vancouver, Vancouver, Canada 7/2004
Workshop in UQAM Montreal, Canada 5/2004
BANFF Workshop on finite type invariants and Gromov-Witten invariants,
Banff, Canada 11/2003
Mini-course on Quantum Topology at University of Crete, Greece (8 lectures) 7/2003
Japan-USA JAMI meeting in Johns Hopkins University, USA 3/2003
Annual AMS meeting, Baltimore, USA (two lectures) 1/2003
London Math. Society meeting in Liverpool, UK, plenary speaker (3 lectures) 6/2002
Tel-Aviv, Israel, plenary speaker at LevineFest, Jerome Levine's 60th birthday 8/2001
SUNY Stony Brook, USA DennisFest in honor of D. Sullivan's 60th birthday 6/2001

Athens, Georgia, USA International Topology Conference 5/2001
UCSan Diego, USA Influence of Physics in Mathematics Conference 8/2000
Kangnung, Korea, International Knot Theory Conference 8/2000
University of Warwick, UK, Geometry and Topology Conference 7/2000
Northeastern University, USA, Conference on Arrangements 6/1999
International Conference in Knot Theory, Delphoi, Greece 8/1998
MSRI, USA, KirbyFest, 60th birthday conference in honor of Kirby's 60th birthday 6/1998
MSRI, International Topology Conference 1/1997
Oberwolfach, Topology Conference 9/1996
Waseda University, Tokyo, International Knot Theory Conference 7/1996
Århus, Geometry and Physics 8/1995
University of Chicago, conference in honor of M. Rothenberg 60th birthday 3/1993

Invited Colloquia and Seminar Lectures

Colloquium, Hong Kong University of Science and Technology, Hong Kong China 10/2023
Geometry and Topology Seminar, Strasbourg France 3/2023
ReNewQuantum Seminar, Odense Denmark 2/2023
Seoul National University Volume Conjecture Seminar, Seoul Korea 12/2022
East China Low Dimensional Topology Seminar, Shanghai China 9/2022
Topology Seminar, Nanyang Technological University Singapore 8/2022
Mathematics Colloquium, Nanyang Technological University Singapore 8/2022
Topology Seminar, Universität Regensburg, Regensburg, Germany 7/2022
Number Theory Seminar, Max Planck Institute for Mathematics, Bonn, Germany 6/2022
Topology Seminar, Max Planck Institute for Mathematics, Bonn, Germany 5/2022
Mathematical Physics Seminar, Humboldt University, Berlin, Germany 5/2022
Mathematical Physics Seminar, Yau Center, Southeast University, Nanjing, China 1/2022
Topology Seminar, Peking University, Beijing, China 5/2021
Mathematical Physics Seminar, Peking University, Beijing, China 5/2021
Geometry Seminar, Tsinghua University, Beijing, China 5/2021
Combinatorics, Algorithms and Interactions, Paris, France 4/2021
Hellenic Mathematics Seminar, Nicosia, Cyprus 3/2021

Geometry-Topology Seminar, Georgia Tech, Atlanta, USA 2/2020

Geometry-Topology seminar, University of Warwick, England	2/2019
Colloquium, University of Warwick, England	1/2019
Colloquium, Michigan State University, Michigan	1/2019
Geometry-Topology Seminar, Paris VII, Paris, France	12/2018
Topology Seminar, Georgia Tech, Atlanta	11/2018
Colloquium, SUSTech, Shenzhen, China	11/2018
Colloquium, University of Leiden, Netherlands	9/2018
Geometry-Topology Seminar, IST, Vienna, Austria	9/2018
Mathematical Physics Seminar, MPI Bonn, Germany	9/2018
Geometry-Topology Seminar, Technion, Haifa, Israel	1/2018
Geometry-Topology Seminar, UTAustin, Austin, Texas	11/2016
Geometry-Physics Seminar, Northwestern, Chicago	2/2015
Geometry Seminar, Caltech, California	1/2015
Duke-UNC Topology Seminar, Duke University, North Carolina	11/2013
Colloquium, Vanderbilt University, Tennessee	10/2013
Subfactors Seminar, Vanderbilt University, Tennessee	10/2013
Topology Seminar, University of Austin, Texas	9/2013
Journeé de Topologie, Université Paris Diderot, Paris France (2 talks)	7/2013
Geometry Seminar, EPFL, Lausanne, Switzerland	2/2013
Symbolic Computation Seminar, Johannes Kepler University, Linz, Austria	1/2013
Representation Theory Seminar, University of Toronto, Canada	11/2012
Topology Seminar, University of South Alabama, Mobile, Alabama	9/2011
Colloquium, Vanderbilt University, Tennessee	2/2011
Subfactors seminar, Vanderbilt University	2/2011
Gauge theory and Geometry Seminar, Harvard	10/2010
Tropical Geometry Seminar, Georgia Tech	10/2010
Geometry-Topology Seminar, Georgia Tech	10/2010
Geometry-Topology Seminar, Caltech	2/2010
Geometry-Topology Seminar, University of Texas, Austin	12/2009
Geometry-Topology Seminar, Georgia Tech	11/2009
Research Horizons Seminar, Georgia Tech	11/2009
Research Horizons Seminar, Georgia Tech	10/2009
Colloquium, Temple University	9/2009
Research Horizons Seminar, Georgia Tech	9/2009
Max Planck Institute, Number theory Seminar	5/2009
UGA, Athens Georgia, Geometry-Topology Workshop	9/2008
Georgia Tech, Geometry-Topology Seminar	9/2008

Max Planck Institute, Bonn, Geometry-Topology Seminar	6/2008
Columbia University, New York, Geometry-Topology Seminar	5/2008
Northwestern University, Chicago, Mathematical Physics and Geometry Seminar	4/2008
University of Pennsylvania, Philadelphia, Probability Seminar	4/2008
Université Genève, Switzerland, Geometry Seminar	3/2008
Gatech, Analysis Seminar	2/2008
Gatech, Geometry-Topology Seminar	2/2008
Gatech, Gombinatorics-Algebra seminar	9/2007
Gatech, Geometry-Topology seminar	9/2007
Rutgers, Experimental Mathematics Seminar	3/2007
University of Chicago, Algebraic Geometry Seminar	3/2007
University of Miami, Algebraic Geometry Seminar	2/2007
Georgia Institute of Technology, Research Horizons Seminar	2/2007
University of Pennsylvania, Philadelphia, Geometry Seminar	1/2007
University of Maryland, Geometry and Mathematical Physics Seminar, Washington DC	12/2006
Georgia Institute of Technology, Topology Seminar, Atlanta	11/2006
Georgia Institute of Technology, Algebra Seminar, Atlanta	11/2006
Université Orsay, Harmonic analysis seminar,France (two talks)	11/2006
Université Paris VII, Topology seminar, Paris	11/2006
Columbia University, Geometry Seminar, New York	9/2006
CUNY, Einstein Chair Seminar, New York	9/2006
Columbia University, Topology seminar, New York	9/2006
Georgia Institute of Technology, Analysis Seminar, Atlanta	9/2006
Ohio State University, Analysis seminar, Columbus, Ohio	8/2006
Université Genève, Switzerland, Topology Seminar	6/2006
University of Athens, Athens, Greece, Colloquium	5/2006
Ohio State University, Topology Seminar, Columbus	5/2006
Georgia Institute of Technology, Analysis Seminar, Atlanta	4/2006
University of Aarhus, Denmark, Geometry Seminar	3/2006
Georgia Institute of Technology, Geometry/Topology Seminar, Atlanta	3/2006
Université Grenoble, France	7/2005
Université Paris VII, France (4 lectures)	6-7/2005
University of Illinois at Chicago, Geometry Seminar	4/2005
Georgia Tech, Research Horizons Seminar	4/2005
Harvard University, Gauge Theory Seminar	11/2004
Princeton University, Geometry Seminar	10/2004
University of Athens, Greece, Analysis Seminar	6/2004
University of California at Berkeley, Subfactors Seminar	4/2004
University of California at Berkeley, Topology Seminar	4/2004

Columbia, Topology Seminar	2/2004
Gatech, Topology Seminar	2/2004
Gatech, Analysis Seminar	2/2004
Harvard, Gauge theory seminar	10/2003
Harvard-MIT-Brandeis Colloquium	10/2003
Rutgers, Colloquium	10/2003
Rutgers, Experimental Mathematics Seminar	10/2003
University of Pennsylvania, Mathematical Physics Seminar	10/2003
Georgia Tech, Topology Seminar	9/2003
Rutgers University, Gelfand Seminar	5/2003
Gatech, Geometry Seminar	3/2003
SUNY Buffalo, Colloquium	2/2003
Rice University, Colloquium	2/2003
Research Horizons Seminar, Gatech	2/2003
Harvard, Gauge theory seminar	11/2002
Brown University, Geometry Seminar	11/2002
Johns Hopkins University, Geometry Seminar	10/2002
Georgia Tech, Probability seminar	9/2002
Georgia Tech, Colloquium	8/2002
Charles University, Special Topology and Combinatorics meeting	6/2002
University of Athens, Geometry Lectures Series	5/2002
CUNY, New York, Einstein Chair Lecture Series, 2 lectures	2/2002
University of Warwick, Colloquium	2/2002
University of Edinburgh, Geometry Seminar	1/2002
Université Paris 7, mini-course of four lectures	21/2001
University of Liverpool, Colloquium	12/2001
University of Warwick, Topology Seminar	10/2001
Oxford, Geometry Seminar	10/2001
University of Athens, Geometry Lectures Series	9/2001
University of Warwick, Colloquium	5/2001
Georgia Tech, PiMuEpsilon Undergraduate Colloquium	4/2001
Emory University, Topology Seminar	2/2001
Georgia Tech, Algebra Seminar	2/2001
Emory University, Topology Seminar	10/2000
Tokyo Institute of Technology, Japan, Geometry Lecture Series	8/2000
Brandeis University, Topology Seminar	7/2000
Georgia Tech, Mathematical Physics Seminar	4/2000
Georgia Tech, Geometry Seminar	2/2000
Emory University, Topology Seminar	11/1999
Georgia Tech, Topology Seminar	10/1999

University of Athens, Georgia, Topology Seminar	10/1999
The University of Chicago, Symplectic Geometry Seminar	10/1999
The University of Chicago, Topology Seminar	10/1999
Harvard University, Yau's Geometry Seminar	4/1999
Boston University, Geometry Seminar	1/1999
Boston University, Geometry Seminar	12/1998
CUNY, New York, Einstein Chair Lecture Series, two lectures	12/1998
Oxford, Combinatorics Seminar	11/1998
Oxford, Geometry Seminar (two lectures)	11/1998
Harvard University, Gauge Theory Seminar	10/1998
Courant Institute, Topology Seminar	10/1998
UMass Amherst, Geometry Seminar	10/1998
MIT, V. Kac's Lie algebras Seminar	3/1998
Boston College, Colloquium	2/1998
University of Warwick, Geometry Seminar	2/1998
Georgia Tech, Geometry Seminar	1/1998

Selected Past Invited Colloquia and Seminar Lectures

University of California at Berkeley, Topology Seminar	93, 94, 96
The University of Chicago, Topology Seminar, Algebra Seminar,	92, 93, 94
Harvard University, Gauge Theory Seminar	93, 94, 96, 97
Princeton University, Symplectic Topology Seminar	93, 94
The Institute of Advanced Studies, Princeton	96
MIT, Symplectic Geometry, Topology Seminar	93, 94, 95, 96
Yale University	95, 96, 97
Brown University	95, 96
Columbia University, Topology Seminar,	93, 95
Duke University, Geometry Seminar,	96
Brandeis University, Topology Seminar,	94, 95, 96, 97, 98
the Courant Institute, Topology Seminar,	94, 95, 96, 98
Northeastern University	97, 98, 99
University of California at Riverside, Topology Seminar	93
Université Paris V, France	97
Columbia University, Colloquium	92
Brandeis-MIT-Harvard, Colloquium	95, 96

Disseration committees

Dissertation committee, University of Geneva for the thesis of Eiichi Piguet	2021
Dissertation committee, Georgia Tech for the thesis of Anh Tran	2012
Dissertation committee, Columbia University for the thesis of Christian Zickert	2008
Dissertation committee, Georgia Tech for the thesis of John Pearson	2008
Dissertation committee, Georgia Tech for the thesis of Jean Savinien	2008

Dissertation committee, University of Buffalo for the thesis of Dorin Cheptea 2005
Dissertation committee, University of Buffalo for the thesis
of Srikanth Kuppum 2005
Dissertation committee, Université Paris VII for the thesis of Julien Marché 2004
Dissertation committee, Brandeis for the thesis of Seonghwa Park 1997
Dissertation committee, Brandeis for the thesis of
Jose Eduardo Prado Pires de Campos 1997
Dissertation committee, Brandeis for the thesis of En-Hung Sun 1996

Organization of conferences

Co-organizer of Low dimensional Topology conference ,
SUSTech, Shenzhen, China 2020
Co-organizer of Worshop on knots and their q-series,
Max Planck Institute, Bonn, Germany 2019
Co-organizer of Classical and Quantum Geometry,
Da Nang, Vietnam 2019
Co-organizer of Classical and Quantum 3-Manifold Topology,
Monash University, Melbourne, Australia 2018
Co-organizer of Geometry Quantum Topology and Asymptotics,
Aarhus, Denmark 2018
Co-organizer of Geometry Quantum Topology and Asymptotics,
Confucius Institute, University of Geneva, Switzerland 2018
Co-organizer of Geometry, Quantum Topology and Asymptotics,
Confucius Institute, University of Geneva, Switzerland 2014
Co-organizer of the International Conference in Quantum Topology
Nha Trang, Vietnam 2012
Co-organizer of the International Conference in Quantum Topology
Hanoi, Vietnam 2007
Co-organizer of Special Session on Quantum Topology at the National
AMS meeting Atlanta, Georgia 2004
Co-organizer of Special Session on Knots and Primes at the
National AMS meeting Baltimore, Maryland 2003
Organizer of a Workshop on Quantum Topology in Warwick, UK 2002
Co-organizer of Special Session on Topology at the AMS meeting
Memphis, Tennessee 1997

Journal managing

Editor for Geometry-Topology 2021-present
Editor for the Journal of Quantum Topology 2021-present
Academic editor for the Journal of Knot theory and its Ramifications 2004-present

Journal and Grants Refereeing

National Science Foundation
Danish National Science Foundation

Binational Science Foundation
Kansas NSF EPSCoR
Research Grants Council, CERG, Honk-Kong
Algebraic and Geometric Topology
Comentarii Mathematici Helvetici
Communications in Mathematical Physics
Geometry and Topology
Inventiones Mathematicae
Journal of the American Mathematical Society
Journal of Differential Geometry
Journal of Knot Theory
Mathematische Annalen
Mathematical Proceedings of the Cambridge Philosophical Society
Nuclear Physics B
Pacific Journal of Mathematics
Topology
Topology and its Applications