January 23, 2024

CURRICULUM VITAE

Pavel Mnev

Contact information

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Research Interests

Topological quantum field theory, gauge theory, algebraic topology, supergeometry, homotopy algebra, moduli spaces

1. HIGHER EDUCATION

- 1998–2002: Bachelor in physics
  - St.Petersburg State University
  - Advisor: Prof. Yu. M. Pismak
  - Thesis: "Undeveloped turbulence"
- 2002–2005: Master in physics
  - St.Petersburg State University
  - Advisor: Acad. L. D. Faddeev
  - Thesis: "On one-loop functional determinants arising in the background field method in gauge theories"
- 2005–2008: Ph.D. in mathematical physics
  - St.Petersburg Department of Steklov Mathematical Institute, Russian Academy of Sciences
  - Advisor: Acad. L. D. Faddeev
  - Thesis: "Discrete BF-theory"
  - Defense date: 24.03.2008

2. EMPLOYMENT

- 07.2022 – present : Associate professor, Department of Mathematics, University of Notre Dame.
- 08.2016 – 06.2022 : Assistant professor, Department of Mathematics, University of Notre Dame.
- 09.2014 – 07.2016 : W2 professor (advanced researcher), Max Planck Institute for Mathematics, Bonn.
- 09.2013 – 01.2014 : Research fellow, Chebyshev Laboratory, Department of Mathematics and Mechanics, St. Petersburg State University.

- 02.2011 – 08.2014: Lecturer, Mathematical Institute, University of Zurich (leave of absence for family reasons, for the period 09.2013–01.2014).
- 04.2008 – 10.2008, 2009 – 2010, 01.2011: Postdoc, Mathematical Institute, University of Zurich (mentor: Prof. Alberto Cattaneo).
- 03.2008–   : Research fellow, St.Petersburg department of Steklov Mathematical Institute, Russian Academy of Sciences (courtesy appointment).
- 08.2007–11.2007: Academic Guest, Department of Mathematics, ETH Zurich (host: Prof. Giovanni Felder).

3. Scholarships and fellowships

- Forschungskredit grant, University of Zurich, 08.2011 – 07.2012.
- Grant by the Science Support Foundation, Moscow, 2007–2008.

4. Distinctions, honors, awards

- André Lichnerowicz prize in Poisson geometry, 2016.
- Award of the Russian Academy of Sciences, 2011.
- "Young Mathematician" prize of the St. Petersburg Mathematical Society, 2010.
- Second prize in the Moebius Contest, Independent University of Moscow, 2006.

5. Books and Monographs

- Pavel Mnev, "Quantum field theory: Batalin-Vilkovisky formalism and its applications," AMS University Lecture Series, Vol. 72 (2019).

6. Refereed Publications

Published.
(1) Pavel Mnev, *On the simplicial BF model*, J. Math. Sci. 141, 4 (2007) 1429–1431.
(2) Pavel Mnev, *Discrete path integral approach to the trace formula for regular graphs*, Commun. Math. Phys. 274 (2007) 233–241.
(3) Pavel Mnev, *On simplicial BF theory*, Russian Academy of Sciences, Doklady Mathematics 77.1 (2008) 59–63.
(4) Pavel Mnev, *Notes on simplicial BF theory*, Moscow Mathematical Journal 9.2 (2009) 371–410.
(5) Alberto S. Cattaneo, Pavel Mnev, *Remarks on Chern-Simons invariants*, Commun. Math. Phys. 293.3 (2010) 803–836.
(6) Francesco Bonechi, Pavel Mnev, Maxim Zabzine, *Finite dimensional AKSZ-BV theories*, Lett. Math. Phys. 94.2 (2010) 197–228.
(7) Anton Alekseev, Pavel Mnev, *One-dimensional Chern-Simons theory*, Commun. Math. Phys. 307.1 (2011) 185–227.
(8) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *Classical and quantum Lagrangian field theories with boundary*, PoS (CORFU2011) 044.
(9) Francesco Bonechi, Alberto S. Cattaneo, Pavel Mnev, *The Poisson sigma model on closed surfaces*, JHEP 99.1 (2012) 1–27.
(10) Anton Alekseev, Yves Barmaz, Pavel Mnev, *Chern-Simons theory with Wilson lines and boundary in the BV-BFV formalism*, J. Geom. and Phys. 67 (2013) 1–15.

(11) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *Classical BV theories on manifolds with boundary,* Comm. Math. Phys. 332.2 (2014) 535–603.

(12) Alberto S. Cattaneo, Pavel Mnev, *Wave relations,* Commun. Math. Phys. 332.3 (2014) 1083–1111.

(13) Pavel Mnev, *A construction of observables for AKSZ sigma models*, Lett. Math. Phys. 105.12 (2015) 1735–1783.

(14) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *Semiclassical quantization of classical field theories*, in "Mathematical Aspects of Quantum Field Theories" (eds. D. Calaque, T. Strobl), Springer series "Mathematical Physics Studies" XXIII (2015).

(15) Anton Alekseev, Olga Chekeres, Pavel Mnev, *Wilson surface observables from equivariant cohomology*, JHEP 93.11 (2015).

(16) Alberto S. Cattaneo, Pavel Mnev, Konstantin Wernli, *Split Chern-Simons theory in the BV-BFV formalism*, in "Quantization, Geometry and Noncommutative Structures in Mathematics and Physics," Springer, Cham (2017) 293–324.

(17) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *Perturbative quantum gauge theories on manifolds with boundary*, Commun. Math. Phys. 357.2 (2018) 631–730.

(18) Andrey S. Losev, Pavel Mnev, Donald R. Youmans, *Two-dimensional abelian BF theory in Lorenz gauge as a twisted N=(2,2) superconformal field theory,* J. Geom. Phys. 131C (2018) 122–137.

(19) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *Poisson sigma model and semiclassical quantization of integrable systems,* Rev. Math. Phys. 30.06 (2018) 1840004.

(20) Riccardo Iraso, Pavel Mnev, *Two-dimensional Yang-Mills theory on surfaces with corners in Batalin-Vilkovisky formalism,* Commun. Math. Phys. 370.2 (2019) 637–702.

(21) Andrey S. Losev, Pavel Mnev, Donald R. Youmans, *Two-dimensional non-abelian BF theory in Lorenz gauge as a solvable logarithmic TCFT,* Commun. Math. Phys. 376.2 (2020) 993–1052.

(22) Michele Schiavina, Pavel Mnev, Konstantin Wernli, *Towards holography in the BV-BFV setting,* Annales Henri Poincaré 21.3 (2020) 993–1044.

(23) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *A cellular topological field theory,* Commun. Math. Phys. 374.2 (2020) 1229–1320.

(24) Alberto S. Cattaneo, Pavel Mnev, Konstantin Wernli, *Theta invariants of lens spaces via the BV-BFV formalism,* in "Representation Theory, Mathematical Physics, and Integrable Systems," Progress in Mathematics, vol 340. Birkhäuser, Cham (2021) 71–110.

(25) Santosh Kandel, Pavel Mnev, Konstantin Wernli, *Two-dimensional perturbative scalar QFT and Atiyah-Segal gluing,* Advances in Theoretical and Mathematical Physics 25.7 (2021) 1847–1952.

(26) Olga Chekeres, Andrey S. Losev, Pavel Mnev, Donald R. Youmans, *Theory of holomorphic maps of two-dimensional complex manifolds to toric manifolds and type A multi-string theory,* JETP Letters (2022) 1–6.

(27) Olga Chekeres, Andrey S. Losev, Pavel Mnev, Donald R. Youmans, "Two field-theoretic viewpoints on the Fukaya-Morse A_∞ category," Lett. Math. Phys. 112.5 (2022) 1–28.

(28) Alberto S. Cattaneo, Pavel Mnev, Konstantin Wernli, *Constrained systems, generalized Hamilton-Jacobi actions, and quantization,* J. Geom. Mech. 14.2 (2022) 179–272.

(29) Alberto S. Cattaneo, Pavel Mnev, Konstantin Wernli, *Quantum Chern-Simons theories on cylinders: BV-BFV partition functions,* Commun. Math. Phys. 398.1 (2023) 133–218.

(30) Alberto S. Cattaneo, Pavel Mnev, *A note on gluing via fiber products in the (classical) BV-BFV formalism,* J. Geom. Phys. 192 (2023), 104956.

In-press.

- Alberto S. Cattaneo, Pavel Mnev, Michele Schiavina, *BV quantization,* arXiv:2307.07761 (math-ph), to appear in Encyclopedia of Mathematical Physics.

Submitted.

- Olga Chekeres, Santosh Kandel, Andrey Losev, Pavel Mnev, Konstantin Wernli, Donald R. Youmans, "On enumerative problems for maps and quasimaps: freckles and scars," arXiv:2308.06844 (math-ph), submitted to J. Geom. Phys.
- Ivan Contreras, Santosh Kandel, Pavel Mnev, Konstantin Wernli, "Combinatorial QFT on graphs: first quantization formalism," arXiv:2308.07801 (math-ph), submitted to Annales Henri Poicaré D.

7. Unrefereed Publications

- Pavel Mnev, *Quantenmechanik auf Graphen,* contribution to Max Planck Society Year Book 2016,
  www.mpg.de/10680624/21_mathematik_bonn_mnev.pdf. (In German, translation by Christian Kaiser.)

8. Other Publications

Preprints.

(1) Pavel Mnev, *Towards simplicial Chern-Simons theory, I,* unpublished draft (2005), available at

    http://www3.nd.edu/~pmnev/Towards_simplicial_CS.pdf

(2) Pavel Mnev, *Discrete BF theory,* arXiv:0809.1160 (hep-th). [English translation of my doctoral thesis.]

(3) Pavel Mnev, *Lecture notes on torsions,* arXiv:1406.3705 (math.AT).

(4) Alberto S. Cattaneo, Pavel Mnev, Nicolai Reshetikhin, *Perturbative BV theories with Segal-like gluing,* arXiv:1602.00741(math-ph)

9. Invited lectures and addresses

9.1. **Mini-courses.**

- 12–15.06.2023: mini-course (3 lectures) "An introduction to the BV-BFV program," program "Emergent Geometries from Strings and Quantum Fields," Galileo Galilei Institute, Florence, Italy.
- 18–21.03.2019: mini-course (3 lectures) "BF theory on cell complexes", workshop "Deformation quantization and index", University of Geneva, Switzerland.

- 12–16.10.2015: mini-course (3 lectures) "Quantum BV theories on manifolds with boundary", Higher Structures 2015, MPIM Bonn, Germany
- 1,8.12.2014: mini-course (2 lectures) "Introduction to quantum electrodynamics", MPIM Bonn, Germany
- 28–30.04.2014: mini-course (3 lectures) "Combinatorial and analytic torsions", Chebyshev Laboratory, St. Petersburg State University, Russia
- 07–09.10.2013: mini-course (3 lectures) "Around moduli spaces of flat connections", program "Geometry of strings and fields", Galileo Galilei Institute, Florence, Italy
- 28–31.05.2013: mini-course (3 lectures) "Around moduli spaces of flat connections", Chebyshev Laboratory, St. Petersburg State University, Russia
- 29.03, 12.04.2012: mini-course (two 2-hour lectures) "Classical and quantum Lagrangian field theories with boundary", Northwestern University, Chicago, USA (with A. Cattaneo)
- 29.01–03.02.2012: mini-course (3 lectures) "On semiclassical topological field theories"(with A. Cattaneo), winter school in mathematical physics, Les Houches, France.
- 19–20.11.2011: mini-course (2 lectures) "Topological field theory on a triangulation and homotopy transfer of algebraic structures", Steklov Institute, St. Petersburg, Russia
- Spring 2007: mini-course (4 lectures) "Simplicial BF-theory", City University, New York, USA

9.2. **Invited talks.**

- 20.09.2023: online talk "Why BF theory is not an Atiyahs TQFT, and how the BV-BFV approach helps," at the Topological Quantum Field Theory Club, Instituto Superior Técnico, Lisbon, Portugal.
- 03.07.2023: talk "Examples of bulk-boundary correspondences of field theories as BV pushforwards" at the conference "Dg-manifolds in Geometry and Physics," Institut Henri Poincaré, Paris, France.
- 22.06.2023: talk "On the Fukaya-Morse A-infinity category" at the program "Emergent Geometries from Strings and Quantum Fields," Galileo Galilei Institute, Florence, Italy.
- 06.06.2023: online talk "On the Fukaya-Morse A-infinity category," at the workshop "Homotopy and operator Algebras in quantum Field Theory," Berlin, Germany.
- 25.05.2023: online talk "On the Fukaya-Morse A-infinity category" at the conference "GAP XVIII: Homotopy algebras and Higher Structures," Institut Henri Poincaré, Paris, France.
- 07.09.2022: online colloquium talk "From Morse theory (via Fukaya-Morse A-infinity category) to Feynman diagrams," University of Pennsylvania.
- 27.04.2022: online talk "On the Fukaya-Morse A-infinity category," TQFT club seminar, University of Lisbon.
- 19.04.2022: online talk "Two field-theoretic viewpoints on the Fukaya-Morse A-infinity category," QM research seminar, Centre for Quantum Mathematics, University of Southern Denmark, Odense, Denmark.
- 26.03.2022: online talk "On the Fukaya-Morse A-infinity category," AMS sectional meeting, section "Integrability, Symmetry and Physics," Purdue.
- 23.02.2022: online talk "On the Fukaya-Morse A-infinity category," mathematical physics seminar, University of Connecticut.

- 03.02.2022: online talk "Two field-theoretic viewpoints on the Fukaya-Morse A-infinity category" at Global Poisson Webinar hosted by University of Geneva.
- 04.10.2021: online talk "Two-dimensional BF theory as a conformal field theory" at the conference "Pure spinors, superalgebras, and holomorphic twists," Heidelberg University, Germany.
- 03.09.2021: online talk "Effective BV action for Chern-Simons theory on cylinders" at ESI thematic program "Geometry for Higher Spin Gravity: Conformal Structures, PDEs, and Q-manifolds," Vienna, Austria.
- 10.08.2021: keynote talk (online) "Batalin-Vilkovisky effective actions and cutting-gluing" at 2021 Geometry and Quantization conference, University of Freiburg, Germany.
- 29.01.2021: online talk "Chern-Simons theory on cylinders and generalized Hamilton-Jacobi actions," mathematical physics seminar, University of York.
- 04.12.2020: online talk "Chern-Simons theory on cylinders and generalized Hamilton-Jacobi actions," Topology, Algebraic Geometry, and Dynamics Seminar at George Mason University. http://math.gmu.edu/tad-seminar.php
- 25.11.2020: online talk "Chern-Simons theory on cylinders and generalized Hamilton-Jacobi actions," Arithmetic Geometry and Quantum Field Theory Seminar (organizers: Jeff Harvey, Minhyong Kim). https://homepages.warwick.ac.uk/~u1972347/past-AGQFT.html
- 17.11.2020: online talk " Two-dimensional BF theory as a conformal field theory," Representation Theory and Mathematical Physics Seminar, Kansas State University. https://www.math.ksu.edu/research/mathphysrep_arxivF20.html
- 09.10.2020: online talk "Two-dimensional perturbative scalar field theory with polynomial potential and cutting-gluing," QMAP seminar, UC Davis.
- 12.06.2020: online talk "Two-dimensional perturbative scalar field theory with polynomial potential and cutting-gluing," Zoom Seminar: Differential Geometry and Mathematical Physics. https://sites.google.com/view/zoomseminardiffgeoandmathphysi/home
- 23.04.2020: "Two-dimensional perturbative scalar field theory with polynomial potential and cutting-gluing," colloquium talk (over Zoom) at the Chebyshev Laboratory, St. Petersburg.
- 09.01.2020: talk "Two-dimensional perturbative scalar field theory with polynomial potential and cutting-gluing," math physics seminar, ETH Zurich, Switzerland.
- 06.01.2020: talk "Two-dimensional perturbative scalar field theory with a polynomial potential and gluing," QFT seminar, Steklov Institute, St. Petersburg, Russia.
- 12.11.2019: talk "Discretization of the algebra of differential forms and fiber Batalin-Vilkovisky integrals," GAP seminar, PennState.
- 08.11.2019: colloquium talk "Batalin-Vilkovisky formalism: an example," math colloquium, University of Toledo, Ohio.
- 08.08.2019: talk "Towards holography in the BV-BFV formalism," QFT seminar, Steklov Institute, St. Petersburg, Russia.
- 04.07.2019: talk "Two-dimensional BF theory as a conformal field theory," math physics seminar, ETH Zurich, Switzerland.
- 03.07.2019: talk "Two-dimensional Yang-Mills theory on surfaces with corners in Batalin-Vilkovisky formalism," University of Zurich, Switzerland.

- 27.05.2019: talk "Two-dimensional BF theory as a conformal field theory," at Faddeev 85 memorial conference "The art of quantization," Steklov Institute, St. Petersburg, Russia.
- 21.05.2019: talk "Two-dimensional BF theory as a conformal field theory," at the workshop "String field theory, BV quantization and moduli spaces," Simons Center for Geometry and Physics, Stony Brook NY.
- 26.04.2019: talk "Two-dimensional BF theory as a conformal field theory," Boston University.
- 10.01.2019: talk "Two-dimensional Yang-Mills theory on surfaces with corners in Batalin-Vilkovisky formalism," QFT seminar, Steklov Institute, St. Petersburg, Russia.
- 19.12.2018: talk "Two-dimensional Yang-Mills theory on surfaces with corners in Batalin-Vilkovisky formalism," representation theory seminar, University of Massachusetts, Amherst.
- 25.05.2018: talk "2D Yang-Mills on surfaces with corners in BV formalism" at the QMAP seminar, UC Davis.
- 15.03.2018: talk "Two-dimensional abelian BF theory in Lorenz gauge as a twisted (2,2)-superconformal field theory," QFT seminar, Steklov Institute, St. Petersburg, Russia.
- 14.12.2017: talk "Abelian 2-dimensional BF theory as a twisted N=(2,2) superconformal field theory," mathematical physics seminar, ETH Zurich.
- 05.12.2017: talk "Two-dimensional abelian BF theory in Lorenz gauge as a B-twisted (2,2)-superconformal field theory," mathematical physics seminar, Northwestern University.
- 09.11.2017: talk "Abelian and non-abelian BF theory on cobordisms endowed with cellular decomposition," mathematical physics seminar, University of Illinois at Urbana-Champaign.
- 08.09.2017: talk "Cellular BV-BFV-BF theory" at the meeting "100e rencontre entre mathématiciens et physiciens théoriciens: Géométrie, dynamique et physique," Institut de Recherche Mathématique Avancée, Strasbourg, France.
- 06.06.2017: talk "Cellular BV-BFV-BF theory" at the conference "Field theories and higher structures in mathematics and physics," Banff International Research Station, Oaxaca, Mexico.
- 19.04.2017: video conference talk "Torsion as an integral" at the seminar on mirror symmetry, Poncelet Laboratory, Moscow.
- 01.04.2017: talk "Abelian and non-abelian BF theory on cobordisms endowed with cellular decomposition," AMS sectional meeting in Bloomington, IN, USA, at the section on representation theory and integrable models.
- 10.02.2017: talk "Abelian and non-abelian BF theory on cobordisms endowed with cellular decomposition," mathematical physics seminar, Columbia University, New York, USA.
- 21.12.2016: talk "Abelian and non-abelian BF theory on cobordisms endowed with cellular decomposition," mini-workshop "New interactions between homotopical algebra and quantum field theory," Oberwolfach, Germany.

- 16.12.2016: "Towards derived Wilson's RG flow along the poset of CW complexes: case of cellular non-abelian BF theory," mathematical physics seminar, University of Zurich, Switzerland.
- 02.11.2016: "Abelian and non-abelian BF theory on cobordisms endowed with cellular decomposition," mathematical physics seminar, Purdue University.
- 28.10.2016: talk "Perturbative BV theories with Segal-like gluing" at the AMS sectional meeting on Topology and Physics, Minneapolis, USA
- 08.07.2016: talk "BF theory on cobordisms endowed with cellular decomposition", conference "Interfaces between geometric analysis and mathematical physics", Mittag-Leffler Institute, Stockholm, Sweden
- 04.07.2016: "BF theory on cobordisms endowed with cellular decomposition", opening talk at the Poisson 2016 conference, ETH Zürich, Switzerland
- 09.06.2016: talk "BF theory on cobordisms endowed with cellular decomposition", GQT (Geometry and quantum theory cluster) colloquium, Utrecht, Netherlands
- 17.05.2016: talk "A field theory on cobordisms endowed with cellular decomposition", seminar "Algebra, Geometry and Quantization", University of Luxembourg
- 29.02.2016: Antrittsvorlesung (inauguration talk associated with the habilitation at the University of Zurich) "BV pushforwards and exact discretizations in topological field theory", University of Zurich
- 07.02.2016: talk "Perturbative BV theories with Segal-like gluing", workshop "Quantum Spacetime 2016', Zakopane, Poland
- 11.01.2016: talk "Cellular BV-BFV-BF theory", workshop "Homotopy methods in quantum field theory", IBS CGP, Pohang, Korea
- 31.12.2015: talk "Wilson surfaces", QFT seminar, Steklov Institute, St. Petersburg, Russia
- 15.11.2015: talk "Cellular BV-BFV-BF theory", QGM retreat, Sandbjerg manor, Sønderborg, Denmark
- 29.10.2015: talk "Quantum BV theories on manifolds with boundary", Northwestern University, Chicago, USA
- 04.09.2015: talk "Cellular BV-BFV-BF theory", Joint Meetings on Noncommutative Geometry and Higher Structures, Università Sapienza di Roma, Italy
- 13.08.2015: talk "BV-BFV formalism", workshop on mathematics of quantum field theory and strings, University of Science and Technology of China, Hefei, China
- 27.07.2015: talk "Perturbative topological field theory with Segal-like gluing" at the International Congress of Mathematical Physics, Santiago, Chile
- 06.11.2014: habilitation lecture "Combinatorial quantum mechanics on a graph", University of Zurich, Switzerland
- 31.10.2014: talk "Cellular BF theory in BV-BFV formalism with Segal-like gluing", Higher Structures 2014, Geneva, Switzerland
- 21.10.2014: talk "Around cellular BV theories with Atiyah-Segal gluing", seminar on algebra, geometry and physics, MPIM Bonn
- 17.10.2014: talk "A perturbative cellular TQFT with Segal-like gluing", Séminaire de Physique Mathématique, Lyon, France
- 14.10.2014: talk "Hidden algebraic structure on cohomology of simplicial complexes, and TFT", University of Uppsala, Sweden
- 06.10.2014: mini-talk "EL moduli spaces", Topology seminar, MPIM Bonn

- 03.10.2014: talk "An example of a cellular topological quantum field theory in BV-BFV formalism, with Segal-like gluing", at the workshop "Homological methods in quantum field theory", Simons Center, Stony Brook, USA
- 17.07.2014: talk "Cellular abelian BF theory with Segal-like gluing", QFT seminar, Steklov Institute, St. Petersburg, Russia
- 10.04.2014: talk "Classical free boson on Lorentzian surfaces with boundary", mathematical physics seminar, ETH, Zurich, Switzerland
- 30.03.2014: talk "Fiber BV integrals and the Reidemeister torsion", conference "Mathematical physics: past, present and future", Euler Institute, St. Petersburg, Russia
- 23.01.2014: talk "Classical free boson on Lorentzian surfaces with boundary", QFT seminar, Steklov Institute, St. Petersburg, Russia
- 16.12.2013: talk "Topological quantum field theory: definition and examples", topology seminar, Steklov Institute, St. Petersburg, Russia
- 13.11.2013: talk "Unimodular L_∞ algebra of a simplicial complex, and topological field theory", Max Planck Institute for Mathematics, Bonn, Germany
- 01.11.2013: talk "Chern-Simons theory on 3-manifolds with boundary", low-dimensional topology seminar, Steklov Institute, St.Petersburg, Russia
- 12.03.2013: talk "Towards perturbative topological field theory on manifolds with boundary", Centre for Quantum Geometry of Moduli Spaces, Aarhus University, Denmark
- 26.02.2013: talk "Towards perturbative topological field theory on manifolds with boundary", University of Hong Kong
- 04.02.2013: talk "Hidden algebraic structure on cohomology of simplicial complexes, and TFT", Trinity College Dublin, Ireland
- 07.12.2012: talk "Topological field theory on manifolds with boundary", Hausdorff Center for Mathematics, Bonn, Germany
- 13.09.2012: talk "On BV-BFV formalism for topological field theories on manifolds with boundary", workshop "From Poisson to String Geometry", Erlangen, Germany
- 19.07.2012: talk "A construction of observables in topological field theories", QFT seminar, Steklov Institute, St. Petersburg, Russia
- 12.06.2012: talk "Topological quantum field theory on triangulated manifolds coming from BV integrals", UC Davis, USA
- 09.12.2011: talk "BV-BFV formalism for classical gauge theories on manifolds with boundary", Séminaire de Physique Mathématique, Lyon, France
- 29.11.2011: talk "One-dimensional Chern-Simons theory and its deformations", conference "Higher structures 2011", Göttingen, Germany
- 14.11.2011: talk "On BV-BFV formalism for topological field theories on manifolds with boundary", conference "Geometry of strings and fields", Nordita, Stockholm, Sweden
- 18.10.2011: talk "What is a discrete differential form?", Zurich Graduate Colloquium, Zurich, Switzerland
- 29.08.2011: talk "Classical gauge theories on manifolds with boundary", QFT seminar, Steklov Institute, St. Petersburg, Russia
- 07.07.2011: talk "One-dimensional simplicial Chern-Simons theory", summer school "Topology, geometry and quantum field theory", Villa de Leyva, Columbia

- 02.02.2011: talk "One-dimensional Chern-Simons theory", winter school in mathematical physics, Les Diablerets, Switzerland
- 18.01.2011: talk "Discrete topological quantum field theory", St. Petersburg Mathematical Society meeting
- 10.2010: talk "Towards discrete topological quantum field theory", "Symposium about pure mathematics", University of Zurich, Switzerland
- 04.2010: talk "One-dimensional simplicial Chern-Simons theory", workshop "Gauge theories, supersymmetry and mathematical physics", Lyon, France
- 01.2010: talk "One-dimensional simplicial Chern-Simons theory", conference "Representation theory and quantization", ETH Zurich, Switzerland
- 08.2009: talk "Toy Chern-Simons theory from dg Frobenius algebras", workshop "Theorie de Chern-Simons classique et quantique", Lyon, France
- 06.2009: talk "Toy Chern-Simons theory from dg Frobenius algebras", conference "Groupes de Lie et espaces des modules", Geneva, Switzerland
- 03.2009: talk "Discrete BF theory", conference and workshop "Mathematical Physics: from XX to XXI century" (in honor of the 75th birthday of Ludwig Faddeev), EPFL Lausanne/University of Geneva, Switzerland
- 11.2008: talk "BF theory on discretized space-time", workshop "Geometrical aspects of string theory", Nordita, Stockholm, Sweden
- 08.2007: talk "Simplicial BF theory", conference on Poisson geometry, ESI, Vienna, Austria
- 07.2007: talk "Simplicial BF theory", Séminaire de Physique Mathématique, Lyon, France
- 03.2007: talk "Simplicial BF theory", Northwestern University, Evanston, USA
- 03.2007: talk "Gauge-fixing constructions: Faddeev-Popov to BRST to BV", SUNY Stonybrook, New York, USA
- 01.2007: talk "Simplicial BF theory", mathematical physics seminar, University of Zurich, Switzerland

9.3. **Invited talks at Notre Dame.**

- 08.05.2022: "From Morse theory to Feynman diagrams," RTG undergraduate workshop.
- 17.02.2022: "On the Fukaya-Morse A-infinity category," math graduate student seminar.
- 19.04.2021: online talk: "Topological quantum mechanics, Stasheff's associahedra and homotopy transfer," math graduate student seminar.
- 06.08.2020: online talk for new math grad students "TQFT: Atiyah's axioms and an example."
- 23.09.2019: talk "Discretization of the de Rham algebra of the interval and effective Batalin-Vilkovisky actions," math graduate student seminar.
- 02.08.2018: talk "Moduli spaces of flat connections" at Geometry&Topology RTG workshop.
- 26.03.2018: talk "From the algebra of discrete differential forms on an interval to topological field theory," math graduate student seminar.
- 24.03.2018: "Counting coverings on a surface (Dijkgraaf-Witten model – a simple case)," expository 20-minute talk for prospective PhD students.

- 04.05.2017: talk "Around AKSZ sigma models" at the "Gone Fishing" Poisson geometry conference.
- 04.11.2016: "Quantum mechanics on graphs," a talk for undergraduate students within the Math Research at Notre Dame series.
- 28.10.2015: talk "Quantum BV theories on manifolds with boundary", colloquium talk.
- Mini-series of 3 talks 22–25.04.2014
  - "Towards perturbative topological field theory on manifolds with boundary" (colloquium),
  - "Fiber Batalin-Vilkovisky integrals and discrete BF theory" (seminar talk),
  - "The BV formalism on manifolds with boundary" (seminar talk).

10. Grants and sponsored programs

- NSF conference grant DMS 1711110 for the Poisson geometry conference "Gone Fishing 2017," co-PI.
- SNF travel funds grant 200021_137595, 11.2011 – 10.2014, PI.

11. Master's Theses Directed

- ETH master thesis (physics), Simone del Vecchio, "Path sum formulae for propagators on graphs, gluing and continuum limit," degree awarded in November 2012.

12. Doctoral Theses Directed

- (Completed) Riccardo Iraso was awarded doctorate degree cum laude at SISSA, Trieste, on 19.09.2018. Thesis title: "Two-dimensional gauge theories in BV formalism and gluing-cutting." Placement after graduation: postdoc at Max Planck Institute for Mathematics, Bonn, Germany.
- (Completed) Donald Youmans, co-advised with Anton Alekseev, was awarded doctorate degree at the University of Geneva on 14.05.2020. Thesis title: "Topological conformal field theories from gauge-fixed topological gauge theories: a case study." Placement after graduation: postdoc at the University of Bern (mentor: Matthias Blau).
- (Ongoing) Justin Beck at Notre Dame, started in summer 2020. Research direction: combinatorial topological conformal field theory built out of a local cyclic L_∞ algebra.

13. Professional Memberships

- Member of St. Petersburg Mathematical Society.

14. Other Notable Contributions

- Habilitation (docentship). Awarded on 06.11.2014 at the University of Zurich. Habilitation thesis "Batalin-Vilkovisky formalism in topological field theory", test lecture "Combinatorial quantum mechanics on graphs".
- Supervising interns at Max Planck Institute for Mathematics, Bonn.
  - Lucas Mann, project: "Ergodic distribution of coefficients in a continued fraction and Arnold's sails," September 2014.

- – Fabian Burghart, Jan Steinebrunner, project: "Magnus expansion via homological perturbation theory," September 2015.
- Advising first year graduate students at Notre Dame:
  - – Patrick Heslin (2016–17), co-advised with Mark Behrens.
  - – David Meretzky (2019–20).
  - – Justin Beck (2020–), continues to work with me towards a Ph.D.
  - – Cory Gillette (2021–22).
  - – Katherine Novey (2021–22), co-advised with Stephan Stolz.
  - – Leon Menger (2023–), ongoing.
- Mentoring postdocs at Notre Dame.
  - – Philippe Mathieu (2018–2021).
  - – Konstantin Wernli (2019–2021).
- Conference organization.
  - – Co-organizer of the "Gone Fishing" Poisson geometry conference, May 4-7, 2017, University of Notre Dame, IN, USA.
  - – Co-organizer of the conference "Quantum field theory on manifolds with boundary and the BV formalism" held on May 8-12, 2017, Perimeter Institute, Waterloo, ON, Canada.
  - – Co-organizer of the conference "A Gauge Sumer with BV" in Scalea, Italy, September 6-10, 2021. Also, of its online counterpart "A Gauge Summer with BV: Online," June 24 and 26, 2020. Link: `https://sites.google.com/view/gaugesummerwithbv/home`
  - – Co-organizer of the "Online workshop on topology and QFT," June 20–24, 2022. Link: `https://sites.nd.edu/stephan-stolz/?page_id=50`.
  - – Co-organizer of the 3-week program "Field Theory and Topology" at the Center for Mathematics at Notre Dame, June 3–21, 2024.
- Service on committees.
  - – Scientific committee (Wissenschaftlicher Ausschuss) at Max Planck Institute for Mathematics, 2014–2016.
  - – Scientific advisory committee for the "Poisson 2018" conference.
  - – AoV search committee at Notre Dame, 2016–2020.
  - – Undergraduate committee at Notre Dame, 2017–2020.
  - – Graduate admissions committee at Notre Dame, 2017–2018, 2019–2024.
  - – Hiring committee at Notre Dame, 2020–2021, 2023–2024.
  - – Strategic opportunities committee at Notre Dame, 2022–2023.
- Service on doctoral dissertation committees (excluding my own Ph.D. students).
  - – 17.12.2018   Konstantin Wernli (University of Zurich, Ph.D. student of A. S. Cattaneo).
  - – 26.06.2019   Danny Orton (Notre Dame, Ph.D. student of M. Gekhtman).
  - – 18.11.2019   Jeremy Mann (Notre Dame, Ph.D. student of S. Stolz).
  - – 25.03.2020   Laura Murray (Notre Dame, Ph.D. student of S. Stolz).
  - – 06.07.2020   Nima Moshayedi (University of Zurich, Ph.D. student of A. S. Cattaneo).
  - – 10.07.2020   Lyda Urresta (Notre Dame, Ph.D. student of K. Barron).
  - – 01.03.2021   Giovanni Canepa (University of Zurich, Ph.D. student of A. S. Cattaneo).

- – 01.07.2021   Tim Campion (Notre Dame, Ph.D. student of C. Schommer-Pries).
- – 25.03.2022   Luan Doan (Notre Dame, Ph.D. student of B. Hall).
- – 10.09.2022   Misha Tyomkin (Department of Mathematics, Higher School of Economics, Moscow, Ph.D. student of P. Pushkar).
- Service as a referee: regularly asked to referee papers for Commun. Math. Phys., Lett. Math. Phys., Annales Henri Poincaré, J. Geom. Phys., J. Math. Phys., ATMP, Rev. Math. Phys. and other journals in mathematics and mathematical physics.