Curriculum Vitae of
Dmitri A. Ivanov

Address: Institute for Theoretical Physics
ETH Zürich
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Switzerland

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Research fields:

Mesoscopic physics, strongly correlated systems, mathematical physics

Education:

Massachusetts Institute of Technology, USA,
Ph.D. in Physics, September 1999
thesis title: "On the SU(2) theory of the t–J model",
supervisor Prof. Patrick Lee

Moscow Institute of Physics and Technology, Russia,
M.S. in applied Physics and Mathematics, June 1995
thesis title: "Statistics of the quantum fluctuations of the current in microcontacts in an alternating external field",
supervisor Prof. Leonid Levitov

Moscow State School No.57, Russia, June 1989

Research and teaching employment:

Sophia Genetics SA, Lausanne, Switzerland
Senior mathematician: 2014 – present time

ETH Zürich and University of Zürich, Switzerland
Researcher: 2012 – 2016

EPFL, Switzerland
Assistant Professor: 2004 – 2011

Paul Scherrer Institute, Switzerland
Postdoctoral Assistant: 2002 – 2003

ETH Zürich, Switzerland
Postdoctoral Assistant: 1999 – 2002

Massachusetts Institute of Technology, USA
Research Assistant: 1995 – 1999
Teaching Assistant: 1996 – 1997

Landau Institute for Theoretical Physics, Russia
Research Assistant: 1993 – 1998

Moscow State School No.57, Russia
Teaching Assistant: 1990 – 1995

Academic web page

`http://one.bahnhofquai.com/ivanovd/www/academic`

Publications

Total: **69** papers (including 63 publications in peer-reviewed journals and 2 book chapters). A full list is included at the end of the CV. Number of citations: **over 2000** (H-index: **22**).
Three most cited publications:

- **(922 cit.)** D. A. Ivanov, Non-abelian statistics of half-quantum vortices in p-wave superconductors, Phys. Rev. Lett. **86**, 268 (2001).
  — The nonabelian statistics of Majorana fermions is demonstrated. This work influenced recent developments in the theory of the $\nu = 5/2$ fractional quantum Hall state, topological insulators and quantum computing.
- **(154 cit.)** L. B. Ioffe, M. V. Feigel'man, A. Ioselevich, D. A. Ivanov, M. Troyer, and G. Blatter, Topologically protected quantum bits using Josephson junction arrays, Nature **415**, 503 (2002).
  — One of the first proposals of topologically protected qubits.
- **(113 cit.)** D. A. Ivanov, Patrick A. Lee, and X.-G. Wen, Staggered-vorticity correlations in a lightly doped t-J model: a variational approach, Phys. Rev. Lett. **84**, 3958 (2000).
  — We have shown an importance of staggered-flux fluctuations for low-temperature properties of underdoped high-T_c cuprate superconductors. This work may help in identifying the mechanism of high-temperature superconductivity.

Presentations at conferences, workshops, seminars

Since 2000, 40 presentations at international conferences, schools, and workshops.

External funding

- 2004 - 2007: SNF grant "Resonating-valence-bond physics in high-temperature superconductors and in frustrated magnets"
- 2005 - 2007: SNF grant "Proximity effects in superconducting - normal metal structures with inhomogeneous magnetism"
- 2007 - 2008: SNF grant "Resonating-valence-bond physics and Gutzwiller-projected description of high-temperature superconductors"
- 2007 - 2009: SNF grant "Proximity effects and mesoscopic fluctuations in superconducting and proximity structures with inhomogeneous magnetism"
- 2010 - 2013: co-applicant in the SNF grant "Quantum magnetism – dimer physics and dipolar criticality" (principal applicant Prof. Henrik Rønnow, EPFL)
- 2013 - 2016: co-applicant in the SNF grant "Quantum magnetism – spinons, skyrmions and dipoles" (principal applicant Prof. Henrik Rønnow, EPFL)
- 2016 - 2019: co-applicant in the SNF grant "Quantum magnetism – checkerboards, skyrmions and dipoles" (principal applicant Prof. Henrik Rønnow, EPFL)

Teaching and supervision activities

Courses given at the University of Zürich:

- Condensed matter theory (2013 – 2015, Master level), in English

Courses given at EPFL:

19 semester courses at Bachelor and Master levels:

- Quantum Physics III (2004 – 2010), in English
- Quantum Physics IV (2004 – 2005), in English
- Statistical Physics I (2006 – 2010), in French
- Statistical Physics II (2006 – 2011), in French

Supervising individual research projects of 4th-year students (14 students over 7 years)

Master students:

- Benoit Crouzy: 2004-05
  Diploma title: *How spin-flip scattering influences the minigap in a S-N junction*.
- Sebastien Perseguers: 2005-06
  Diploma title: *Quantum dimer model: from triangular to square lattice and vice versa*.
- Hugo Ribeiro: 2006-07
  Diploma title: *Resonating-valence-bond dimer liquids with mobile holes*.
- Florian Miserez: 2007-08
  Diploma title: *Quantum dimer model: dynamical correlations and supersymmetric dimer-fermion model*.
- Pavel Sekatski: 2007-08
  Diploma title: *Non-unitary parameterizations in non-linear sigma models*.
- Dania Kambly: 2008-09
  Diploma title: *Full counting statistics in multi-channel fermionic systems*.
- Samuel Aldana: 2009-10
  Diploma title: *Minigap in an SN heterostructure at low impurity concentration*.
- Grégory Strübi: 2009-10
  Diploma title: *Quantum dimer models: a variational study of visons close to the critical point*.

Out of 8 students, 7 continued to Ph.D. studies, 4 diploma theses resulted in publications.

Ph.D. students:

- Samuel Bieri: 2004 – 2008
  Thesis title: *Resonating-valence-bond approach to high-temperature superconductivity*
- Benoit Crouzy: 2005 – 2009
  Thesis title: *Effects of magnetism in superconducting hybrid structures*

- Bastien Dalla Piazza: 2010 – 2014 (co-director; principal thesis director: Prof. Henrik Rønnow) Thesis title: *Theories of experimentally observed excitation spectra of square lattice antiferromagnets*

Postdocs:

- George Jackeli: 2004 – 2007
- Sylvain Tollis: 2006 – 2008
- Darius Sadri: 2009 – 2011

Other teaching experience:

- ETH Zürich, 1999 – 2002 and 2012: assisting in supervising diploma work and individual research projects of fourth-year students
- MIT, 1996 – 1997: teaching assistant for graduate-level courses in condensed-matter physics
- Moscow State School No. 57, 1990 – 1995: assisting in teaching mathematics to high-school students

Other professional and administrative activities

- Refereeing for journals: Physical Review B, Physical Review A, Physical Review Letters, European Physics Journal B, Europhysics Letters, JETP Letters, Nature Communications.
- Refereeing project proposals for NSF (USA), SNF (Switzerland), CNRS (France).
- 2004 – 2011: Organization of theoretical seminars at ITP EPFL (Condensed Matter and Statistical Physics Seminar).
- 2004 – 2011: Participating in the organization of "Suisse Romande meetings on strongly-correlated systems" (once or twice a year, hosted alternatively at EPFL, University of Fribourg, and University of Geneva).
- 2007 – 2010: Member of the Doctoral Program Committee in Physics at EPFL.

Past and ongoing collaborations

- Landau Institute for Theoretical Physics, Moscow, Russia (Dr. M. A. Skvortsov, Dr. Ya. V. Fominov, and Prof. M. V. Feigelman), MPI Stuttgart (Dr. P. Ostrovsky): mesoscopic physics.
- MIT (group of Prof. P. A. Lee): theory of high-temperature superconductivity.
- Stony Brook University (Prof. A. Abanov): full counting statistics in quantum systems.
- EPFL (group of Prof. F. Mila), SISSA, Trieste (group of Dr. F. Becca), Landau Institute, Moscow (Dr. S. Korshunov): quantum dimer models.
- EPFL (group of Prof. H. Rønnow): quantum magnetism.

Publication list (as of May 2019)

69. D. A. Ivanov and L. Gurvits, Complexity of full counting statistics of free quantum particles in entangled states, e-print arXiv:1904.06069.
68. J.-S. You, R. Schmidt, D. A. Ivanov, M. Knap, and E. Demler, Atomtronics with a spin: statistics of spin transport and non-equilibrium orthogonality catastrophe in cold quantum gases, e-print arXiv:1808.02062.
67. M. V. Feigel'man, D. A. Ivanov, and E. Cuevas, Dielectric response of Anderson and pseudo-gapped insulators, New J. Phys. **20**, 053045 (2018) [e-print arXiv:1711.05972].
66. R. Schmidt, M. Knap, D. A. Ivanov, J.-S. You, M. Cetina, and E. Demler, Universal many-body response of heavy impurities coupled to a Fermi sea, Rep. Prog. Phys. **81**, 024401 (2018) [e-print arXiv:1702.08587].
65. D. A. Ivanov and M. V. Feigel'man, Low-energy dynamical response of an Anderson insulator with local attraction, Phys. Rev. B **95**, 045147 (2017) [e-print arXiv:1609.05304].
64. D. A. Ivanov, Computational complexity of exterior products and multiparticle amplitudes of noninteracting fermions in entangled states, Phys. Rev. A **96**, 012322 (2017) [e-print arXiv:1603.02724].
63. D. A. Ivanov and I. P. Levkivskyi, Fermionic full counting statistics with smooth boundaries: from discrete particles to bosonization, Europhys. Lett. **113**, 17009 (2016) [e-print arXiv:1507.07896].
62. B. Dalla Piazza, M. Mourigal, N. B. Christensen, G. J. Nilsen, P. Tregenna-Piggott, T. G. Perring, M. Enderle, D. F. McMorrow, D. A. Ivanov, and H. M. Rønnow, Fractional excitations in the square-lattice quantum antiferromagnet, Nature Physics **11**, 62 (2015) [e-print arXiv:1501.01767].
61. D. A. Ivanov and A. G. Abanov, Fisher–Hartwig expansion for the transverse correlation function in the XX spin-1/2 chain, J. Phys. A: Math. Theor. **47**, 015001 (2014) [e-print arXiv:1309.4867].
60. D. A. Ivanov, P. M. Ostrovsky, and M. A. Skvortsov, Anderson localization of a Majorana fermion, Europhys. Lett. **106**, 37006 (2014) [e-print arXiv:1307.0372].
59. D. A. Ivanov and A. G. Abanov, Fisher–Hartwig expansion for Toeplitz determinants and the spectrum of a single-particle reduced density matrix for one-dimensional free fermions, J. Phys. A: Math. Theor. **46**, 375005 (2013) [e-print arXiv:1306.5017].
58. M. A. Skvortsov, P. M. Ostrovsky, D. A. Ivanov, and Ya. V. Fominov, Superconducting proximity effect in quantum wires without time-reversal symmetry, Phys. Rev. B **87**, 104502 (2013) [e-print arXiv:1211.0202].
57. R. Süsstrunk and D. A. Ivanov, Free fermions on a line: asymptotics of the entanglement entropy and entanglement spectrum from full counting statistics, Europhys. Lett. **100**, 60009 (2012) [e-print arXiv:1208.5845].
56. D. A. Ivanov and A. G. Abanov, Characterizing correlations with full counting statistics: classical Ising and quantum XY spin chains, Phys. Rev. E **87**, 022114 (2013) [e-print arXiv:1203.6325].
55. D. A. Ivanov, A. G. Abanov, and V. V. Cheianov, Counting free fermions on a line: a Fisher-Hartwig asymptotic expansion for the Toeplitz determinant in the double-scaling limit, J. Phys. A: Math. Theor. **46**, 085003 (2013) [e-print arXiv:1112.2530].
54. D. A. Ivanov, M. A. Skvortsov, P. M. Ostrovsky, and Ya. V. Fominov, Hybridization of wave functions in one-dimensional localization, Phys. Rev. B **85**, 035109 (2012) [e-print arXiv:1111.0339].

53. A. G. Abanov, D. A. Ivanov, and Y. Qian, Quantum fluctuations of one-dimensional free fermions and Fisher–Hartwig formula for Toeplitz determinants, J. Phys. A: Math. Theor. **44**, 485001 (2011) [e-print arXiv:1108.1355].

52. D. A. Ivanov and S. E. Korshunov, Continuous interpolation between the fully frustrated Ising and quantum dimer models, Phys. Rev. B **83**, 235129 (2011) [e-print arXiv:1102.1912].

51. G. Strübi and D. A. Ivanov, Vison excitations in near-critical quantum dimer models, Europhys. Lett. **94**, 57003 (2011) [e-print arXiv:1009.1040].

50. D. A. Ivanov and A. G. Abanov, Phase transitions in full counting statistics for periodic pumping, Europhys. Lett. **92**, 37008 (2010) [e-print arXiv:1007.2687].

49. D. Kambly and D. A. Ivanov, On the statistics of quantum transfer of non-interacting fermions in multi-terminal junctions, Phys. Rev. B **80**, 193306 (2009) [e-print arXiv: 0907.2565].

48. B. Crouzy and D. A. Ivanov, Magnetic interference patterns in long disordered Josephson junctions, Phys. Rev. B **87**, 024514 (2013) [e-print arXiv:0907.0632].

47. D. A. Ivanov, Ya. V. Fominov, M. A. Skvortsov and P. M. Ostrovsky, Effective spin-flip scattering in diffusive superconducting proximity systems with magnetic disorder, Phys. Rev. B **80**, 134501 (2009) [e-print arXiv:0907.0113].

46. A. G. Abanov and D. A. Ivanov, Factorization of quantum charge transport for non-interacting fermions, Phys. Rev. B **79**, 205315 (2009) [e-print arXiv:0902.4151].

45. D. A. Ivanov, P. M. Ostrovsky, and M. A. Skvortsov, Correlations of the local density of states in quasi-one-dimensional wires, Phys. Rev. B **79**, 205108 (2009) [e-print arXiv:0901.1914].

44. D. A. Ivanov, Resonating-valence-bond physics and topological order in two dimensions: from dimer models to high-temperature superconductivity, in Advances in Theoretical Physics: Landau Memorial Conference, Chernogolovka, Russia, 22 – 26 June 2008, AIP Conf. Proc. **1134**, 94 (2009).

43. S. Bieri and D. Ivanov, SU(2) approach to the pseudogap phase of high-temperature superconductors: electronic spectral functions, Phys. Rev. B **79**, 174518 (2009) [e-print arXiv: 0809.5230].

42. D. A. Ivanov and M. A. Skvortsov, Dyson–Maleev representation of nonlinear sigma-models, J. Phys. A **41**, 215003 (2008) [e-print arXiv:0801.2180].

41. A. G. Abanov and D. A. Ivanov, Allowed charge transfers between coherent conductors driven by a time-dependent scatterer, Phys. Rev. Lett. **100**, 086602 (2008) [e-print arXiv:0709.2898].

40. H. Ribeiro, S. Bieri, and D. Ivanov, Single hole and vortex excitations in the doped Rokhsar–Kivelson quantum dimer model on the triangular lattice, Phys. Rev. B **76**, 172301 (2007) [e-print arXiv:0708.0508].

39. A. Ralko, M. Ferrero, F. Becca, D. Ivanov, and F. Mila, Crystallization of the resonating-valence-bond liquid as vortex condensation, Phys. Rev. B **76**, 140404(R) (2007) [e-print arXiv:0707.1986].

38. B. Crouzy, S. Tollis, and D. A. Ivanov, Josephson current in a superconductor – ferromagnet – superconductor junction with in-plane ferromagnetic domains, Phys. Rev. B **76**, 134502 (2007) [e-print arXiv:0706.1638].

37. G. Jackeli and D. A. Ivanov, Dimer phases in quantum antiferromagnets with orbital degeneracy, Phys. Rev. B **76**, 132407 (2007) [e-print arXiv:0705.2990].

36. S. Bieri and D. Ivanov, Quasiparticle spectral weights of Gutzwiller-projected high-T_c superconductors, Phys. Rev. B **75**, 035104 (2007) [e-print cond-mat/0608047].

35. B. Crouzy, S. Tollis, and D. A. Ivanov, Josephson current in a superconductor-ferromagnet junction with two non-collinear magnetic domains, Phys. Rev. B **75**, 054503 (2007) [e-print cond-mat/0608009].

34. A. Ralko, M. Ferrero, F. Becca, D. Ivanov, and F. Mila, Dynamics of the quantum dimer model on the triangular lattice: Soft modes and local resonating valence-bond correlations, Phys. Rev. B **74**, 134301 (2006) [e-print cond-mat/0607610].

33. D. A. Ivanov and Ya. V. Fominov, Minigap in superconductor–ferromagnet junctions with inhomogeneous magnetization, Phys. Rev. B **73**, 214524 (2006) [e-print cond-mat/0511299].

32. D. A. Ivanov and M. A. Skvortsov, Quantum mechanics with a time-dependent random unitary Hamiltonian: A perturbative study of the nonlinear Keldysh sigma-model, Nucl. Phys. B **737**, 304 (2006) [e-print cond-mat/0511030].

31. C. P. Nave, D. A. Ivanov, and P. A. Lee, A variational Monte Carlo study of the current carried by a quasiparticle, Phys. Rev. B **73**, 104502 (2006) [e-print cond-mat/0510001].

30. D. A. Ivanov, Resonating-valence-bond structure of Gutzwiller-projected superconducting wave functions, Phys. Rev. B **74**, 024525 (2006) [e-print cond-mat/0509791].

29. B. Crouzy, E. Bascones, and D. A. Ivanov, Minigap in a SN junction with paramagnetic impurities, Phys. Rev. B **72**, 092501 (2005) [e-print cond-mat/0506499].

28. A. Ralko, M. Ferrero, F. Becca, D. Ivanov, and F. Mila, Zero-temperature properties of the quantum dimer model on the triangular lattice, Phys. Rev. B **71**, 224109 (2005) [e-print cond-mat/0502294].

27. D. A. Ivanov, Vortexlike elementary excitations in the Rokhsar–Kivelson dimer model on the triangular lattice, Phys. Rev. B **70**, 094430 (2004) [e-print cond-mat/0403383].

26. D. A. Ivanov, Antiferromagnetism and phase separation in the t–J model at low doping: a variational study, Phys. Rev. B **70**, 104503 (2004) [e-print cond-mat/0309265].

25. D. A. Ivanov and P. A. Lee, Staggered-flux normal state in the weakly doped t–J model, Phys. Rev. B **68**, 132501 (2003) [e-print cond-mat/0305143].

24. M. A. Skvortsov, D. A. Ivanov, and G. Blatter, Vortex viscosity in the moderately clean limit of layered superconductors, Phys. Rev. B **67**, 014521 (2003) [e-print cond-mat/0207500].

23. A. Ioselevich, D. A. Ivanov, and M. V. Feigelman, Ground-state properties of the Rokhsar-Kivelson dimer model on the triangular lattice, Phys. Rev. B **66**, 174405 (2002) [e-print cond-mat/0206451].

22. D. A. Ivanov, R. von Roten, and G. Blatter, Minigap in a long disordered SNS junction: analytical results, Phys. Rev. B **66**, 052507 (2002) [e-print cond-mat/0204088].

21. D. A. Ivanov and T. Senthil, Projected wave functions for fractionalized phases of quantum spin systems, Phys. Rev. B **66**, 115111 (2002) [e-print cond-mat/0204043].

20. L. B. Ioffe, M. V. Feigel'man, A. Ioselevich, D. A. Ivanov, M. Troyer, and G. Blatter, Topologically protected quantum bits using Josephson junction arrays, Nature **415**, 503 (2002) [e-print cond-mat/0111224].

19. A. V. Shytov, D. A. Ivanov, and M. V. Feigel'man, Landau–Zener interferometry for qubits, Eur. Phys. J. B **36**, 263 (2003) [e-print cond-mat/0110490].

18. D. A. Ivanov, The supersymmetric technique for random-matrix ensembles with zero eigenvalues, J. Math. Phys. **43**, 126 (2002) [e-print cond-mat/0103137].

17. D. A. Ivanov, L. B. Ioffe, V. B. Geshkenbein, and G. Blatter, Interference effects in isolated Josephson junction arrays with geometric symmetries, Phys. Rev. B **65**, 024509 (2002) [e-print cond-mat/0102232].

16. D. A. Ivanov, Random-matrix ensembles in p-wave vortices, in *Vortices in unconventional superconductors and superfluids*, eds. R. P. Huebener, N. Schopohl, and G. E. Volovik (Springer, Heidelberg, 2002) [e-print cond-mat/0103089].

15. D. A. Ivanov, Non-abelian statistics of half-quantum vortices in p-wave superconductors, Phys. Rev. Lett. **86**, 268 (2001) [e-print cond-mat/0005069].

14. D. A. Ivanov, The energy-level statistics in the core of a vortex in a p-wave superconductor, e-print cond-mat/9911147.

13. D. A. Ivanov, Patrick A. Lee, and X.-G. Wen, Staggered-vorticity correlations in a lightly doped t-J model: a variational approach, Phys. Rev. Lett. **84**, 3958 (2000) [e-print cond-mat/9909431].

12. D. A. Ivanov, On the SU(2) theory of the t-J model, Ph.D. thesis, M.I.T. 1999.

11. D. A. Ivanov and Patrick A. Lee, Staggered-spin contribution to nuclear spin-lattice relaxation in two-leg antiferromagnetic spin-1/2 ladders, Phys. Rev. B **59** , 4803 (1999) [e-print cond-mat/9808029]

10. D. A. Ivanov and Patrick A. Lee, Bipolaronic charge excitations in t-J two-leg ladders, Phys. Rev. B **57**, 2118 (1998) [e-print cond-mat/9708145].

9. D. A. Ivanov and M. V. Feigel'man, Phonon relaxation of subgap levels in superconducting quantum point contacts, JETP Letters **68**, 890 (1998) [e-print cond-mat/9811176].

8. D. A. Ivanov and M. V. Feigel'man, Two-level Hamiltonian of a superconducting quantum point contact, Phys. Rev. B **59**, 8444 (1999) [e-print cond-mat/9808029]

7. D. A. Ivanov and M. V. Feigel'man, Coulomb effects in a ballistic one-channel S-S-S device, Zh. Eksp. Teor. Fiz. **114**, 640 (1998) [J. Exp Theor. Phys. **87**, 349 (1998); e-print cond-mat/9712074].

6. D. A. Ivanov and A. S. Losev, KZB equations as a flat connection with spectral parameter, in "Moscow seminar in mathematical physics", Eds. A. Yu. Morozov and M. A. Olshanetsky (Amer. Math. Soc., Providence, 1999).

5. D. A. Ivanov, Knizhnik-Zamolodchikov-Bernard equations as a quantization of nonstationary Hitchin system, e-print hep-th/9610207.

4. D. A. Ivanov, Knizhnik-Zamolodchikov-Bernard equations on Riemann surfaces, Int. J. Mod. Phys. A **10**, 2507 (1995) [e-print hep-th/9410091].

3. D. A. Ivanov, Hyunwoo Lee, and L. S. Levitov, Coherent states of alternating current, Phys. Rev. B **56**, 6839 (1997) [e-print cond-mat/9501040].

2. D. A. Ivanov and L. S. Levitov, Statistics of charge fluctuations in quantum transport in an alternating field, JETP Lett. **58**, 461 (1993).

1. D. A. Ivanov and T. A. B. Kennedy, Photon-number measurements with cold atoms, Phys. Rev. A **47**, 566 (1993).

Presentations at conferences (since 2000, as of May 2019)

- June 2017, Conference "Landau Days", Chernogolovka, Russia. Title: "Dynamical response of impurities in fermionic cold atoms: what we learn from full counting statistics and Toeplitz determinants".
- September 2016, Workshop "Recent progress in low-dimensional quantum magnetism", Lausanne, Switzerland. Title: "Indications of high-energy spinons in the square-lattice spin-1/2 antiferromagnet".
- March 2014, Workshop "Recent progress and perspectives in scaling, multifractality, interactions, and topological effects near Anderson transitions", Dresden, Germany. Title: "Anderson localization of a Majorana fermion".
- October 2013, Japan-Swiss Workshop "Trends in theory of correlated materials", Lausanne, Switzerland. Title: "Anderson localization of a Majorana fermion".
- July 2013, Euler symposium on theoretical and mathematical Physics, St. Petersburg, Russia. Title: "Localization of a Majorana fermion".
- January 2013, NCCR QSIT general meeting, Arosa, Switzerland. Title: "Localization of a Majorana fermion".
- October 2012, Workshop "Correlations and coherence in quantum systems", Évora, Portugal. Title: "Phase transitions in full counting statistics".
- June 2012, Swiss Physical Society annual meeting, Zürich, Switzerland. Title: "Hybridization of wave functions in one-dimensional Anderson localization".
- June 2012, Workshop "Mesoscopic and strongly correlated electron systems", Chernogolovka, Russia. Title: "Hybridization of wave functions in one-dimensional Anderson localization".
- June 2012, Summer school on nanophysics and nanoelectronics, Chernogolovka, Russia. Lectures: "Statistics of charge transfer in mesoscopic conductors".
- September 2011, Japan-Swiss Workshop "New Electronic Properties through Structure and Correlation", Zürich, Switzerland. Title: "Phase transitions in full counting statistics".
- July 2011, Symposium on Theoretical and Mathematical Physics, Euler International Mathematical Institute, St. Petersburg, Russia. Title: "Phase transitions in full counting statistics in time-periodic setups".
- June 2011, Conference "Landau Days – 2011", Chernogolovka, Russia. Title: "Vison excitations in near-critical quantum dimer models".
- March 2011, Conference "XLVI-th Rencontres de Moriond: Quantum mesoscopic physics", La Thuile, Italy. Title: "Phase transitions in full counting statistics in time-periodic setups".
- October 2010, Workshop "Resonating-valence-bond physics: spin liquids and beyond", Budapest, Hungary. Title: "Vison excitations in near-critical quantum dimer models".
- September 2010, Japan-Swiss Joint Workshop "New trends in theory of correlated materials", Chiba, Japan. Title: "Vison excitations in near-critical quantum dimer models".
- July 2010, Workshop on emergence of new states of matter in magnetic systems and beyond, Trieste, Italy. Title: "Vison excitations in near-critical quantum dimer models".
- May 2010, Workshop on Localization Phenomena in Novel Phases of Condensed Matter, Trieste, Italy. Title: "Localization in quasi-one-dimensional wires: correlations of the local density of states".

- July 2009, Workshop on the Heisenberg model: past, present and future, Brasilia, Brazil. Title: "Resonating-valence-bond physics and topological order in two dimensions: frustrated spin systems, dimer models, and high-temperature superconductivity".
- July 2009, Symposium on Theoretical and Mathematical Physics, St. Petersburg, Russia. Title: "Correlations of the local density of states in quasi-one-dimensional wires".
- June 2008, L.D.Landau memorial conference "Advances in Theoretical Physics", Chernogolovka, Russia. Title: "Resonating-valence-bond physics and topological order in two dimensions: from dimer models to high-temperature superconductivity".
- March 2008, Conference "Rencontres de Moriond: Quantum Transport and Nanophysics", La Thuile (Italy), March 2008. Title: "Allowed charge transfers between coherent conductors driven by a time-dependent scatterer".
- July 2007, Workshop on Theoretical and Mathematical Physics (dedicated to the 300th birthday of Leonhard Euler), St-Petersburg, Russia. Title: "Quantum mechanics with a time-dependent random unitary Hamiltonian: A perturbative study of the nonlinear Keldysh sigma-model".
- December 2006, Hong Kong forum in Condensed Matter Physics: Past, Present, and Future, Hong Kong. Title: "Resonating-valence-bond physics and topological order in two dimensions: from dimer models to high-temperature superconductivity".
- July 2006, Conference "Strongly correlated low-dimensional systems", Ascona, Switzerland. Title: "Resonating-valence-bond structure of Gutzwiller-projected superconducting wave functions".
- June 2006, Workshop "Mesoscopic and strongly correlated electron systems", Chernogolovka, Russia. Title: "Quantum mechanics with a time-dependent random unitary Hamiltonian: A perturbative study of the nonlinear Keldysh sigma-model". Invited talk: "Minigap in superconductor-ferromagnet junctions with inhomogeneous magnetization" presented by a co-author (Ya. Fominov).
- November 2005, ESF Workshop "Highly frustrated magnetism", La Londe Les Maures, France. Title: "Resonating-valence-bond structure of Gutzwiller-projected superconducting wave functions".
- October 2005, Workshop "Gutzwiller Wave Functions and Related Slave-Boson Mean-Field Theories", Marburg, Germany. Title: "On the resonating-valence-bond structure of Gutzwiller-projected superconducting states".
- September 2005, Swiss workshop on Materials with novel electronic properties, Les Diablerets, Switzerland. Title: "Vison gap in the Rokhsar–Kivelson dimer model on the triangular lattice".
- November 2004, YKIS Workshop "Physics of Strongly Correlated Electron Systems", Kyoto, Japan. Title: "Topological excitations in dimer liquids".
- May 2004, Workshop "Evolution of quantum effects from nano- to macroscale", Cargese, Corsica. Title: "Vison gap in the Rokhsar–Kivelson dimer model on the triangular lattice".
- September 2003, Swiss Workshop on Materials with Novel Electronic Properties, Les Diablerets, Switzerland. Title: "Gutzwiller-projected wave functions for strongly correlated systems".
- August 2003, Workshop "Highly frustrated magnetism", Grenoble, France.Title: "Topological order in the Rokhsar-Kivelson dimer model on the triangular lattice".
- June 2003, Amsterdam Summer Workshop on Flux, Charge, Topology and Statistics, Amsterdam, The Netherlands. Title: "Topological order in Gutzwiller-projected wave functions".

- November 2002, The Netherlands' national seminars on condensed matter physics, Utrecht, The Netherlands.Title: "Topological order in resonating-valence-bond liquids and the Rokhsar–Kivelson dimer model on the triangular lattice".
- August 2002, 23rd International conference on low temperature physics (LT23), Hiroshima, Japan. Title: "Projected wave functions for fractionalized phases of quantum spin systems".
- March 2001, APS March meeting, Seattle, USA. Title: "Interference effects in isolated Josephson junction arrays with geometric symmetries".
- January 2001, Conference "XXXVIth rencontres de Moriond", Les Arcs, France. Title: "Quantum interference in isolated Josephson junction loops".
- June 2000, Conference "Chernogolovka 2000: Mesoscopic and strongly correlated electron systems", Chernogolovka, Russia. Title: "Vortices in superconductors with triplet pairing: new symmetry classes and nonabelian statistics".
- March 2000, The 18th Conference of the Condensed Matter Division of the EPS, Montreux, Switzerland. Title: "Level statistics in disordered vortices in s- and p-wave superconductors".
- February 2000, Workshop "Microscopic Structure and Dynamics of Vortices in Unconventional Superconductors and Superfluids", Dresden, Germany. Title: "Random-matrix ensembles in p-wave vortices".