CURRICULUM VITAE

Dr. MICHAEL (MISHA) CHERTKOV
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EDUCATION

1996 Ph.D. Physics, Weizmann Institute of Science
1990 M.Sc. Physics, Novosibirsk State University

EMPLOYMENT

2002- Technical Staff Member, Theoretical Division, Los Alamos NL
1999-2001 J.R. Oppenheimer Fellow, Theoretical Division, Los Alamos NL
1996-99 R.H. Dicke Fellow, Department of Physics, Princeton University
1993-96 Research Assistant, Weizmann Institute of Science
1990-92 Junior Researcher, Budker Institute, Novosibirsk

AWARDS, ADJUNCT AFFILIATIONS and SERVICE

2010 TCP Member for an IEEE SmartGridComm Symposium, NIST 10/2010
2010- JSTAT Editorial Board
2010 Visiting Scholar (Aston U, UK)
2008- Visiting Researcher (NM Consortium)
2007 Weston Visiting Professor (Weizmann Institute)
2007 Visiting Scholar (Joint Theory Institute at U of Chicago and ANL)
2004 CNRS Visiting Scholar (Nonlinear Institute, Nice)
1999 J.R. Oppenheimer Fellowship at LANL
1996-99 Consultant (Bell Laboratories, Lucent Technologies)
1996 R.H. Dicke Fellowship at Princeton (Physics Department)
1996 Prize of the Feinberg Graduate School
1995 Prize of the Charles Clore Israel Foundation

WORKSHOPS co-ORGANIZED (only latest are shown: 2007–)

08/2010 Two consequitive workshops on Design and Control of Systems of Goal-Directed Agents: From Game Theory to Game Engineering (SFI & CNLS/LANL)
08/2010 Mini-Workshop on Optimization and Control Theory for Smart Grids (CNLS/LANL)
03/2010 Workshop on Linear Programming and Message-Passing Approaches to High-Density Parity-Check Codes and High-Density Graphical Models (Tel-Aviv University, Israel)
08/2009 Physics of Algorithms (CNLS, Santa Fe)
05/2009 The Pioneering Science of Robert H. Kraichnan (CNLS, Santa Fe)
03/2008 Classical and Quantum Information Theory (CNLS, Santa Fe)
05/2007 Algorithms, Inference and Statistical Physics (CNLS, Santa Fe)

ADVISED POSTDOCS and FELLOWS

2009- Shrinivas Kudekar (Ph.D. EPFL) - *Information/Coding Theory*
2009-2010 Konstantin Turitsyn (Assistant Professor at MIT) - *Statistical Physics, Fluid Mechanics, Power Grids*
2008- Jason Johnson (Ph.D. MIT; Director's Fellowship) - *Computer Science, Machine Learning*
2008-2010 Lenka Zdeborova (Charge de Recherche, CNRS at IPhT Saclay) - *Statistical Physics, Optimization*
2006-2008 Nandakishore Santhi (Staff Member at CCS-3/LANL)- *Information/Coding Theory*
2006-2008 Razvan Teodorescu (Assistant Professor at University of South Florida) - *Mathematical/Statistical Physics*
2005-2007 Colm Connaughton (Lecturer at U of Warwick, UK) - *Statistical Physics, Turbulence*
2004-2006 Misha Stepanov (Assistant Professor at UA, Tucson) - *Statistical Physics, Theory of Error-Correction*
2002-2004 Yeo-Jin Chung (Assistant Professor at SMU, Dallas) - *Applied Mathematics, Fiber Optics Communications*
2001-2004 Avner Peleg (Assistant Professor at SUNY, Buffalo) - *Applied Mathematics, Fiber Optics Communications*

RESEARCH GRANTS (PI)

2011-2013 Network Adaptability from WMD Disruption and Cascading Failures (DTRA)$\approx 360K\$$/year
2010-2012 Optimization and Control Theory for Smart Grids (LDRD/DR at LANL)$\approx 1.65M\$$/year
2009-2011 Coding, Detection, and Inference in Multiple Dimensions, (UCOP LANL-UCSD) $\approx 180K\$$/year
2008-2010 Harnessing Statistical Physics for Computing and Communication (NSF via NM Consortium, EMT/MISC: Collaborative Research with MIT & Cornell)$\approx 130K\$$/year
2007-2009 Physics of Algorithms (LDRD/DR at LANL)$\approx 1.5M\$$/year
2006-2008 Novel physics inspired approach to error-correction (LDRD/ER at LANL) $\approx 300K\$$/year
2006-2007 Prediction of Mixing Induced by Rayleigh-Taylor Instability (WSR at LANL)$\approx 200K\$$/year
2001-2003 Statistical Physics of Fiber Optics Communications (LDRD/ER at LANL) $\approx 190K\$$/year

INVITED PRESENTATIONS at CONFERENCES and WORKSHOPS (only latest are shown: 2010–)

05/2011 Plenary Talk at SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah
03-04/2011 Nature of Turbulence, KITP/UCSB
02/2011 Statistical Physics of Complexity, Optimization and Systems Biology, Bardonecchia, Italy
11/2010 Turbulence and Mixing, Eilat, Israel
10/2010 DIMACS workshop on Algorithmic Decision Theory for the Smart Grid, Rutgers
08/2010 Information Theory Workshop 2010, Dublin, Ireland
03/2010 Statistical Physics of Complexity, Optimization and Biological information, Les Houches, France
02/2010 Workshop on the Frontiers of Controls, Games and Network Science, UoT, Austin
02/2010 The 2010 Information Theory and Application Workshop, ITA, UCSD

FIELDS OF INTEREST:

Theoretical, Statistical and Mathematical Physics, Applied Mathematics, Hydrodynamics, Optics, Classical and Quantum Information Theory, Error-Correction Theory, Computer Science, Queuing Theory, Power Grid

PATENT

U.S. Patent 6701050, issued March 2, 2004: Methods and Optical Fibers that decrease pulse degradation resulting from random chromatic dispersion, Co-author: I. Gabitov.

LIST OF PUBLICATIONS

102. Statistical Classification of Cascading Failures in Power Grids, submitted to IEEE PES 2011, arxiv:1012.0815, co-authors: R. Pfitzner and K. Turitsyn.

101. Learning Planar Ising Models, submitted to AISTATS 2011, co-authors: P. Netrapalli, J. Johnson.

100. Geometric Universality of Currents in an Open Network of Interacting Particles, arxiv:1008.2749, co-authors V. Chernyak and N. Sinitsyn.

99. Optimization of Reactive Power by Distributed Photovoltaic Generators, submitted to Proceedings of the IEEE, special issue on Smart Grid, arxiv:1008.0878, co-authors K. Turitsyn, P. Sulc, S. Backhaus.

98. Local Control of Reactive Power by Distributed Photovoltaic Generators, proceedings of IEEE SmartGridComm 2010, arXiv:1006.0160, co-authors K. Turitsyn, P. Sulc, S. Backhaus.

97. Robust Broadcast-Communication Control of Electric Vehicle Charging, proceedings of IEEE SmartGridComm 2010, arXiv:1006.0165, co-authors K. Turitsyn, N. Sinitsyn, S. Backhaus.

96. Predicting Failures in Power Grids: The Case of Static Overloads, to appear in IEEE Transactions on Smart Grids, arXiv:1006.0671, co-authors F. Pan and M. Stepanov.

95. A Majorization-Minimization Approach to Design of Power Transmission Networks, accepted for oral presentation at the 49th IEEE Conference on Decision and Control, arXiv:1004.2285, co-author J. Johnson.

94. Non-Equilibrium Statistical Physics of Currents in Queuing Networks, arXiv:1001.5454, Journal of Statistical Physics **140**, 819–845 (2010), co-authors: V. Chernyak, D.A. Goldberg, and K. Turitsyn.

93. Worst Configurations (Instantons) for Compressed Sensing over Reals, arxiv:1001.5113, to appear in proceedings of ISIT 2010, co-authors: S. Chillapagari, B. Vasic.

92. Distributed control of reactive power flow in a radial distribution circuit with high photovoltaic penetration, arxiv:0912.3281, accepted for IEEE PES General Meeting 2010, co-authors: K. Turitsyn, P. Sulc, S. Backhaus.

91. Belief Propagation and Loop Calculus for Permanent of a Non-Negative Matrix, arxiv:0911.1419, J. Physics A **43**, 242002 (2010), co-author: Y. Watanabe.

90. Inference in particle tracking experiments by passing messages between images, PNAS 10.1073/pnas.0910994107, arxiv:0909.4256, co-authors L. Kroc, F. Krzakala, M. Vergassola, L. Zdeborova.

89. Universal Shape of Coherent Vortices Generated by Two-Dimensional Turbulence, Phys. Rev. E **81**, 015302(R) (2010), arXiv:0909.1575,co-authors I. Kolokolov and V. Lebedev.

88. Non-Equilibrium Thermodynamics and Topology of Currents, Journal of Statistical Physics **137**, 109-147 (2009), `http://www.springerlink.com/content/17740348qh5j03m7/`, arXiv:0907.3481, co-authors: V. Chernyak, S. Malinin and R. Teodorescu.

87. Counting Independent Sets Using the Bethe Approximation, to appear in SIAM Journal on Discrete Math, `http://www-math.mit.edu/~jinwoos/submit_bp.pdf`, co-authors: J. Shin, V. Chandrasekaran, D. Gamarnik and D. Shah.

86. Message Passing for Integrating and Assessing Renewable Generation in a Redundant Power Grid, proceedings of HICSS-43, Jan. 2010, arXiv:0909.2358, co-authors: L. Zdeborova and S. Backhaus.

85. Message Passing for Optimization and Control of Power Grid: Toy Model of Distribution with Ancillary Lines, arxiv:0904.0477, Phys. Rev. E **80**, 046112 (2009), `http://link.aps.org/abstract/PRE/v80/e046112`, co-authors: L. Zdeborova and A. Decelle.

84. Orbit-Product Representation and Correction of Gaussian Belief Propagation, proceedings of the International Conference on Machine Learning (ICL) '09, `http://www.cs.mcgill.ca/~icml2009/papers/543.pdf`, arxiv:0904.3769, co-authors: J. Johnson, V. Chernyak.

83. Planar Graphical Models which are Easy, J. Stat. Mech. (2010) P11007, arXiv:0902.0320, co-author: V. Chernyak.

82. Analysis of Error Floor of LDPC Codes under LP Decoding over the BSC, proceedings of ISIT 2009, co-authors: S.K. Chilappagari, M. Stepanov and B. Vasic.

81. Approximate inference on planar graphs using Loop Calculus and Belief Propagation, Journal of Machine Learning Research **11**, 1273–1296 (2010), arXiv:0901.0786, co-authors: V. Gómez and H.J. Kappen.

80. Instanton-based Techniques for Analysis and Reduction of LDPC Error-floors, IEEE Journal on Selected Areas in Communications [Special issue on capaciyy approaching codes], **27**, 855-865 (2009), co-authors: S.K. Chilappagari, M. Stepanov and B. Vasic.

79. Irreversible Monte Carlo Algorithms for Efficient Sampling, arxiv:0809.0916, to appear in Physica D, co-authors: K. Turitsyn, M. Vucelja.

78. Fermions and Loops on Graphs. II. Monomer-Dimer Model as Series of Determinants, J. Stat. Mech. (2008) P12012, arXiv:0809.3481, co-author: V. Chernyak.

77. Fermions and Loops on Graphs. I. Loop Calculus for Determinant, J. Stat. Mech. (2008) P12011, arXiv:0809.3479, co-author: V. Chernyak.
76. Provably Efficient Instanton Search Algorithm for LP-decoding over the BSC, submitted to IEEE IT, arXiv:0808.2515, co-authors: S.K. Chilappagari and B. Vasic.
75. Belief Propagation and Beyond for Particle Tracking, arXiv: 0806.1199, co-authors: L. Kroc, M. Vergassola,
74. Reactive Rayleigh Taylor Turbulence, Journal of Fluid Mechanics **633** ,(2009), arXiv:0807.3772, co-authors: V. Lebedev, N. Vladimirova.
73. Belief Propagation and Loop Series on Planar Graphs, J. Stat. Mech (2008) P05003, arxiv:0802.3950, co-authors: V. Chernyak, R. Teodorescu.
72. Exactness of Belief Propagation for Some Graphical Models with Loops, J. Stat. Mech. (2008) P10016, arxiv:0801.0341
71. Non-equilibrium thermodynamics for functionals of current and density, arxiv:0712.3542, co-authors: V. Chernyak, S.V. Malinin, R. Teodorescu.
70. Reducing the Error Floor, invited talk at the Information Theory Workshop '07 on "Frontiers in Coding", September 2-6, 2007, arxiv:0706.2926.
69. Strong effect of weak diffusion on scalar turbulence at large scales, Physics of Fluids **19**, 101703 (2007), arxiv:0706.2928, co-authors: I. Kolokolov, V. Lebedev.
68. Self-Similarity and Universality in Rayleigh-Taylor, Boussinesq Turbulence, Physics of Fluids **21**, 015102 (2009), arXiv:0801.2981, co-author: Natalia Vladimirova.
67. Bethe-Free-Energy Based Decoding of Low-Density Parity-Check Codes on Partial Response Channels, submitted to Transactions on Communications, http://arxiv.org/abs/0904.0747, co-authors: J. A. Anguita, B. Vasic, and M. A. Neifeld.
66. Statistical geometry in homogeneous and isotropic turbulence, Journal of Turbulence **8**, 39 (2007), co-authors: Aurore Naso and Alain Pumir.
65. Searching for low weight pseudo-codewords, invited talk at the 2007 Information Theory and Application Workshop, proceedings ITA CALIT2, UCSD, cs.IT/0702024, co-author: Mikhail Stepanov.
64. Pseudo-codeword Landscape, Proceedings of ISIT 2007, June 2007, Nice, cs.IT/0701084, co-author: Mikhail Stepanov.
63. Loop Calculus and Belief Propagation for q-ary Alphabet: Loop Tower, Proceedings of ISIT 2007, June 2007, Nice, cs.IT/0701086, co-author: Vladimir Chernyak.
62. Dynamics of Energy Condensation in Two-Dimensional Turbulence, co-authors: C. Connaughton, I. Kolokolov and V. Lebedev, Phys.Rev.Lett. **99**, 084501 (2007).
61. Loop Calculus Helps to Improve Belief Propagation and Linear Programming Decodings of Low-Density-Parity-Check Codes, co-author: Vladimir Chernyak, invited talk at 44th Allerton Conference (September 27-29, 2006, Allerton,IL), arXiv:cs.IT/0609154.
60. Statistics of entropy production in linearized stochastic systems , co-authors: Konstantin Turitsyn, Vladimir Chernyak, Alberto Puliafito, Phys.Rev.Lett. **98**, 180603 (2007), nlin.CD/0609051.
59. Improving convergence of belief propagation decoding, co-author: Mikhail G. Stepanov, cs.IT/0607112, Proceedings of 44th Allerton Conference (September 27-29, 2006, Allerton, IL).
58. Path-integral analysis of fluctuation theorems for general Langevin processes, co-authors: Vladimir Chernyak and Christopher Jarzynski, cond-mat/0605471, JSTAT/2006/P08001.
57. Loop series for discrete statistical models on graphs, co-author: Vladimir Chernyak, cond-mat/0603189, JSTAT/2006/P06009.
56. Scale dependence of the coarse-grained velocity derivative tensor: influence of large scale shear on small-scale turbulence, Journal of Turbulence **7**, 41 (2006), co-authors: A. Naso, A. Pumir.
55. An Efficient Pseudo-Codeword-Search Algorithm for Linear Programming Decoding of LDPC Codes, arXiv:cs.IT/0601113, IEEE Transactions on Information Theory **54**, 1514 (2008), co-author: Mikhail Stepanov.
54. Loop Calculus in Statistical Physics and Information Science, Phys. Rev. E **73**, 065102(R) (2006), cond-mat/0601487, co-author: Vladimir Chernyak.
53. Instanton analysis of Low-Density-Parity-Check codes in the error-floor regime, arXiv:cs.IT/0601070, Proceeding of ISIT 2006, July 2006 Seattle, co-author: Mikhail Stepanov.
52. The error-floor of LDPC codes in the Laplacian channel, Proceedings of 43rd Allerton Conference (September 28-30, 2005, Allerton, IL), arXiv:cs.IT/0507031, co-author: Mikhail Stepanov.
51. Diagnosis of weakness in error correction: a physics approach to error floor analysis, Phys. Rev. Lett. **95**, 228701 (2005)+cond-mat/0506037 (long version), co-authors: Mikhail Stepanov, Vladimir Chernyak, Bane Vasic.
50. Dynamical generalization of non-equilibrium work relation, Phys. Rev. E **71**, 025102 (2005), co-authors V. Chernyak and C. Jarzynski.

49. Polymer Statistics in a Random Flow with Mean Shear, Journal of Fluid Mechanics **531**, 251-260 (2005), co-authors: Igor Kolokolov, Vladimir Lebedev and Konstantin Turitsyn.
48. Effects of surface tension on immiscible Rayleigh-Taylor turbulence, Phys. Rev. E **71**, 055301 (2005), co-authors: Igor Kolokolov, Vladimir Lebedev.
47. Error correction on a tree: An instanton approach , Phys. Rev. Lett. **93**, 198702-1 (2004), co-authors: Vladimir Chernyak, Mikhail Stepanov, Bane Vasic.
46. Outage probability for soliton transmission, Euro. Phys. Lett **66**, 499 (2004), co-authors: Vladimir Chernyak, Igor Kolokolov, and Avner Peleg.
45. Phenomenology of Rayleigh-Taylor Turbulence, Phys. Rev. Lett. **91**, 115001 (2003).
44. PMD induced fluctuations of Bit-Error-Rate in optical fiber systems, Journal of Lightware Technology **22**, 1155 (2004), co-authors: Vladimir Chernyak, Ildar Gabitov, Igor Kolokolov, and Vladimir Lebedev.
43. Periodic and Quasi-Periodic Compensation Strategies of Extreme Outages caused by Polarization Mode Dispersion and Amplifier Noise, JETP Lett. **78**, 198-201 (2003), http://arXiv.org/abs/physics/0303015, co-authors: Vladimir Chernyak, Igor Kolokolov, and Vladimir Lebedev.
42. Compensation for Extreme Outages caused by Polarization Mode Dispersion and Amplifier noise, Optics. Express. **11**, 1607 (2003), http://www.opticsexpress.org/abstract.cfm?URI=OPEX-11-14-1607, co-authors: Vladimir Chernyak, Igor Kolokolov, and Vladimir Lebedev.
41. Extreme Outages due to Polarization Mode Dispersion, Optics. Lett. **28**, 2159 (2003), co-authors: Vladimir Chernyak, Igor Kolokolov, and Vladimir Lebedev.
40. Probability of anomalously large Bit-Error-Rate in long haul optical transmission, Phys. Rev. E **68**, 066619 (2003), co-authors: Vladimir Chernyak, Igor Kolokolov and Vladimir Lebedev.
39. Passive Compensation of Polarization Mode Dispersion via Periodic Control of Birefringent Disorder, JOSA B 21, 486 (2004), co-authors: I. Gabitov, I. Kolokolov and T. Schäfer.
38. Inter-channel interaction of optical solitons, Phys. Rev. E 68, 026605 (2003), co-authors: A. Peleg and I. Gabitov.
37. Inelastic collisions of pulses in optical fibers, JOSA B **21**, 18 (2004), co-authors: A.Peleg and I. Gabitov.
36. Shedding and interaction of solitons in weakly disordered optical fibers, Phys. Rev. E. **67**, 036615 (2003), co-authors: Y. Chung, A. Dyachenko, I. Gabitov, I. Kolokolov, and V. Lebedev.
35. Boundary effects on chaotic advection-diffusion chemical reactions, Phys. Rev. Lett **90**, 134501 (2003), co-author: V. Lebedev.
34. Decay of scalar turbulence revisited, Phys. Rev. Lett **90**, 034501 (2003), co-author: V. Lebedev.
33. Pinning method of pulse confinement in optical fiber with random dispersion, JOSA B 19, 2538 (2002), co-authors: I. Gabitov, P. Lushnikov, J. Moeser, Z. Toroczkai.
32. Solitons in Optical Medium with Disorder and Anisotropy, Pis'ma v ZhETF **74**, 608 (2001), co-authors: I. Gabitov, I.Kolokolov, V. Lebedev.
31. Shedding and Interaction of Solitons in Imperfect Medium, Pis'ma v ZhETF **74**, 391 (2001) [JETP Letters **74**, 357 (2001)], co-authors: I. Gabitov, I.Kolokolov, V. Lebedev.
30. Pulse confinement in optical fibers with random dispersion, Proc. Natl. Acad. Sci. USA **98**, 14208 (2001), co-authors: I. Gabitov, J. Moeser.
29. The Lagrangian view of energy transfer in turbulent flow, Euro. Phys. Lett.**56**, 379 (2001), co-authors: A. Pumir, B. Shraiman.
28. Geometry of Lagrangian Dispersion in Turbulence, Phys. Rev. Lett.**85**, 5324 (2000), co-authors: A. Pumir, B. Shraiman.
27. Turbulence in Polymer Solutions, Proceedings of IUTAM 99 symposium on Geometry and Statistics of Turbulence, editors T. Kambe, T. Nakano and T. Miyauchi, Fluid Mechanics and Its application Bookseries, ISBN 0-7923-6711-1, Kluwer Academic Publisher, 2001.
26. Polymer Stretching by Turbulence, chao-dyn/9911011, Phys. Rev. Lett.**84**, 4761 (2000).
25. Small-scale turbulent dynamo, chao-dyn/9906030, Phys. Rev. Lett.**83**, 4065 (1999), co-authors: G. Falkovich, I. Kolokolov and M. Vergassola.
24. Lagrangian Tetrad Dynamics and Phenomenology of Turbulence, Physics of Fluids**11**, 2394 (1999), Co-authors: A. Pumir, and B. Shraiman.
23. Passive advection in nonlinear medium, chao-dyn/9809010, Physics of Fluids 11, 2257 (1999).
22. On how a joint interaction of two innocent partners (smooth advection & linear damping) produces a strong intermittency, chao-dyn/9803007, Physics of Fluids**10**, 3017 (1998).
21. Propagation of a Huygens front through turbulent medium, chao-dyn/9709028, Phys. Rev. Lett. **80**, 2837 (1998), Co-author: V. Yakhot.
20. Intermittent dissipation of a passive scalar in turbulence, chao-dyn/9709005, Phys. Rev. Lett. **80**, 2121 (1998), Co-authors: G. Falkovich, and I. Kolokolov.

19. Inverse versus direct cascades in turbulent advection, chao-dyn/9706016, Phys. Rev. Lett. **80**, 512 (1998), Co-authors: I. Kolokolov, and M. Vergassola.
18. Inverse cascade and intermittency of passive scalar in 1d smooth flow, chao-dyn/9706017, Phys. Rev. E **56**, 5483 (1997), Co-authors: I. Kolokolov, and M. Vergassola.
17. Instanton for random advection, chao-dyn/9606011, Phys. Rev. E **55**, 2722 (1997).
16. Non-universality of the scaling exponents of a passive scalar convected by a random flow, Phys. Rev. Lett. **76**, 3707 (1996), chao-dyn/9601016, Co-authors: G. Falkovich, and V. Lebedev.
15. Anomalous scaling exponents of a white-advected passive scalar, Phys. Rev. Lett. **76**, 2706 (1996), chao-dyn/9509007, Co-author: G. Falkovich.
14. Theory of random advection in two dimensions, Int. J. Mod. Phys. B **10**, 2273 (1996), Co-authors: G. Falkovich, I. Kolokolov, and V. Lebedev.
13. The fourth-order correlation function of a randomly advected passive scalar, JETP Lett **61**, 1012 (1995), chao-dyn/9508002, Co-authors: E. Balkovsky, I. Kolokolov, and V. Lebedev.
12. Normal and anomalous scaling of the fourth-order correlation function of a randomly advected passive scalar, Phys. Rev. E **52**, 4924 (1995), chao-dyn/9503001. Co-authours: G. Falkovich, I. Kolokolov, and V. Lebedev.
11. Equilibrium and nonequilibrium mean-field dynamics of quantum spin cluster., Sov.Phys.JETP **79**, 824 (1994), Co-author: I. Kolokolov.
10. Exact field-theoretical description of passive scalar convection in N-dimensional long-range velocity field, Phys.Lett.A **192**, 435 (1994), Co-authors: A. Gamba and I. Kolokolov.
9. Equilibrium dynamics of a paramagnet cluster, Phys.Rev.B **51**, 3974 (1995), Co-author: I. Kolokolov.
8. Statistics of a passive scalar advected by a large-scale 2D velocity field: analytic solution, Phys.Rev.E **51**, 5609 (1995), Co-authours: G. Falkovich, I. Kolokolov and V. Lebedev.
7. Passive scalar convection in a 2D long-range delta-correlated velocity field: exact results, Journ. of Phys. A **27**, 4925 (1994), Co-authors: Y. V. Fyodorov and I. Kolokolov.
6. Structural instability of two-dimensional turbulence, Physica D **78**, 11 (1994), Co-author: G. Falkovich.
5. Long-time dynamics of the infinite-temperature Heisenberg magnet, Phys. Rev. B **49**, 3592 (1994), Co-author: I. Kolokolov.
4. Functional integral and effective Hamiltonian t-J-V model of strongly correlated electron system, J. of Stat. Phys. **69**, 231 (1992), Co-author: V.I. Belinicher.
3. High-temperature phase of the 2D Couloumb gas model near the Kosterlitz- Thouless phase transition, Phys. Lett. A **162**, 402(1992).
2. The supersonic motion of a phase transition front, Sow. Solid. State **32**, 550 (1990), Co-author: A.Z.Patashinski.
1. The motion of a phase transition front in deep metastability, Sow. Solid. State **32**, 287 (1990), Co-author: A.Z.Patashinski.