Alex Kovner
CURRICULUM VITAE

Professional

8/2008-present	Full Professor, Physics Department, University of Connecticut,
8/2006-8/2008	Associate Professor (with tenure), Physics Department, University of Connecticut
8/2004-8/2006	Tenure track Associate Professor, Physics Department, University of Connecticut
2001-2004	Senior Lecturer and PPARC Advanced Fellow, University of Plymouth
1997-2000	PPARC Advanced Fellow, Oxford University
1994-1997	Research Associate, Theoretical Physics Institute, University of Minnesota
1992-1994	Postdoctoral Research Fellow, Elementary Particle and Field Theory Group T-8, Los Alamos National Laboratory
1990-1992	NSERC International Postdoctoral Fellow, UBC, Vancouver, BC.
1989-1990	Postdoctoral Fellow at Physics Department, University of British Columbia, Vancouver, B.C.

Education

1985-1989	Ph.D. in Physics, High Energy Physics Department, School of Physics and Astronomy, Tel Aviv University, Tel Aviv, Israel. Supervisor Prof. L. Horwitz. Thesis: *"Nonperturbative Gaussian Calculations in Quantum Field Theory"*
1982-1983	M.Sc. in Physics, Tel Aviv University. Supervisor Prof. S. Yankielowicz. Thesis: *"Effective Lagrangian of the Supersymmetric CPn Model in 1+1 Dimensions."*
1980-1982	B.Sc. in Physics, Tel Aviv University

Honors and awards

01-08/2018	Scientific Associate, CERN, Geneva, Switzerland (awarded)
10/2017	Fellow of American Physical Society (Division of Nuclear Physics)
09-12/2017	Fulbright Senior Scholar, Israel
12/ 2016	Outstanding referee for APS journals
5-6/2012	Distinguished Scientist Visitor, Ben Gurion University, Beer Sheva, Israel
4-5/2002	Guest professor, University of Connecticut, Storrs, USA
2-10/2001	Scientific associate, CERN, Geneva, Switzerland
7-9/2000	Visiting CNRS Fellow, University of Marseille - Luminy, France
1997-2003	PPARC Advanced Fellow, Oxford University and University of Plymouth,

UK

Recent invited and plenary talks and lectures at conferences and summer schools

4/2017 Saturation: Recent Developments, New Ideas and Measurements , BNL (invited talk)
4/2017 Iterated Integrals and Regge Limit, Edinburgh, UK (invited keynote talk);
1/2017 Winter Workshop on Nuclear Dynamics, Snowbird (invited talk);
12/2016 Workshop on QCD and Diffraction, Krakow (invited talk)
6/2016 QCD evolution 2016, Amsterdam (invited talk);
5/2016 Initial Stages 2016, Lisbon (invited plenary talk);
5/2016 Continuous Advances in QCD, Minneapolis (invited talk);
2/2016 Emerging Spin and Transverse Momentum Effects in pp and p+A Collisions, BNL (invited review talk);
9/2015 Workshop on Physics Opportunities at an Electron-Ion Collider, POETIC VI, Paris (invited plenary talk);
7/2015 Fluctuations and Correlations in p-A collisions, INT Seattle, WA (invited talk);
6/2015 Hard Probes 2015, Montreal QC (invited talk);
5/2015 Heavy Ion Collisions at LHC: The First Fermi, Beer Sheva, Israel (invited talk);
5/2015 Deep Inelastic Scattering 2015, Dallas, TX (invited talk);
9/2014 Workshop on Physics Opportunities at an Electron-Ion Collider, New Haven (invited talk);
12/2013 High Energy Physics in the LHC era, Valparaiso, Chile (invited plenary talk);
12/2013 3rd Chilean School of High-Energy Physics, (invited series of lectures);

11/2013 6th International Conference on Hard and Electromagnetic Probes of High Energy Nuclear Collisions (Hard Probes 2013), Stellenbosch, South Africa (invited talk),
05/2013 Low x workshop, Eilat, Israel (invited talk);
05/2013 QCD evolution workshop, Newport News (invited talk);
06/2012 p-Pb at LHC, CERN, Geneva, Switzerland (invited talk);
02/2012 Exploring QCD frontiers: from RHIC to LHC and EIC, Stellenbosch, South Africa (invited talk),
01/2012 High Energy Physics in the LHC era, Valparaiso, Chile (invited plenary talk);
11/2011 Frontiers in QCD, INT Seattle, Washington, USA (invited talk);
06/2011 Cracow School of Theoretical Physics, LI course, Zakopane, Poland, June 2011 (invited course of lectures)
05/2011 Standard and Novel QCD Phenomena at Hadron Colliders, Trento (invited talk);
05/2011 Continuous advances in QCD, Minneapolis, MN (invited talk);
02/2011 Initial State Fluctuations and Final-State Particle Correlations, RBRC

workshop, BNL (invited talk);

11/2010 Structure Functions, Geometric Scaling and Parton Saturation: Assessment and Perspectives for the LHC, GSI Darmstadt (invited talk);

10/2010 Levinfest, An International Symposium Celebrating Genya Levin's 70th Birthday, Tel Aviv (invited plenary talk);

01/2010 QCD in the LHC era, Valparaiso, Chile (invited talk);

10/2009 From Particles and Partons to Nuclei and Fields: an international workshop and symposium; Columbia University, NY (invited plenary talk);

09/2009 Low x meeting, Ischia, Italy (invited talk);

05/2009 Crossing the Boundaries: Gauge Dynamics at Strong Coupling, Minneapolis, MN (invited talk);

04/2009 International workshop and symposium on Quantum Field Theory in Extreme Environments, Paris, France (invited plenary talk);

06/2008 3rd International Conference on Hard and Electromagnetic Probes in High Energy Collisions, Hard Probes 2008, Isla A Toxa, Spain (invited lecture for students);

07/2007 Meeting in Theoretical and Mathematical Physics, Euler Institute, St. Petersburgh, Russia (invited keynote talk);

05/2007 12 International conference on Elastic and Diffractive Scattering, DESY, Hamburg, Germany (invited plenary talk);

05/2007 CERN Institute on Heavy Ion Collisions at LHC, CERN, Geneva, Switzerland (invited talk);

01/2007 High Density QCD, Galileo Galilei Center, Florence, Italy (invited talk);

11/2006 From RHIC to LHC: Achievements and Opportunities; INT Seattle, Washington; USA (invited talk);

6/2006 Low x workshop, Lisbon, Portugal (invited talk)

6/2006 Hard Probes 2006, Monterey, California (invited plenary talk)

5/2006 Continuous Advances in QCD, Minneapolis, MN (invited talk)

10/2005 PANIC05 , Santa Fe, New Mexico (invited talk)

6/2005 Cracow School of Theoretical Physics, XLV course, Zakopane June 2005 (invited course of lectures)

5/2005 Deep Inelastic Scattering 05, Madison, WI (invited talk)

3/2005 RBRC Workshop on Classical and Quantum Aspects of Color Glass Condensate, BNL, (invited talk)

11/2004 QCD and String Theory conference, KITP Santa Barbara (invited plenary talk);

1/2003 VIII Argentine Symposium of Theoretical Physics of Particles and Fields, Bariloche, (invited course of lectures)

9/2002 Confinement 2002, Gargnano, Italy (invited plenary talk)

5/2002 Conference on QCD and RHIC physics, Santa Barbara (invited plenary talk)

Recent Participation in programs

7/2015 Fluctuations and Correlations in p-A collisions, INT Seattle, WA

10/2011 Frontiers in QCD, INT Seattle, Washington, USA

05-06/2011 Standard and Novel QCD Phenomena at Hadron Colliders, Trento, Italy
05-06/2007 CERN Institute on Heavy Ion Collisions at LHC, CERN, Geneva, Switzerland;
01/2007 High Density QCD, Galileo Galilei Center, Florence, Italy;
11/2006 From RHIC to LHC: Achievements and Opportunities; INT Seattle, Washington; USA;
07/2006 QCD and String Theory, Benasque center for science
11/2004 QCD and String theory, KITP Santa Barbara
11/2003 The First Three Years of Heavy-Ion Physics at RHIC, INT University of Washington, Seattle
10/2002 Coherent Effects at RHIC and LHC: Initial Conditions and Hard Probes ECT Trento
5/2002 QCD and Gauge Theory Dynamics in the RHIC Era, Kavli institute, Santa Barbara

Organization of Conferences

05/25-05/31/2015 Heavy Ion Collisions at LHC: The First Fermi, Beer Sheva, Israel – member of international advisory committee;

07/02- 07/14/2006 QCD and String Theory, Benasque center for science, lead organizer
10/24-10/28/2005 Santa Fe, New Mexico, USA, Particle and Nuclei International Conference, PANIC 05, convener of the QCD parallel session;
05/25-05/27/2005 Workshop on Proton-Nucleus Collisions at the LHC, CERN, Geneva, Switzerland - coordinator of the low x section;
01/05-01/08/2004 From Fields to Strings - Circumnavigating Theoretical Physics, Memorial Conference in Memory of Ian Kogan, Oxford, UK - member of scientific advisory committee;
08/20-08/25/2002 Channel meeting in theoretical particle physics, Plymouth, UK - lead organizer

Referee for the following Journals:

Annals of Physics
Physical Review B, C and D
Physical Review Letters
Physics Letters A and B
Nuclear Physics A and B
International Journal of Modern Physics A
Modern Physics Letters A
Journal of High Energy Physics
European Physics Journal

Proposal reviewing for funding agencies:

DOE Nuclear theory carrier grant proposals (2017)
Israel Science Foundation (2017, 2010, 2008)
Binational US-Israel Foundation (2017)
FONDECYT (Chile) grant proposals (2017, 1999)

NSC (Poland) grant proposals (2016, 2017)
NRF (South Africa) grant proposal (2014)
DOE particle theory grant proposal (2012, 2010)
Agence National de la Recherche grant proposal (France) (2011)
NSF High energy grant proposals (2013, 2011, 2006, 2005, 2004, 2003, 2002)
NSF Nuclear theory grant proposal (2005)
PPARC (Particle Physics and Astrophysics Research Council) advanced fellowship (UK) (2004, 2002, 2000)
EPSRC (Engineering and Physical Sciences Research Council) advanced fellowship (UK) (2004)
EURYI (European Young Investigator Award Scheme) particle theory (2004)
EURYI condensed matter theory (2004);
PPARC postdoctoral fellowship (UK) (2002)

Review articles and Chapters in books

1. A. Kovner and B. Rosenstein, Topological Interpretation of Electric Charge, Duality and Confinement in 2+1 Dimensions, *Int. J. Mod. Phys*. **A7** 7419 (1992).

2. A. Kovner, Magnetic Z_N Symmetry in 2+1 Dimensions, *Int. J. Mod. Phys*. **A17** 2113 (2002).

3. A. Kovner, Confinement, Magnetic Z(N) Symmetry and Low-Energy Effective Theory of Gluodynamics, In *Shifman, M. (ed.): At the Frontier of Particle Physics, vol. 3* 1777-1825. e-Print Archive: hep-ph/0009138.

4. I. I. Kogan and A. Kovner; Monopoles, Vortices and Strings: Confinement and Deconfinement in (2+1)-Dimensions at Weak Coupling, In *Shifman, M. (ed.): At the Frontier of Particle Physics, vol. 4*; 2335-2407. e-Print Archive: hep-th/0205026.

5. A. Kovner and U. Wiedemann, Gluon Radiation and Patrons Energy Loss, in Hwa, R.C. (ed.) et al.: Quark Gluon Plasma, World Scientific, Singapore; 192-248 e-Print Archive: hep-ph/0304151.

6. A. Kovner and J.G. Milhano, Variational Techniques in Non-Perturbative QCD; in M. Shifman, A. Vainshtein and J. Wheater eds. From Fields to Strings: Circumnavigating Theoretical Physics, World Scientific, Singapore 2004; 121-188; e-Print Archive: hep-ph/0406165.

7. A. Kovner, High energy evolution: The Wave function point of view;
Lectures given at 45th Cracow School of Theoretical Physics, Zakopane, Tatra Mountains, Poland, 3-12 June 2005; published in *Acta Phys.Polon***.B36**:3551-3592,2005; e-Print Archive: hep-ph/0508232

8. A. Kovner, Particle Production and Angular Correlations at High Energy; Lectures given at 51st Cracow School of Theoretical Physics, Zakopane, Tatra Mountains, Poland, June 2011; published in *Acta Phys.Polon*. **B42** (2011) 2717-2750;

9. A. Kovner and M. Lublinsky; Angular and Long Range Rapidity Correlations in Particle Production at High Energy, invited review article, *Int. J. Mod. Phys*. E22 (2013) 1330001.

Papers published in refereed journals

1. A. Kovner and B. Rosenstein, Quantum Mechanical Evolution of Generalized Coherent States and Semiclassical Approximation, *Phys. Rev. D* **32**, 2622 (1985).
2. B. Rosenstein and A. Kovner, The Solution of the Gap Equation for Yang - Mills Theory, *Phys. Lett. B* **177**, 71 (1986).
3. A. Kovner and B. Rosenstein, On Quantization Ambiquity, *J. Phys. A* **20**, 2709 (1987).
4. A. Kovner and B. Rosenstein, Power Corrections from Nonlocal Terms in a Lagrangian, Phys. Rev. *D* **36**, 2595 (1987).
5. A. Kovner and B. Rosenstein, The O(N) nonlinear σ - Model - A Theory with Hidden U(1) Gauge Symmetry, *Phys.Rev. Lett*. **59**, 857 (1987).
6. A. Kovner and B. Rosenstein, Time Dependent Gaussian Approximation in O(N) Nonlinear σ - Model, *Ann.Phys*. (N.Y.) **187**, 449 (1988).
7. A. Kovner and B. Rosenstein, Covariant Gaussian Approximation - Formalism, *Phys. Rev. D* **39**, 2332 (1989).
8. B. Rosenstein and A. Kovner, Covariant Gaussian Approximation. Scalar Theories, *Phys. Rev. D* **40**, 504 (1989).
9. B. Rosenstein and A. Kovner, Covariant Gaussian Approximation in the U(1) Higgs Model, *Phys. Rev. D* **40**, 515 (1989).
10. B. Rosenstein and A. Kovner, Gross - Neveu and Thirring Models. Covariant Gaussian Analysis, *Phys. Rev. D* **40**, 523 (1989).
11. A. Krasnitz, E.G. Klepfish and A. Kovner, Properties of the Large - U Hubbard Model Near Half Filling, *Phys. Rev. B* **39**, 9147 (1989).
12. A. Kovner, Canonical Quantization of the CP^n Model with a θ - Term, *Phys. Lett. B* **224**, 299 (1989).
13. A. Kovner and S. Popescu, Equivalence of the Massive Thirring Model with a U(1) Gauge Theory, *Phys. Rev. D* **39**, 3766 (1989).
14. A. Kovner, Berry's Phase and Effective Action, *Phys. Rev. A* **40**, 545 (1989).
15. A. Krasnitz and A. Kovner, Hidden Weak Ferromagnetism in Slightly Doped Antiferromagnets, *Phys. Rev. B* **41**, 547 1990).
16. A. Kovner and D. Eliezer, Solitons in Low Energy Effective Theory of the Four Fermi Model in 2+1 Dimensions, *Phys. Lett*. **246B**, 119 (1990).

17. A. Kovner and B. Rosenstein, Kosterlitz - Thouless Mechanism of 2-D Superconductivity, *Phys. Rev. B* **42**, 4748 (1990).

18. G. Gat, A. Kovner, B. Rosenstein and B. Warr, Four - Fermi Interaction in 2+1 Dimensions beyond Leading Order in 1/N, *Phys. Lett*. **240B**, 158 (1990).

19. A. Kovner, On Fermi - Bose Correspondence in 2+1 Dimensions, *Int. J. Mod. Phys*. *A* **5**, 3999 (1990).

20. B. Rosenstein and A. Kovner , On Quantum CP^N Model, *Nucl. Phys. B* **346**, 576 (1990).

21. A. Kovner, B. Rosenstein and D. Eliezer, Photon as a Goldstone Boson in 2+1 Dimensional Abelian Gauge Theories, *Nucl. Phys. B* **350**, 325 (1991).

22. A. Kovner and B. Rosenstein, Masslessness of Photon and Chern - Simons Term in QED3, *Mod. Phys. Lett. A* **5**, 2661 (1990).

23. A. Kovner, B. Rosenstein and D. Eliezer, Photon as Goldstone boson in 2+1 dimensional Higgs model; *Mod. Phys. Lett.* A **5**, 2733 (1990).

24. B. Rosenstein and A. Kovner, Masslessness of Photon and the Goldstone Theorem; *Int. J. Mod. Phys. A* **6**, 3559 (1991).

25. A. Kovner and B. Rosenstein, Finite Fixed Points - Rule Rather Than Exception, *Phys. Lett. B* **261**, 97 (1991).

26. A. Kovner and B. Rosenstein, Ultraviolet Dimension of the Vortex Operator and the Nonperturbative Anomaly in the CP^{N-1} Model, *Phys. Lett. B* **261**, 104 (1991).

27. A. Kovner and B. Rosenstein, Locality of the Order Parameter for Higgs - Coulomb Phase Transition in Planar QED, *Phys. Lett. B* **266,** 443 (1991).

28. A. Kovner and D. Eliezer, Spontaneous Breaking of Magnetic Flux and Dual Transformation in 2+1 Dimensional Electrodynamics with Four Fermi Coupling, *Int. J. Mod. Phys*. *A* **7**, 2775 (1992).

29. A. Kovner and B. Rosenstein, Topological Interpretation of Electric Charge and the Aharonov - Bohm Effect in 2+1 Dimensions, *Phys. Rev. Lett*. **67**, 1490 (1991).

30. A. Kovner and B. Rosenstein, What Symmetry is Broken in the Superconducting - Normal Phase Transition, *J. Phys. C* **4** (Condensed Matter), 2903 (1992).

31. G. Gat, A. Kovner and B. Rosenstein, Chiral Phase Transitions in d=3 and Renormalizability of Four Fermi Interaction, *Nucl. Phys*. *B* **385**, 76 (1992).

32. A. Kovner and B. Rosenstein, Deconfinement in 2+1 Dimensional Nonabelian Gauge Theories with Fundamental Fermions, *Mod. Phys. Lett*. *A* **7**, 2287 (1992).

33. A. Kovner, P. Kurzepa and B. Rosenstein, A Candidate for Exact Continuum Dual Theory for Scalar QED_3, *Mod. Phys. Lett*. *A* **8**, 1343 (1993).

34. A. Kovner and B. Rosenstein, Quarks as Topological Defects or What is Confined Inside a

Hadron?, *Int. J. Mod. Phys. A* **8**, 5575 (1993).

35. B. Rosenstein, H.L. Yu and A. Kovner, Critical Exponents for New Universality Classes, *Phys. Lett. B* **314**, 381 (1993).

36. F. Alexander, S. Habib and A. Kovner, Statistical Mechanics of Kinks in 1+1 Dimensions - Numerical Simulations and Double Gaussian Approximation, *Phys. Rev. E* **48**, 4284 (1993).

37. A. Kovner and B. Rosenstein, New look at QED_4: Photon as a Goldstone Boson and Topological Interpretation of Electric Charge, *Phys. Rev. D* **49**, 5571, (1994).

38. A. Kovner and P. Kurzepa, Bosonization in 2+1 Dimensions without a Chern - Simons Term, *Phys. Lett. B* **321**, 129 (1994).

39. A. Kovner and P. Kurzepa, Bosonization of QED_3 with an Induced Chern - Simons Term, *Phys. Lett. B* **328**, 506 (1994).

40. A. Kovner and P. Kurzepa, Fermions from Photons: Bosonization of QED_3 in 2+1 dimensions, *Int. J. Mod. Phys. A* **9**, 4669 (1994).

41. E. Langmann, M. Salmhofer and A. Kovner, Consistent Axial - Like Gauge Fixing on Hypertori, *Mod. Phys. Lett. A* **9**, 2913 (1994).

42. A. Kovner, B. Rosenstein and P. Kurzepa, Fermionic Operators from Bosonic Fields in 3+1 Dimensions, *Phys. Lett. B* **342**, 381 (1995).

43. I. Kogan and A. Kovner, Compact QED_3 - a Simple Example of a Variational Calculation in a Gauge Theory, *Phys. Rev. D* **51**, 1948 (1995).

44. I. Kogan and A. Kovner, A Variational Approach to Yang - Mills Vacuum: Dynamical Mass Generation and Confinement, *Phys. Rev. D* **52**, 3719 (1995).

45. A. Kovner, L. McLerran and H. Weigert, Gluon Production at High Transverse Momentum in the McLerran-Venugopalan Model of Nuclear Structure Functions, *Phys. Rev. D* **52**, 3809 (1995).

46. A. Kovner, L. McLerran and H. Weigert, Gluon Production from Non Abelian Weizsacker - Williams Fields in Nucleus - Nucleus Collisions, *Phys. Rev. D* **52**, 6231 (1995).

47. I. Kogan and A. Kovner, The Two Phases of Topologically Massive Compact U(1) Theory, *Phys. Rev. D* **53**, 4510 (1996).

48. J. Jalilian-Marian, A. Kovner, L. McLerran and H. Weigert; The Intrinsic Glue Distribution at Very Small x, *Phys. Rev. D* **55**, 5414 (1997).

49. A. Kovner, Dual Superconductivity. Variations on a Theme, *Found.Phys.***27**, 101 (1997).

50. A. Kovner and M. Shifman, Chirally Symmetric Phase of Supersymmetric Gluodynamics, *Phys. Rev. D* **56**, 2396 (1997).

51. A. Kovner, M. Shifman and A. Smilga, Domain Walls in Supersymmetric Yang - Mills

Theories, *Phys. Rev. D* **56**, 7978 (1997).

52. J. Jalilian-Marian, A. Kovner, A. Leonidov and H. Weigert; The BFKL Equation from the Wilson Renormalization Group, *Nucl. Phys*. *B* **504**, 415 (1997).

53. I. Kogan, A. Kovner and M. Shifman More on Supersymmetric Domain Walls, N Counting and Glued Potentials, *Phys. Rev. D* **57**, 5195 (1998).

54. J. Jalilian-Marian, A. Kovner, A. Leonidov and H. Weigert; The Wilson Renormalization Group for Low *x* Physics: towards the High Density Regime, *Phys. Rev*. *D* **59**, 014014 (1999).

55. J. Jalilian-Marian, A. Kovner and H. Weigert; The Wilson Renormalization Group for Low *x* Physics: Gluon Evolution at Finite Parton Density, *Phys. Rev*. *D* **59**, 014015 (1999).

56. A. Kovner and B. Rosenstein; Strings and String Breaking in (2+1)-Dimensional Nonabelian Theories, *J. High Energy Phys*. **003**, 9809 (1998).

57. W. Brown, J. P. Garrahan, I. I. Kogan and A. Kovner; Instantons and the QCD Vacuum Wave Functional, *Phys. Rev. D* **59**, 034015 (1999).

58. J. Jalilian-Marian, A. Kovner, A. Leonidov and H. Weigert; Unitarization of Gluon Distribution in the Doubly Logarithmic Regime at High Density, *Phys. Rev*. *D* **59**, 034007 (1999).

59. I. I. Kogan, A. Kovner and M. Shifman, Chiral Symmetry Breaking without Bilinear Condensates, Unbroken Axial Z(N) Symmetry, and Exact QCD Inequalities, *Phys. Rev*. *D* **59**, 016001 (1999).

60. A. Kovner and B. Svetitsky, Interaction Potential in Compact Three-Dimensional QED with Mixed Action, *Phys. Rev*. *D* **60**,105032 (1999).

61. A. Kovner and J.G. Milhano, Vector Potential Versus Color Charge Density in Low x Evolution, *Phys. Rev*. *D* **61**, 014012 (2000).

62. A. Kovner, A. Krasnitz, R. Potting, Sphaleron Transition Rate in Presence of Dynamical Fermions, *Phys. Rev. D* **61**, 025009 (2000).

63. C. Korthals-Altes, A. Kovner and M. Stephanov, Spatial 't Hooft Loop, Hot QCD and Z_N Domain Walls, *Phys. Lett*. *B* **469**, 205 (1999).

64. W. E. Brown, J. P. Garrahan, I. I. Kogan and A. Kovner, Gauge Invariant Variational Approach with Fermions: the Schwinger Model, *Phys. Rev*. *D* **62**, 016004 (2000).

65. A. Kovner, J.G. Milhano and H. Weigert, Relating Different Approaches to Nonlinear QCD Evolution at Finite Gluon Density, *Phys. Rev*. *D* **62**, 114005 (2000).

66. C. Korthals-Altes and A. Kovner, Magnetic Z(N) Symmetry In Hot QCD and the Spatial Wilson Loop, *Phys. Rev. D* **62** 096008 (2000).

67. G. Dunne, A. Kovner and B. Tekin, Magnetic Symmetries and Vortices in Chern-Simons

Theories, *Phys. Rev. D* **63** 025009 (2001).

68. C. D. Fosco and A. Kovner, Vortices and Bags in 2+1 Dimensions, *Phys. Rev. D* **63**, 045009 (2001).

69. G. Dunne, I. I. Kogan, A. Kovner, B. Tekin, Deconfining Phase Transition in 2+1D: The Georgi-Glashow Model, *JHEP* **0101**, 032 (2001).

70. I. Kogan, A. Kovner, B. Tekin, The Chicken or the Egg: or Who Ordered the Chiral Phase Transition, *Phys. Rev. D* **63**, 116007 (2001).

71. I. Kogan, A. Kovner, B. Tekin, Instanton Molecules at High Temperature - The Georgi-Glashow Model and Beyond, *JHEP* **0103**, 021 (2001).

72. I. Kogan, A. Kovner, B. Tekin, Deconfinement at N > 2: SU(N) Georgi-Glashow Model in 2+1 Dimensions, *JHEP* **0105**, 062 (2001).

73. I. Kogan, A. Kovner, M. Schvellinger, Hagedorn Transition, Vortices and *D*0-Branes: Lessons from 2+1 Confining String; *JHEP* **0107**, 019 (2001).

74. A. Kovner, Z(N) Wall Junctions: Monopole Fossils in Hot QCD, *Phys. Lett. B* **509**, 106 (2001).

75. A. Kovner and U. A. Wiedemann, Eikonal Evolution and Gluon Radiation, *Phys.Rev. D* **64**, 114002 (2001).

76. A. Kovner and U. A. Wiedemann, Nonlinear QCD Evolution: Saturation without Unitarization, *Phys. Rev. D* **66**, 051502 (2002).

77. A. Kovner and U. A. Wiedemann, Perturbative Saturation and the Soft Pomeron, *Phys. Rev. D* **66**, 034031 (2002).

78. G. Dunne, A. Kovner and S. Nishigaki, Fundamental Matter and the Deconfining Phase Transition in 2+1 D, *Phys. Lett. B* **544**, 215 (2002).

79. A. Kovner and U. Wiedemann, No Froissart Bound from Gluon Saturation, *Phys. Lett. B* **551**, 311 (2003).

80. I.K. Kogan, A. Kovner and J.G. Milhano, Variational Study of the Deconfinement Phase Transition, *JHEP* **0212**, 017 (2002).

81. A. Kovner, M. Lavelle and D. McMullan, On Nonexistence of Magnetic Charge in Pure Yang - Mills Theories, *JHEP* **0212**, 045 (2002).

82. D. Antonov and A. Kovner, SUSY 3D Georgi-Glashow Model at Finite Temperature, *Phys. Lett. B* **563** 203 (2003).

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Dependence of the Cronin Effect from the Nonlinear QCD Evolution, *Phys. Rev. Lett.* **92**, 082001 (2004).

85. A. Khvedelidze, A. Kovner and D. McMullan, The Higgs Field and the Ultraviolet Behavior of the Vortex Operator in 2+1 Dimensions, *JHEP* **0407**, 003 (2004).

86. A. Kovner and M. Lublinsky, In Pursuit of Pomeron Loops: The JIMWLK Equation and the Wess-Zumino Term, *Phys. Rev. D* **71**, 085004 (2005).

87. A. Kovner and M. Lublinsky, Remarks on High Energy Evolution, *JHEP* **0503**, 001 (2005).

88. A. Kovner and M. Lublinsky, From Target to Projectile and Back Again: Selfduality of High Energy Evolution in QCD, *Phys. Rev. Lett.* **94**, 181603 (2005).

89. A. Kovner and M. Lublinsky, Dense-Dilute Duality at Work: Dipoles of the Target, *Phys. Rev. D* **72,** 074023 (2005).

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91. A. Khvedelidze, A. Kovner and D. McMullan, Magnetic Monopoles in 4d: An Attempt at Perturbative Calculation; *JHEP* **0601***,* 145 (2006).

92. R. Baier, A. Kovner, M. Nardi and U. A. Wiedemann Particle Correlations in Saturated QCD Matter; submitted to *Phys. Rev. D* **72**, 094013 (2005).

93. A. Kovner and M. Lublinsky, Odderon and seven Pomerons: QCD Reggeon field theory from JIMWLK evolution, e-Print Archive: hep-ph/0512316, *JHEP* **0702**:058 (2007).

94. A. Kovner and M. Lublinsky, The Yin and Yang of High Energy Chromodynamics: Scattering in Black and White, e-Print Archive: hep-ph/0604085**;** *Nucl. Phys.* **A779**:220-243, (2006).

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Most significant results:

- Variational study of the Yang-Mills vacuum and of the deconfinement phase transition in Yang-Mills theory;
- Clarification of the nature of Z(N) domain walls in high temperature QCD and their relation to confinement order parameter;
- Spontaneous breaking of (generalized) magnetic symmetry in nonabelian gauge symmetries as the universal description of confinement;
- Analytic solution of deconfinement phase transition in 2+1 dimensional confining theory;
- Semiclassical approach to gluon production in nucleus-nucleus collisions;

- Derivation of the high energy evolution equation for high energy hadronic scattering – the JIMWLK evolution;
- Froissart bound violation at high energy within the saturation framework;
- Derivation of Reggeon field theory from high energy evolution;
- Next to Leading Order JIMWLK equaton;
- Study of multiparticle correlations in high energy hadronic wave function and its possible relation to particle production at LHC;