

Alex Kovner

CURRICULUM VITAE

Alexander.Kovner@uconn.edu

Gant South, Room S413-G

Tel: 860-486-4468

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

- 01-06/2025 Scientific Associate, CERN, Geneva, Switzerland
- 08/2024-08/2026 ExtreMe Matter Institute, EMMI visiting professor, University of Heidelberg, Germany
- 01-08/2018 Scientific Associate, CERN, Geneva, Switzerland
- 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

5/2023 Color Glass Condensate at the Electron-Ion Collider, Trento, Italy (invited talk)
 5/2023 Quantum Entanglement in High Energy Physics, Krakow, Poland (invited talk)
 5/2022 Physics of Saturation – Precision and Quasi Collectivity, Beer Sheva, Israel (invited talk)
 5/2022 XXIX International workshop on Deeply Inelastic Scattering, Santiago de Compostela, Spain (contributed talk)
 10/2021 12th International Conference on Multi Parton Interaction, Lisbon, Portugal (invited review talk);
 1/2021 6th International Conference Initial Stages in High Energy Nuclear Collisions, Rehovot, Israel (invited plenary talk);
 3/2019 Workshop on Collectivity of small systems in high energy collisions, Houston, TX (invited keynote talk);
 8/2018 Quark Confinement and the Hadron Spectrum, Maynooth, Ireland (invited talk);
 5/2018 Probing QCD at the High Energy Frontier, ECT* Trento, Italy (invited talk);
 9/2017 4th International Conference Initial Stages in High Energy Nuclear Collisions, Krakow, Poland (invited plenary talk);
 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.
 Petersburg, 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

08/2018 Collectivity and Correlations in High Energy Hadron and Nuclear Collisions,
Benasque, Spain
07/2015 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 and Summer Schools

08/02-08/09/2023. Summer School: UConn-NSF summer school on EIC and saturation
physics, Storrs, CT; sole organizer
05/27-06/5/2019 Summer School: Strong interactions beyond simple factorization:
collectivity at high energy from initial to final state, Storrs, CT; sole
organizer
08/06-08/18/2018 Collectivity and Correlations in High Energy Hadron and Nuclear

Collisions, Centro de Ciencias Pedro Pasqual, Benasque, Spain,
lead organizer

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

Proposal reviewing for funding agencies:

ERC (European Research Council) grant proposals (2018, 2023)
NSF Nuclear Theory grant panel member (2020)
DOE Nuclear theory grant proposals (2019)
DOE Nuclear theory carrier grant proposals (2019, 2017)
Israel Science Foundation (2023, 2021, 2020, 2017, 2010, 2008)
Binational US-Israel Foundation (2017)
FONDECYT (Chile) grant proposals (2020, 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 proposals (2005, 2018)
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)

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 equation;
- Study of multiparticle correlations in high energy hadronic wave function and its possible relation to particle production at LHC;