

Alexander Moll

Contact and Personal Information

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Employment

University of Massachusetts Boston	2020-present
Robert T. Seeley Visiting Assistant Professor	Boston, MA

Northeastern University	2018-2020
Zelevinsky Research Instructor	Boston, MA
NSF Postdoctoral Associate	
RTG in Algebraic Geometry and Representation Theory	

Hausdorff Center for Mathematics	2017-2018
University of Bonn	Bonn, Germany
Institute for Applied Mathematics	
Postdoctoral Researcher	
Probability Theory and Stochastic Analysis	

Institut des Hautes Études Scientifiques	2016-2017
CARMIN Postdoctoral Researcher	Bures-sur-Yvette, France
Affiliation: Institut Henri Poincaré	

Education

Massachusetts Institute of Technology (Ph.D. Mathematics)	Jun. 2016
Advisor: Alexei Borodin	Cambridge, MA
Thesis: <i>Random Partitions and the Quantum Benjamin-Ono Hierarchy</i>	

Columbia University (B.A. Mathematics)	Jun. 2011
Advisor: Mikhail Khovanov	New York, NY
Thesis: <i>Vershik-Kerov Asymptotics for HOMFLY Invariants of Knots and Links</i>	

Honors and Awards

U.S. National Science Foundation Graduate Research Fellowship	2013 - 2016
MIT Dean of Science Fellowship	2011 - 2013
Mellon Mays Fellow, Columbia University	2009 - 2011
John Jay Scholar, Columbia University	2007 - 2011
Phi Beta Kappa, Columbia University	2011
Summa Cum Laude, Columbia University	2011

Research

Probability Theory and Mathematical Physics with a focus on:

Integrable Probability
Geometric Quantization
Semi-Classical Analysis
Benjamin-Ono Universality
Solitons and Dispersive Shock Waves

Papers

A. Moll “Multi-Phase z -Measures from Quantum Periodic Traveling Waves” (in preparation)

R. Chang and A. Moll, “Fractional Gaussian Fields in Geometric Quantization and the Semi-Classical Analysis of Coherent States” (in preparation)

A. Moll “The Born Rule for Quantum Measurement for Mathematicians” (in preparation).

A. Moll “Gaussian Asymptotics of Jack Measures on Partitions from Weighted Enumeration of Ribbon Paths” (in review) submitted to *International Mathematics Research Notices*.
[arXiv:2010.13258](#)

A. Moll “Exact Bohr-Sommerfeld Conditions for the Quantum Periodic Benjamin-Ono Equation”. *Symmetry, Integrability, Geometry: Methods and Applications* 15 (2019) 098.
[arXiv:1906.07926](#)

A. Moll “Finite Gap Conditions and Small Dispersion Asymptotics for the Classical Periodic Benjamin-Ono Equation”. *Quarterly of Applied Mathematics* 78 (2020), 617-702.
[arXiv:1901.04089](#)

A. Moll “Random Partitions and the Quantum Benjamin-Ono Hierarchy”.
Monograph, 127 pages (2017).
[arXiv:1508.03063](#)

Invited Talks

University of Massachusetts Boston
Colloquium Dec 9, 2020
Boston, MA

AIMS Conference Series on Dynamical Systems and Differential Equations
Nonlinear Wave Equations Jun 5, 2020
Atlanta, GA

Brown / UMass Amherst / Boston University
Joint Dynamics and PDE Seminar Apr 16, 2020
Amherst, MA

AMS Spring Southeastern Sectional Meeting <i>Integrable Probability</i>	Mar 13, 2020 Charlottesville, VA
Initiative for the Theoretical Sciences, CUNY Graduate Center <i>Seminar on Condensed Matter Physics and Quantum Computation</i>	Feb 7, 2020 New York, NY
Joint Math Meeting <i>Random Combinatorial Structures ... and Integrable Systems</i>	Jan 15, 2020 Denver, CO
City College of New York <i>Theoretical Physics Seminar</i>	Dec 6, 2019 New York, NY
AMS Fall Western Sectional Meeting <i>Random Matrices and Related Structures</i>	Nov 9, 2019 Riverside, CA
University of Massachusetts Amherst <i>Representation Theory Seminar</i>	Oct 15, 2019 Amherst, MA
Northeastern University <i>Analysis and Geometry Seminar</i>	Oct 4, 2019 Boston, MA
International Centre for Theoretical Physics <i>School and Workshop on Random Matrix Theory and Point Processes</i>	Sept 25, 2019 Trieste, IT
Brown University <i>Lefschetz Center Dynamical Systems Seminar</i>	Sept 16, 2019 Providence, RI
University of Michigan <i>Integrable Systems and Random Matrix Theory Seminar</i>	Apr 15, 2019 Ann Arbor, MI
Temple University <i>Probability Seminar</i>	Jan 29, 2019 Philadelphia, PA
University of Massachusetts Boston <i>Colloquium</i>	Oct 2, 2018 Boston, MA
Harvard Center for Mathematical Sciences and Applications <i>Algebraic Geometry Seminar</i>	Nov 2, 2017 Cambridge, MA
Yale University <i>Geometry, Symmetry, and Physics Seminar</i>	Oct 30, 2017 New Haven, CT
New York University <i>Probability Seminar</i>	Oct 27, 2017 New York, NY
Massachusetts Institute of Technology <i>Integrable Probability Seminar</i>	Sept 19, 2017 Cambridge, MA

Centre International de Recontres Mathématiques (Luminy) <i>Winter School Combinatorics and Interactions</i>	Jan 8, 2017 Marseille, FR
Université Paris Diderot (Paris 7) <i>Combinatorics Seminar</i>	Nov 23, 2016 Paris, FR
Institut de Mathématiques de Toulouse <i>Probability Seminar</i>	Nov 15, 2016 Toulouse, FR
Eidgenössische Technische Hochschule / University of Zürich <i>Joint Probability Seminar</i>	Nov 9, 2016 Zürich, CH
Institut Henri Poincaré <i>Random Matrix Seminar</i>	Nov 4, 2016 Paris, FR
Kungliga Tekniska högskolan <i>Analysis Seminar</i>	Oct 19, 2016 Stockholm, SE
Massachusetts Institute of Technology <i>Integrable Probability Seminar</i>	May 5, 2016 Cambridge, MA
Massachusetts Institute of Technology <i>Integrable Probability Seminar</i>	Apr 21, 2016 Cambridge, MA
Banff International Research Station <i>Workshop on Beta Ensembles</i>	Apr 13, 2016 Banff, CA
Yale University <i>Geometry, Symmetry, and Physics Seminar</i>	Feb 4, 2016 New Haven, CT
New York University <i>Probability Seminar</i>	Jan 29, 2016 New York, NY
Hausdorff Center for Mathematics <i>Probability and Asymptotic Analysis in Strongly Coupled Systems</i>	Jan 15, 2016 Bonn, DE
Columbia University <i>Probability Seminar</i>	Nov 13, 2015 New York, NY
University of Salento <i>Physics and Mathematics of Nonlinear Phenomena</i>	Jun 24, 2015 Gallipoli, IT

Selected Conference and Workshop Participation

Northeastern University <i>Quantum Structures in Algebra and Geometry</i>	Aug 2019 Boston, MA
The Fields Institute for Research in Mathematical Sciences <i>Workshop on Nonlinear Dispersive PDEs and Inverse Scattering</i>	Apr 2019 Toronto, CA
Institut des Hautes Études Scientifiques <i>Spectral Properties of Large Random Objects</i>	Jul 2017 Bures-sur-Yvette, FR
Institut Henri Poincaré <i>Combinatorics and Interactions</i>	Jan-Mar 2017 Paris, FR
Institut d'Études Scientifiques de Cargèse <i>Quantum Integrable Systems, Conformal ... and Stochastic Processes</i>	Sept 2016 Cargèse, COR
Kavli Institute for Theoretical Physics <i>Non-Equilibrium Dynamics of Stochastic ... Integrable Systems</i>	Feb 2016 Santa Barbara, CA
Institut Henri Poincaré <i>Conference in Random Matrix Theory</i>	Nov 2014 Paris, FR
Mathematical Sciences Research Institute <i>Summer School in Stochastic PDEs</i>	Jun 2014 Berkeley, CA
Institute for Computational and Experimental Research in Math. <i>Blackwell-Tapia Conference</i>	Nov 2012 Providence, RI
Chebyshev Laboratory in St. Petersburg State University <i>St. Petersburg Summer Program in Statistical Physics</i>	Jun 2012 St. Petersburg, RU

Research Activities

Reviewer for Journal of High Energy Physics
Reviewer for Journal of Statistical Physics
Reviewer for Symmetry, Integrability, and Geometry: Methods and Applications

Co-Organizer of Special Session “Nonlinear Wave Equations” Jun. 2020
American Institute of Mathematical Sciences (AIMS)
Conference Series on Dynamical Systems and Differential Equations

Interdisciplinary Outreach (Public Lectures for Humanists, Artists, and Activists)

Arika Episode 10: A Means Without End Nov 22-23, 2019
Irreversibility in Quantum Theory and Statistical Reasoning Glasgow, Scotland

Teaching Experience

No.	Course	Institution	Enrollment	Evaluations	Semester
260	<i>Linear Algebra I</i>	UMBoston	32	- / -	Spring 2021
647	<i>Probability Models</i>	UMBoston	15	- / -	Fall 2020
260	<i>Linear Algebra I</i>	UMBoston	33	- / -	Fall 2020
4525	<i>Applied Analysis</i>	Northeastern	15	5.0 / 5.0	Spring 2020
3081	<i>Probability and Statistics</i>	Northeastern	71	4.8 / 5.0	Fall 2019
4525	<i>Applied Analysis</i>	Northeastern	23	4.8 / 5.0	Spring 2019
1341	<i>Calculus I</i>	Northeastern	46	4.3 / 5.0	Fall 2018
1341	<i>Calculus I</i>	Northeastern	44	3.6 / 5.0	Fall 2018
4525	<i>Applied Analysis</i>	Northeastern	12	4.4 / 5.0	Summer 2018
(TA) 18.02	<i>Multivariable Calculus</i>	MIT	22	-	Fall 2014
(TA) W4801y	<i>Differentiable Manifolds</i>	Columbia	12	-	Spring 2011
(TA) BC2006x	<i>Combinatorics</i>	Columbia	11	-	Fall 2010
(TA) V1201x	<i>Calculus III</i>	Columbia	31	-	Fall 2010

Teaching Activities

Created Written Qualifying Exams in Probability Models U Mass Boston Ph.D. Program in Computational Sciences	Jan. 2021
Organizer of MIT Integration Bee (with D. Mendelson)	Jan. 2015
Organizer of MIT Mathematics Department Music Recital	Jan. 2013-2016
Organizer of Atiyah-Singer Index Theorem Learning Seminar	Fall 2013

Recent Letters of Reference

- Alexei Borodin, M.I.T. (*Ph.D. advisor*)
- Peter Miller, University of Michigan
- Govind Menon, Brown University
- Christopher Beasley, Northeastern University
- Prasanth George, Northeastern University (*teaching*)