Larry Rolen

Curriculum vitae

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Education, Research and Professional Experience

Starting Fall 2015	**Research Associate**, *The Pennsylvania State University*, State College, PA, USA.
08/2013–Present	**Wissenschaftlicher Mitarbeiter**, *University of Cologne*, Germany. Mentor: Kathrin Bringmann
07/2013	**PhD in Mathematics**, *Emory University*, Atlanta, GA, USA. Dissertation in number theory on "Maass Forms and Quantum Modular Forms" Advisor: Ken Ono
Summer 2011	**National Science Foundation Research Experience for Undergraduates in Number Theory**, *Emory University*, Atlanta, GA, USA.
05/2011	**Bachelor of Arts with Honors**, *University of Wisconsin–Madison*, Madison, WI, USA.
Summer 2010	**National Science Foundation Research Experience for Undergraduates in Combinatorics and Number Theory**, *Clemson University*, Clemson, SC, USA.
06/2007	**High School Diploma**, *Wausau West High School*, Wausau, WI, USA. Valedictorian

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Grants and Financial Support

04/2014	**University of Cologne Postdoc Grant**, 60.000 Euro, duration 2 years.
08/2012	**National Science Foundation Graduate Fellowship**, 32.000 USD, duration 3 years (only 1 year used due to early graduation).
08/2011	**Woodruff Fellowship**, Stipend and graduate fees covered, duration of PhD program (only 1 year used, due to NSF fellowship).
2009	**VIGRE**, National Science Foundation undergraduate research grant.

Awards

2011	Mathematical Association of America Undergraduate Poster Session (Joint Meetings) Prize Winner.
2010	Young Mathematicians Conference Outstanding Presentation, second place.
2010	Frank D. Cady Scholarship from the University of Wisconsin—Madison Department of Mathematics.
2009	Lawrence Young Memorial Scholarship from the University of Wisconsin—Madison Department of Mathematics.

2006　Wisconsin Mathematics, Science & Engineering Talent Search honor for achievement.

Refereeing and Reviewing Work

Advances in Mathematics, Archiv der Mathematik, Aurum Mathematicae, Communications in Number Theory and Physics, Forum Mathematicum, Journal of Number Theory, NSA grant reviewing, Proceedings of the American Mathematical Society, Quarterly Journal of Mathematics, The Ramanujan Journal, Research in the Mathematical Sciences, Research in Number Theory, Women In Numbers Proceedings, and Zentralblatt Math

Invited Talks

07/2015　Undergraduate talk, Amherst College

07/2015　Number Theory Seminar, Universität Heidelberg

06/2015　13th International Symposium on Orthogonal Polynomials, Special Functions, and Applications, National Institute of Standards and Technology, USA

05/2015　Automorphic Forms: Advances and Applications, Luminy Institute of Mathematics, France

20/03/2015　Geometric Methods in Representation Theory Seminar, University of North Carolina at Chapel Hill

18/03/2015　UNC-Duke Number Theory Seminar, University of North Carolina at Chapel Hill

17/03/2015　Algebra and Number Theory Seminar, Emory University

16/12/2014　Colloquium, Center for Communications Research–Princeton

10/12/2014　Max Planck Institute for Mathematics Number Theory Lunch Seminar

28/10/2014　Number Theory Seminar, Technische Universität Darmstadt

21/07/2014　Center for Advanced Mathematical Sciences Seminar, American University of Beirut, Lebanon

19/02/2014　Seminar Aachen-Köln-Lille-Siegen on Automorphic Forms, University of Cologne

20/12/2013　International Conference on Number Theory and Galois Representations, Sastra University, India

21/08/2013　Max Planck Institute for Mathematics Number Theory Lunch Seminar

Selected Contributed Talks

07/2014　Exciting New Faces in Analytic Number Theory, Hausdorff Center for Mathematics

04/2013　SouthEast Regional Meeting on Numbers, High Point University

11/2012　Ramanujan 125, University of Florida–Gainesville

10/2012　Fall Western Sectional Meeting of the American Mathematical Society, University of Arizona–Tucson

09/2012　Palmetto Number Theory Seminar XVIII, Wake Forest University

08/2012　Building Bridges: First EU-US Conference on Automorphic Forms and Related Topics

04/2012	SouthEast Regional Meeting on Numbers, Western Carolina University
03/2012	Symposium, Mock Modular Forms, Mock Theta Functions, and Applications, Cologne, Germany
12/2011	Palmetto Number Theory Seminar XVII, Clemson University
10/2011	Integers Conference, University of West Georgia
09/2011	Palmetto Number Theory Seminar XVI, Emory University
01/2011	Joint Mathematics Meeting Poster Session, New Orleans, USA
08/2010	Young Mathematicians Conference, Ohio State University

Other Selected Professional Activities

07/2014	Emerging Leaders and Evolving Frontiers in Analytic Number Theory, Hausdorff Center for Mathematics
04/2014	Oberwolfach Conference on Modular Forms (invited participant)
04/2014	Applications of Automorphic Forms in Number Theory and Combinatorics, Louisiana State University–Baton Rouge
02/2014	Automorphic Forms and Arithmetic, Göttingen University
08/2013	Mock Modular Forms, Moonshine, and String Theory, Stony Brook University
03/2013	Arizona Winter School 2013: Modular Forms and Modular Curves, University of Arizona–Tucson

Professional Organizational Activities

03/2015	Co-organizer for Spring School on "Characters of Representations and Modular Forms," Max Planck Institute for Mathematics in Bonn
08/2014-present	Co-organizer for Algebra and Number Theory Seminar, University of Cologne

Supervision of Students

The following projects were advised in my Cologne Young Researchers in Number Theory Program 2015.

1. Alexandru Ciolan and Robert Neiss, *On the convergence of the Rogers-Ramanujan continued fraction and its generalization*, Research in Number Theory, to appear.

2. Minjoo Jang and Steffan Löbrich, *Radial Limits of the Universal Mock Theta Function g_3*, submitted, arXiv:1504.05365.

3. Joschka Braun, Johannes Buck, and Johannes Girsch, *Class invariants for non-holomorphic modular functions arising from modular forms of negative weight*, submitted, arXiv:1504.05045.

All of the following students were advised with Professor Bringmann.

Phd Thesis Defense Committees	René Olivetto, September 2014
	Michael Mertens, June 2014
Diploma Theses	Johanna Dahlem, 2013-present
	Ben Engel, 2013-present
Master's Theses	Max Müller, 2014-present
	Miriam Weingarten, Spring 2014
	Roland Mainka, Winter 2013
Bachelor's Theses	Dennis Khaskin, Summer 2014

Teaching

Spring 2015	Creator and Instructor: Cologne Young Researchers in Number Theory Program 2015
Spring 2015	Co-Organizer for Seminar: Modulformen (Modular Forms), University of Cologne
Spring 2015	Co-Organizer for Pro-Seminar: Erzeugende Funktionen (Generating Functions), University of Cologne
Winter 2014	Co-Organizer for Seminar: L-Funktionen (L-Functions), University of Cologne
Winter 2014	Instructor: Elliptic Functions and Related Objects, University of Cologne
Summer 2014	Co-Organizer for Seminar: Asymptotische Entwicklungen von Modulformen (Asymptotic Expansions of Modular Forms), University of Cologne
Summer 2014	Co-Organizer for Pro-Seminar: Partitionen (Partitions), University of Cologne
Winter 2013	Co-Organizer for Seminar: Elliptische Kurven (Elliptic Curves), University of Cologne
Summer 2013	Instructor: National Science Foundation Research Experience for Undergraduates in Number Theory at Emory University
Spring 2013	Instructor: Calculus 1, Emory University
Fall 2012	Instructor: Calculus 1, Emory University

Languages

English	Native
German	A1 certified, "sehr gut"
Arabic	Basic knowledge
Spanish	Basic knowledge

Books

1. **Harmonic Maass forms and mock modular forms: theory and applications** (with K. Bringmann, A. Folsom and K. Ono). AMS Colloquium Series, in preparation.

List of Publications

Articles

1. T. Anderson, L. Rolen, and R. Stoehr, *Benford's Law for Coefficients of Modular Forms and Partition Functions*, Proc. Amer. Math. Soc. **139** (2011), 1533-1541.

2. N. Amersi, J. Beyerl, J. Brown, A. Proffer, and L. Rolen, *Pullbacks of Siegel Eisenstein Series and Weighted Averages of Critical L-Values*, The Ramanujan Journal, **27**, No. 2 (2012), 151-162.

3. L. Rolen, *A Generalization of the Congruent Number Problem*, International Journal of Number Theory, **7**, No. 8 (2011), 2237-2249.

4. E. Larson and L. Rolen, *Progress Towards Counting D_5 Quintic Fields*, Involve, **5**, No. 1 (2012), 91-97.

5. E. Larson and L. Rolen, *Upper Bounds for the Number of Number Fields with Alternating Galois Group*, Pro. Amer. Math. Soc. **141** (2013), 499-503.

6. E. Larson and L. Rolen, *Integrality Properties of the CM-values of Certain Weak Maass Forms*, Forum Mathematicum, (2013), DOI: 10.1515/forum-2012-0112.

7. M. Griffin and L. Rolen, *On Matrices Arising in the Finite Field Analogue of Euler's Integral Transform*, Mathematics, **1**, No. 1 (2013), 3-8.

8. M. Griffin and L. Rolen, *Properties of Class Polynomials for Non-Holomorphic Modular Functions*, accepted for publication in Journal of the Ramanujan Math Society.

9. L. Rolen and R. Schneider, *A "Strange" Vector Valued Quantum Modular Form*, Archiv der Mathematik, **101** (2013) 43-52.

10. M. Griffin, K. Ono, and L. Rolen, *Ramanujan's Mock Theta Functions*, Proceedings of the National Academy of Sciences USA, **110**, No. 19 (2013) 7592-7594.

11. V. Dose, N. Green, M. Griffin, T. Mao, L. Rolen, and J. Willis, *Singular Moduli for a Distinguished Non-Holomorphic Modular Function*, accepted for publication in Proceedings of the American Mathematical Society.

12. K. Bringmann, T. Creutzig, and L. Rolen, *Negative Index Jacobi Forms and Quantum Modular Forms*, Research in the Mathematical Sciences, **1**, No. 1 (2014).

13. C. Alfes, M. Griffin, K. Ono, and L. Rolen, *Weierstrass Mock Modular Forms and Elliptic Curves*, recommended for publication in Research in Number Theory.

14. P. Guerzhoy, Z. Kent, and L. Rolen, *Congruences for Taylor Expansions of Quantum Modular Forms*, Research in the Mathematical Sciences, **1**, No. 1 (2014).

15. K. Ono, L. Rolen, and S. Trebat-Leder, *Classical Umbral Moonshine: Connections and p-adic Properties*, J. of the Ramanujan Math. Soc. **30**, No.2 (2015) 135–159.

16. K. Bringmann and L. Rolen, *Half-Integral Weight Eichler Integrals and Quantum Modular Forms*, accepted for publication in Journal of Number Theory, special issue in honor of Winnie Li.

17. M. Mertens and L. Rolen, *On class invariants for non-holomorphic modular functions and a question of Bruinier and Ono*, accepted for publication in Research in Number Theory.

18. M. Mertens and L. Rolen, *Lacunary Recurrences for Eisenstein Series*, to appear in Research in Number Theory

19. L. Rolen, *A New Construction of Eisenstein's Completion of the Weierstrass Zeta Function*, to appear in Proceedings of the American Mathematical Society.

20. K. Bringmann, J. Duncan, and L. Rolen, *Maass-Jacobi Poincaré Series and Mathieu Moonshine*, to appear in Advances in Mathematics.

21. K. Bringmann and L. Rolen, *Radial Limits of Mock Theta Functions*, recommended for publication in Research in the Math. Sciences.

   Submitted Articles

22. K. Bringmann, L. Rolen, and S. Zwegers, *On the Fourier coefficients of negative index meromorphic Jacobi forms*, submitted.

23. K. Bringmann, L. Rolen, and S. Zwegers, *On the modularity of certain functions from the Gromov-Witten theory of elliptic orbifolds*, submitted.

Media Publications Mentioning my Work

1. Scientific American, May 2014, "The Oracle," by Ariel Bleicher.

2. Science Daily, December 2012, "Math formula gives new glimpse into the magical mind of Ramanujan," by Carol Clark.

3. Kölner Wissenschaftsrunde, February 2014, "Mathematiker lösen ein Rätsel der String-Theorie," by Robert Hahn.

References

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