Eric M. Rains

Work Address

Department of Mathematics
California Institute of Technology
1200 E. California Blvd.
MC 253-37
Pasadena, CA 91125
Internet: rains@caltech.edu

Home Address

500 E. Del Mar Blvd. #14
Pasadena, CA 91101

Education

Case Western Reserve University
- Graduated May 1991
- Bachelor of Arts with concentration in Physics, summa cum laude
- Bachelor of Science, summa cum laude
- Master of Science in Mathematics

Cambridge University
- Graduated June 1992
- Certificate of Advanced Study in Mathematics

Harvard University
- Graduated June 1995
- Doctor of Philosophy in Mathematics
- Thesis advisor: Persi Diaconis
- Thesis title: *Topics in Probability on Compact Lie Groups*

Experience

July 2007–present: Professor of Mathematics, California Institute of Technology

Fall 2011: Visiting Professor,
Department of Mathematics
Massachusetts Institute of Technology

July 2003–June 2007: Professor, Department of Mathematics,
University of California at Davis

Fall 2006: Visiting Professor,
Department of Mathematics and Statistics
University of Melbourne

April 2002–August 2003: Mathematician,
Center for Communications Research–Princeton

Fall 2002: Visiting Associate and Lecturer,
Mathematics Department and Institute for Quantum Information,
California Institute of Technology

April 2001–March 2002: Principal Member of Technical Staff,
AT&T Laboratories–Research

September 1996–March 2001: Senior Member of Technical Staff,
AT&T Laboratories–Research

June 1995–September 1996: Mathematician, CCR–Princeton

Awards, Honors, and Funding

National Science Foundation Grant DMS-1500806
"Noncommutative geometry and elliptic special functions"
AMS Invited Address at the Joint Mathematics Meeting, 2012 (Boston)
Invited talk at ICM 2010, combinatorics section
Plenary talk at the Western Sectional AMS meeting, Fall 2007
National Science Foundation Grant DMS-1001645
"Elliptic special functions"
National Science Foundation Grant DMS-0401387
"Multivariate special functions"
Three year grant starting July 2004, extended as DMS-0833464.
The best paper of the year award 2005 in difference equations, awarded by the International Society of Difference Equations for [42, 41, 40]
National Science Foundation Fellowship (Fall 1992-Spring 1995)
Churchill Scholarship (for one year of study in Mathematics and Physics at Cambridge University, England, Fall 1991-Spring 1992)
Inducted into Phi Beta Kappa (1991)
8th place in William Lowell Putnam Examination (1990)

Publications

[1] C. M. Ormerod and E. M. Rains. Commutation relations and discrete Garnier systems. *SIGMA Symmetry Integrability Geom. Methods Appl.*, 12:Paper No. 110, 50, 2016.

[2] P. Etingof and E. Rains. On Cohen-Macaulayness of algebras generated by generalized power sums. *Comm. Math. Phys.*, 347(1):163–182, 2016.

[3] A. Okounkov and E. Rains. Noncommutative geometry and Painlevé equations. *Algebra Number Theory*, 9(6):1363–1400, 2015.

[4] M. Bhargava, D. M. Kane, H. W. Lenstra, Jr., B. Poonen, and E. Rains. Modeling the distribution of ranks, Selmer groups, and Shafarevich-Tate groups of elliptic curves. *Camb. J. Math.*, 3(3):275–321, 2015.

[5] F. J. van de Bult and E. M. Rains. Limits of elliptic hypergeometric biorthogonal functions. *J. Approx. Theory*, 193:128–163, 2015.

[6] E. Rains and S. Ruijsenaars. Difference operators of Sklyanin and van Diejen type. *Comm. Math. Phys.*, 320(3):851–889, 2013.

[7] E. M. Rains and M. J. Vazirani. Deformations of permutation representations of Coxeter groups. *J. Algebraic Combin.*, 37(3):455–502, 2013.

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[9] P. J. Forrester and E. M. Rains. A Fuchsian matrix differential equation for Selberg correlation integrals. *Comm. Math. Phys.*, 309(3):771–792, 2012.

[10] B. Poonen and E. Rains. Random maximal isotropic subspaces and Selmer groups. *J. Amer. Math. Soc.*, 25(1):245–269, 2012.

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[12] P. Etingof and E. Rains. On algebraically integrable differential operators on an elliptic curve. *SIGMA Symmetry Integrability Geom. Methods Appl.*, 7:Paper 062, 19, 2011.

[13] E. M. Rains. An isomonodromy interpretation of the hypergeometric solution of the elliptic Painlevé equation (and generalizations). *SIGMA Symmetry Integrability Geom. Methods Appl.*, 7:Paper 088, 24, 2011.

[14] E. M. Rains. The homology of real subspace arrangements. *J. Topol.*, 3(4):786–818, 2010.

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[20] E. M. Rains. The action of S_n on the cohomology of $\overline{M}_{0,n}(\mathbb{R})$. *Selecta Math. (N.S.)*, 15(1):171–188, 2009.

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