

Alexander B. Soshnikov
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University of California, Davis

Office:

Department of Mathematics
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Personal:

Citizenship: USA and Russia

Education:

Ph.D: June 1997 , Princeton University
M.A: June 1995 , Princeton University
B.S: June 1991 , Moscow State University (with distinction)

Research Interests:

Random Matrix Theory,
Probability Theory ,
Mathematical Physics,
Combinatorics .

Experience:

University of California, Davis : Full Professor	July 2006 - present
University of California, Davis : Associate Professor	July 2002 - June 2006
University of California, Davis : Assistant Professor	July 2000 - June 2002
California Institute of Technology : Taussky-Todd Instructorship	January 1998 - June 2000
Institute for Advanced Study : Member	September 1997 - December 1997
Princeton University : Assistant in Instruction	September 1994 - June 1997
Princeton University : Assistant in Research	September 1994 - June 1997

Visiting Positions and Short Term Visits:

Fields Institute, Toronto, Canada,	September 16 - September 29, 2007
Royal Institute of Technology (KTH), Stockholm, Sweden,	May 2 - May 5, 2007
Isaac Newton Institute, Cambridge, UK,	June 9 - July 16, 2004
CalTech, Pasadena,	April 4 - April 10, 2004
Institut Fourier (Laboratoire de Mathematiques), Grenoble,	June 23 - July 4, 2003
Pacific Institute for Mathematical Sciences, Vancouver,	July 15, 2002 - August 9, 2002
Universite Paris 7 : Visiting Professor, First Class, 3rd Echelon	June 20, 2000 - July 16, 2000
University of Melbourne, Australia	July 4, 1997 - July 13, 1997
Technical University of Berlin : Visiting Fellow	June 1,1993 - July 31,1993

Publications and Preprints:

1. **On Resolvent Identities in Gaussian Ensembles at the Edge of the Spectrum,** to appear in the Proceedings of the XV-th International Congress of Mathematical Physics, Rio de Janeiro, invited submission.
2. **On the Spectral Norm of Wigner Random Matrices,** joint with Sandrine Péché, **Proceedings of the 2008 International Workshop on Applied Probability (IWAP 2008),** Refereed proceedings, CD-ROM, Compiègne, France, July 7-10, 2008.
3. **On the Lower Bound of the Spectral Norm of Symmetric Random Matrices with Independent Entries,** joint with Sandrine Péché, **Elec. Commun. Probab.,** vol. 13, 280-290, (2008),
4. **Wigner Random Matrices with Non-Symmetrically Distributed Entries,** joint with Sandrine Péché, **Journal of Statistical Physics,** vol. 129, 857-883, (2007).
5. **Statistics of Extreme Spacings in Determinantal Random Point Processes,** **Moscow Math. J.,** vol.5, No.3, 705-719, (2005).
6. **Determinantal Random Fields,** **Encyclopedia of Mathematical Physics,** (eds. Jean-Pierre Francoise, Greg Naber and Tsou Sheung Tsun), Oxford: Elsevier, 2006, v.2, pp. 47-53.
7. **Poisson Statistics for the Largest Eigenvalues in Random Matrix Ensembles,** **Lect. Notes Phys.,** vol. 690, 351-364 (2006).
8. **On the Largest Singular Values of Random Matrices with Independent Cauchy Entries,** joint with Yan Fyodorov, **J. Math. Phys.,** vol. 46, 033302 (2005), 15 pages.
9. **Janossy Densities of Coupled Random Matrices,** **Commun. Math. Phys.** vol. 251, 447-471 (2004).
10. **Poisson Statistics for the Largest Eigenvalues of Wigner Random Matrices with Heavy Tails,** **Elec. Commun. Probab.,** 9, pp.82-91, (2004).
11. **On the Largest Eigenvalue of a Random Subgraph of the Hypercube,** joint with Benny Sudakov, **Commun. Math. Phys.,** vol. 239, pp. 53-63 (2003).
12. **Janossy Denities II. Pfaffian Ensembles,** **J.Stat. Phys.,** vol. 113, No. 3/4, pp. 611-622 (2003).
13. **Janossy Denities I. Determinantal Ensembles,** joint with Alexei Borodin, **J.Stat. Phys.,** vol. 113, No. 3/4, pp. 595-610 (2003)
14. **Gaussian Limit for Determinantal Random Point Fields,** **Annals of Probability,** 30, No.1, 171-187, (2002).
15. **A Note on Universality of the Distribution of the Largest Eigenvalues in Certain Sample Covariance Matrices,** **J. Stat. Phys.,** 108, No. 5/6, pp.1033-1056, (2002)
(a special issue dedicated to the 65-th birthdays of David Ruelle and Yakov Sinai).
16. **Random Matrices and Quantum Chaos,** joint paper with with Thomas Kriecherbauer and Jens Marklof **Proceedings of the National Academy of Sciences USA,** 98, No. 19, 10531-10532, (2001).
17. **Central Limit Theorem for Linear Statistics in Classical Compact Groups and Related Combinatorial Identities,** **Annals of Probability,** 28, 1353-1370, (2000).
18. **Determinantal Random Point Fields,** **Russian Mathematical Surveys,** 55, No.5, 923-975, (2000).
19. **Gaussian Fluctuation for the Number of Particles in Airy, Bessel and Other Determinantal Random Point Fields,** **J. Stat. Phys.,** 100, No.3/4, 491-522,(2000).

20. **Universality at the Edge of the Spectrum in Wigner Random Matrices,**
Commun. Math. Phys. , 207, No.3, 697-733, (1999).
21. **Level Spacings Distribution for Large Random Matrices :Gaussian Fluctuations,**
Annals of Mathematics, vol.148, 573-617 (1998).
22. **A Refinement of Wigner's Semicircle Law in a Neighborhood of the Spectrum Edge,**
for Random Symmetric Matrices.
joint work with Ya.G.Sinai,
Functional Analysis and Its Applications, vol.32, No.2 (1998).
23. **Central Limit Theorem for the Traces of High Powers of Large Random Matrices with**
Independent Components,
joint work with Ya.Sinai ,
Bol.Soc.Bras.Mat. vol.29, No.1, 1-24 (1998), (volume dedicated to the memory of Ricardo Mane).
24. **Splitting of the Low Landau Levels into a Set of Positive Measure under Small Periodic**
Perturbation,
joint work with E.Dinaburg and Ya.Sinai ,
Commun.Math.Phys., 189,559-575 (1997), (volume dedicated to the memory of Roland Dobrushin).
25. **Difference Almost-Periodic Schrödinger Operators : Corollaries of Localization,**
Commun.Math.Phys., 153,465-477 (1993).

Academic Honors, Research and Travel Grants:

NSF Research Grant DMS-0707145 (\$ 140,000)	08/2007- 07/2010
NSF Research Grant DMS-0405864 (\$ 100,000)	07/2004- 06/2007
Alfred P. Sloan Fellowship	09/2002 - 09/2004
NSF Research Grant DMS-0103948 (\$ 85,996)	07/2001- 06/2004
New Faculty Research Grant, UC Davis	2000-2001 academic year
NSF travel grant to attend XIIIth International Congress of Mathematical Physics	July 2000
The Young Mathematicians Prize of the Moscow Mathematical Society	1999
The Leonard Euler stipend of the German Mathematical Society	1998
NSF travel grant to attend XIIth International Congress of Mathematical Physics	July 1997

Presentations and Attended Conferences:

0. Invited talk at the Stanford University Applied Mathematics seminar, January 15, 2009.
1. Invited talk at the Workshop on Random Matrices,
Brunel University, Uxbridge, UK, December 19-20, 2008.
2. Invited talk at the Rice University Mathematics Department Analysis seminar, September 24, 2008.
3. Invited talk at the Banff workshop on Random Matrices, Inverse Spectral Methods and Asymptotics,
Banff, Canada, October 6-10, 2008.
4. Invitation to give a talk at the International Workshop on Applied Probability,
Compiègne, France, July 7-10, 2008.
5. Invited talk at the 4th annual conference Phenomena in High Dimensions,
Seville, Spain, June 23-27, 2008.
6. Invited talk at the Oberwolfach workshop on Random Schrodinger Operators and Random Matrices,
Oberwolfach, Germany, March 23-29, 2008.
7. Colloquium talk at the University of South California Mathematics Department,
Los Angeles, February 20, 2008.
8. Invited talk at the Workshop on Infinite Dimensional Analysis and Representation Theory,
Universität Bielefeld, ZiF, Germany, December 10-14, 2007.
9. Co-organizer of the Workshop on Random Matrices, Non-Commutative Probability, and Planar Algebras,
Fields Institute, Toronto, Canada, September 17-21, 2008.
10. Invited talk at the KTH Analysis and Dynamical Systems seminar,
Stockholm, Sweden, May 3, 2007.

11. Invited talk at the Probability Seminar at UC Berkeley Statistics Department, Berkeley, April 4, 2007.
12. Colloquium talk at the UC Santa Cruz Mathematics Department, Santa Cruz, April 3, 2007.
13. Invited talk at the Random Matrices section of the XVth Congress on Mathematical Physics, Rio de Janeiro, Brazil, August 6-11, 2006.
14. The organizer of a section on Random Matrices at the Fifth International Congress on Probability and its Applications, IMPA, Rio de Janeiro, Brazil, August 2-4, 2006.
15. Invited talk at the Random Matrices section of the 31st Conference on Stochastic Processes and Applications, Paris, University Rene Decartes, July 17-21, 2006.
16. Colloquium talk at Caltech Applied Mathematics Department, Pasadena, April 10, 2006.
17. Invited talk at the Workshop on Dynamical systems and Related Topics in honor of Ya. Sinai's 70th birthday, University of Maryland, College Park, May 18-21, 2006.
18. Invited talk at the workshop on Dynamics of Complex Quantum Systems, Weizmann Institute of Science, Israel, D
19. Invited Colloquium talk at University of Arizona Mathematics Department, November 10, 2005.
20. Invited talk at the Program on Random Matrices and Random Point Processes, CRM, Montreal, Canada, June 24, 2005.
21. Invited talk at S.A.Molchanov's 65th Birthday Conference, CRM, Montreal, Canada, June 27-July 1, 2005.
22. Invited talk at the Workshop on Quantum Chaos, Random Matrices and their Applications, Universität Bielefeld, ZiF, Germany, May 23-25, 2005.
23. Invited Colloquium talk at the IUPUI Mathematics Department, April 22, 2005.
24. Invited talk at the session on Special Functions and Integrable Systems, AMS National Meeting, Atlanta, January 5-8, 2005.
25. Invited talk at the session on Random Matrices and Growth Processes at the Western Section of the AMS, Albuquerque, October 16-17, 2004.
26. Invited talk at the Free Probability Theory Workshop, BIRS, Banff, Canada, October 9-14, 2004.
27. Invited talk at the Minisymposia on Combinatorics and Statistical Models, SIAM Conference on Nonlinear Waves and Coherent Structures, Orlando, October 2-5, 2004.
28. Invited talk at the QMath9 conference, Session on semi-classical approximation, Giennes, France, September 12-16, 2004.
29. Organizer of a session on Random Matrices and Related Processes at the Sixth Bernoulli World Congress, Barcelona, Spain, July 26-31, 2004.
30. Invited talk at the I.Newton Institute, Cambridge, UK, June 17, 2004.
31. Invited talk at the Stanford University Probability Theory seminar, February 25, 2004.
32. Invited talk at the Princeton University Ergodic Theory and Statistical Mechanics seminar, December 11, 2003.
33. Invited talk at the Courant Institute Probability Theory and Mathematical Physics seminar, December 12, 2003.
34. Invited talk at the Rutgers University Mathematical Physics seminar, December 10, 2003.
35. Invited talk at the Mathematics Department Colloquium, Queens University, Kingston, Canada, November 25, 2003.
36. Two invited talks at the McGill University Analysis seminar, Montreal, Canada, November 20-21, 2003.
37. Invited talk at the the Workshop on Random Media,

- Mathematisches Forschungsinstitut Oberwolfach, Germany
October 26- November 1, 2003 .
38. Invited talk at the I. Newton Institute workshop on Random Matrices, Gregynog Hall, Wales, September 14-19, 2003.
 39. Invited talk at the Workshop on Combinatorics, Probability and Algorithms, CRM, Montreal, Canada, May 4-9, 2003.
 40. Speaker at the Duke University Mathematics Department Seminar on Integrable Systems, March 19, 2003.
 41. Speaker at the UCLA Mathematics Department Seminar on Probability Theory, February 19, 2003.
 42. Invited talk at the Western States Math Phys Conference, Caltech, February 17-18, 2003.
 43. Invited talk at the Workshop on Random Matrices and Related Topics, Centre for Mathematical Physics and Stochastics, Sandbjerg Estate, Denmark, January 13-17, 2003.
 44. Invited Talk at the MSRI Workshop on Recent Progress in Random Matrix Theory and its Applications, September 23-27, 2002.
 45. Invited Talk at the Workshop on Random Structures, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, August 26 - September 6, 2002.
 46. Speaker at the Mathematical Physics seminar at the University of Bristol, UK August 30, 2002.
 47. Invited Talk at the Workshop on Random Matrices and Non-Commutative Phenomena, Pacific Institute for the Mathematical Sciences, Vancouver, Canada, August 6-9, 2002.
 48. Invited Talk at the Section on Random Matrices, Fourth International Congress on Probability Theory , Banff, Canada, July 30- August 2, 2002.
 49. Three Talks on Random Matrices, Thematic Programme on Asymptotic Geometric Analysis, Pacific Institute for the Mathematical Sciences, Vancouver, Canada, July 24-26, 2002.
 50. Invited Talk at the Workshop on the Phenomena of Large Dimension, Pacific Institute for the Mathematical Sciences, Vancouver, Canada, July 18-22, 2002.
 51. Invited Talk at the Conference on Random Matrix Theory and Combinatorics, Courant Institute, NY, June 2-6, 2002.
 52. Speaker at the Applied Mathematics Seminar, University of Chicago, May 22, 2002.
 53. Speaker at the Probability Theory Seminar, University of Wisconsin at Madison, April 18, 2002.
 54. Speaker at the Colloquium of the Mathematics Department, UN Reno, November 28, 2001.
 55. Speaker at the Mathematical Physics Seminar, UC Davis, November 13, 2001.
 56. Member of the organizing committee of 7th Annual German- American Frontiers of Science Symposium, Bad-Homburg, Germany, June 7-10, 2001.
 57. Invited participant at the workshop on L- Functions and Random Matrix Theory, American Institute of Mathematics, Palo Alto, California, May 14-18, 2001.
 58. Short talk at the 84th Statistical Mechanics Meeting, Rutgers University, December 17-19, 2000.
 59. Speaker at the Probability seminar of the Statistics Department of Stanford University November 27, 2000.

60. Invited talk at the Workshop on Random Matrices, Mathematisches Forschungsinstitut Oberwolfach, Germany October 29- November 4, 2000 .
91. Invited talk at the session “Topics in Probability with the Emphasis on Random Matrices and Markov Processes”, Fall Western Section Meeting of the AMS, San Francisco, October 21-22, 2000 .
62. Invited talk at the Combinatorics and Random Matrix Theory conference, University of Pennsylvania, Philadelphia, October 16-18, 2000.
63. Talk at the Quantum Chaos and Semiclassical Approximation section XIIIth International Congress of Mathematical Physics, London, July 17- 22, 2000.
64. Speaker at the Mathematical Physics seminar, Universite Paris 7, June 27, 2000.
65. Invited Talk at the 6th Annual German- American Frontiers of Science Symposium, section on Random Matrices and Quantum Chaos, , Irvine, California, June 8-10, 2000.
66. Speaker at the Mathematical Physics Seminar, Caltech, May 10, 2000.
67. Speaker at the Analysis Seminar, Caltech, April 26, 2000.
68. Speaker at the Mathematical Physics seminar, UC Irvine, December 9, 1999.
69. Invited Talk at the Meeting on Stochastic Analysis, Mathematisches Forschungsinstitut Oberwolfach, Germany October 31- November 6, 1999 .
70. Speaker at the Seminar of the Moscow Mathematical Society, Moscow, Russia, September 21, 1999 .
71. Invited Talk at the Meeting on Random Systems, Mathematisches Forschungsinstitut Oberwolfach, Germany August 29- September 4, 1999 .
72. Talk at the Third Brazilian School of Probability, Angra dos Reis, Brazil, August 1-7, 1999.
73. Invited Talk at the “Wave Phenomena in Complex Media” Joint Summer Research Conference, Boulder, Colorado, June 20-24, 1999.
74. Invited Talk at the Workshop “ Random Matrices and Their Applications: Quantum Chaos, G.U.E Conjecture for Zeroes of Zeta Function, Combinatorics and All That”, MSRI, Berkeley, June 7-11, 1999.
75. Speaker at the Mathematics Department Colloquim, UC Davis, March 3, 1999.
76. Invited talk at the Western States Mathematical Physics Conference, Caltech, Pasadena, February 15-16, 1999.
77. Speaker at the Mathematical Physics seminar, Caltech, January 20, 1999
78. Paricipant of the Introductory Workshop on Random Matrices, MSRI, Berkeley, January 13-17, 1999.
79. Invited talk at the “Integrable Systems and Random Matrix Theory” session of the 1998 Fall Western Section Meeting of the AMS, Tucson, November 14-15, 1998.
80. Speaker at the Mathematical Physics seminar, Caltech, January 14, 1998
81. Speaker at the Analysis seminar, Caltech, October 28 and November 4, 1998.
82. Invited talk at the Spring L.A. Dynamics Meeting at UCLA,

May 8, 1998.

83. Speaker at the Mathematical Physics seminar, UC Irvine,
April 8, 1998 .

84. Speaker at the Princeton University seminar on Ergodic Theory and Statistical Mechanics ,
December 1997 .

85. Speaker at the Mathematical Physics seminar, Rutgers University,
December 4, 1997.

86. Stend presentation at the XIIth International Congress of Mathematical Physics
Brisbane, Australia , July 12-19, 1997.

87. Speaker at the New York Mathematical Journal Conference (Probability theory and Ergodic Theory section)
Albany, NY, June 1997

88. Speaker at the Princeton University seminar on Mathematical Physics ,
April 8, 1997 .

89. Short presentation at the 76-th Statistical Mechanics Meeting at Rutgers University ,
December 15-17, 1996 .

90. Speaker at the Courant Institute seminar on Statistical Physics and Probability Theory ,
September 1996 .

91. Speaker at the ‘Random Matrices,Statistical Mechanics and Painleve Transcedents ‘
Summer Research Conference , Mt.Holyoke College,
June 23,1996 -June 27,1996 .

92. Participant in the Workshop on Asymptotic Properties of Eigenstates of Classically Chaotic Systems
ITAMP, Harvard-Smithsonian Center for Astrophysics , Cambridge, Massachusets
April 26-28, 1996 .

93. Speaker at the Princeton University seminar on Ergodic Theory and Statistical Mechanics ,
February 1996 .

94. Speaker at the Princeton University seminar on Ergodic Theory and Statistical Mechanics ,
November 1993.

95. Invited talk at the Mathematical Workshop on Quantum Chaos,
Mathematisches Forschungsinstitut Oberwolfach, Germany
June 20,1993 - June 26,1993 .

96. Speaker at the Seminar on Ergodic Theory and Dynamical Systems,
Moscow State University, Department of Mathematics and Mechanics,
April 1992 .

Service to the UC Davis Mathematics Department (2000-present):

- Member of the Undergraduate Program Committee, 2007-2008 academic year,
- Organizer of the Mathematical Physics/Probability seminar, fall 2007,
- Member of the Permanent Faculty Search Committee, 2006-2007 academic year,
- Chairman of the FRC, 2005-2006 academic year,
- Member of the Department’s Executive Council, 2005-2006 academic year,
- Chairman of the FRC, 2004-2005 academic year,
- Organizer of the Mathematical Physics/ Probability Seminar, 2004-2005 (winter and spring quarters),
- Chairman of the Postdoc Search Committee, 2003-2004 academic year,
- Lead faculty of the VIGRE Research Focus Group on Random Matrices and Statistical Physics, 2003-2004
- Member of the Graduate Program Committee, 2003-2004 academic year,
- Member of the Permanent Faculty Search Committee, 2002-2003 academic year,
- Organizer of the Analysis/ Mathematical Physics Seminar, 2002-2003 (fall and spring quarters),
- Leung Prize Committee member, 2001-2002,
- Organizer of the Analysis/ Mathematical Physics Seminar, 2001-2002 academic year,
- Leung Prize Committee member, 2000-2001.

University Service at UC Davis:

- UC Davis Graduate Studies Internal Fellowship Reviewer, February- March 2006,
- Member of the Ph.D. Qualifying Exam Committee at the Department of Electrical and Computer Engineering, March 2006.

Editorial Duties:

- Associate Editor of the Journal of Mathematical Physics, January 2006-present.

Refereeing:

- Annales De L'Institut Henri-Poincare, Probabilites et Statistiques
- Annales of Probability
- Combinatorica
- Communications in Mathematical Physics
- Electronic Journal of Linear Algebra
- International Mathematics Research Notices
- Journal of the American Mathematical Society
- Journal of Functional Analysis
- Journal of Mathematical Physics
- Journal of Multivariate Analysis
- Journal of Physics A
- Journal of Statistical Physics
- Journal of Theoretical Probability
- Letters in Mathematical Physics
- Probability Theory and Related Fields
- SIAM Journal on Matrix Analysis and Applications
- Transactions AMS
- NSF research grant proposals
- NSA research grant proposals
- Swedish Research Council grant proposals