

# PETER SARNAK

## BIBLIOGRAPHY

1. *Spectra of singular measures as multipliers on  $L^p$* , Journal of Functional Analysis, **37**, (1980).
2. *Prime geodesic theorems*, Ph.D. Thesis, Stanford, (1980).
3. *Asymptotic behavior of periodic orbits of the horocycle flow and Einsenstein series*, Comm. on Pure and Appl. Math., **34** (1981), 719-739.
4. *Class numbers of indefinite binary quadratic forms*, Journal of Number Theory, **15**, No. 2, (1982), 229-247.
5. *Spectral behavior of quasi periodic Schroedinger operators*, Comm. Math. Physics, **84**, (1984), 377-401.
6. *Entropy estimates for geodesic flows*, Ergodic Theory and Dynamical Systems, **2**, (1982), 513-524.
7. *Arithmetic and geometry of some hyperbolic three manifolds*, Acta Mathematica, **151**, (1983), 253-295.
8. (with S. Klainerman) *Explicit solutions of  $\square u = 0$  on Friedman-Robertson-Walker space times*, Ann. Inst. Henri Poincare, **35**, No. 4, (1981), 253-257.
9. (with D. Goldfeld) *On sums of Kloosterman sums*, Invent. Math. **71**, (1983), 243-250.
10. "Maass forms and additive number theory," in *Number Theory*, New York, (1982), Springer Lecture Notes 1052, D.V. Chudnovsky, ed., 286-309.
11. *Domains in hyperbolic space and the Laplacian*, in Diff. Equations Math. Studies Series, North Holland, **92**, (1984), R. Lewis and I. Knowles, eds.
12. (with R.S. Phillips) *Domains in hyperbolic space and limit sets of Kleinian groups*, Acta Math., **155**, (1985).
13. *Class numbers of indefinite binary quadratic forms II*, Journal of Number Theory, **21**, No. 3, (1985), 333-346.
14. *Fourth power moments of Hecke zeta functions*, Comm. Pure and App. Math., **XXXVIII**, (1985), 167-178.
15. (with R. Osseman) *A new curvature integral and entropy of geodesic flows*, Invent. Math., **77**, (1984), 455-462.
16. (with R. Phillips) *On cusp forms for confinite subgroups of  $\mathrm{PSL}(2, \mathbf{R})$* , Invent. Math., **80**, (1985), 339-364.

17. (with R. Phillips) *On the spectrum of the Hecke groups*, Duke Math. J., **52**, No. 1, (1985), 211-221.
18. (with C. Epstein and J. Hafner) *On the zeros of  $L$ -functions attached to Maass forms*, Math. Zeit, **190**, (1985), 113-128.
19. "On the number of points on certain curves and an uncertainty principle," in *Number Theory*, D.V. Chudovski, ed., (1984), New York.
20. (with I. Efrat) *The determinant of the Eisenstein matrix and Hilbert class fields*, Trans. A.M.S., **290**, 2, (1985), 815-824.
21. (with R. Phillips) *The Weyl theorem and the deformations of discrete groups*, Comm. Pure and Appl. Math., **XXXVIII**, (1985), 853-866.
22. (with Deshouillers, Iwaniec and Phillips) *On Maass cusp forms*, Proc. of the Natl. Aca. of Sci., **82**, (1985), 3533-3534.
23. *On cusp forms*, in Contemp. Math., **53**, (1986), Hejhal-Terras-Sarnak, eds., 393-407.
24. (with A. Lubotsky and R. Phillips) *Ramanujan conjecture and explicit construction of expanders and super-concentrators*, in Proc. of Symposium on Theory of Computation (STOC), (1986).
25. (with A. Lubotsky and R. Phillips) *Hecke operators and distributions points on  $S^2$ , I and II*, Comm. Pure and Appl. Math., **34**, (1986), 149-186, and No. XL, (1987), 401-420.
26. (with R. Phillips) *Geodesics in homology classes*, Duke Math. J., **55**, No. 2, (1987), 287-297.
27. *Determinants of Laplacians*, Comm. Math. Physics, **110**, (1987), 113-120.
28. *Determinants of Laplacians on surfaces*, Volume in honor of Laxs 60<sup>th</sup> birthday, (1986), MSRI Publications, (1987), A. Chorin and A. Majda, eds.
29. (with A. Lubotsky and R. Phillips) *Ramanujan graphs*, Combinatorica, **8**, 3, (1988), 261-277.
30. (with B. Osgood and R. Phillips) *Extremals of determinants of Laplacians*, J. of Functional Analysis **80**, No. 1, (1988), 148-211.
31. (with B. Osgood and R. Phillips) *Compact sets of isospectral surfaces*, J. of Functional Analysis, **80**, No. 1, (1988), 212-234.
32. (with B. Osgood and R. Phillips) *Compact isospectral sets of planar domains*, Proc. Nat. Acad. Sci., U.S.A., **85**, (1988), 5359-5361.
33. (with J. Li and I. Piatetsky-Shapiro) *Poincare series for  $SO(n,1)$* , Proc. Ind. Acad. Sci., **97**, No. 1-3, (1987), 231-237.
34. (with B. Osgood and R. Phillips) *Moduli space, heights and isospectral sets of plane domains*, Annals of Math., **129**, (1989), 293-362.

35. "Determinants of Laplacians, heights and finiteness," in *Analysis Etc.*, Acad. Press, P. Rabinowitz, ed., (1990).
36. "On cusp forms II," in *I. Piatetsky-Shapiro's Festschrift*, S. Gelbart, ed., Weizmann Press, (1990).
37. (with J. Cogdell, J. Li and I. Piatetsky-Shapiro) *Poincare series for  $SO(n, 1)$* , Acta Math., **167**, (1991), 229-285.
38. (with S. Adams), *Betti numbers of congruence groups*, Israel Journal of Math., **88**, (1994), 31-72.
39. (with R. Phillips) *Spectrum of Fermat curves*, GAFA, **1**, (1991), 80-146.
40. *Diophantine problems and linear groups*, in Proceedings of I.C.M., Kyoto, (1990), 459-471.
41. (with M. Burger and J.-S. Li) *Ramanujan duals and automorphic spectrum*, B.A.M.S., Vol. 26, No. 2, (1992).
42. (with M. Burger) *Ramanujan duals II*, Invention. Math., **106**, (1991), 1-11.
43. (with R. Phillips) *Perturbation theory of automorphic functions*, J. of Amer. Math. Soc., (1992).
44. *Automorphic spectrum and Fermis golden rule*, Jnl. D'Analyse Mathematique, Vol. 54, (1992), 179-189.
45. (with J. Hafner and K. McCurley) *Relatively prime values of polynomials*, to appear in Trans. of Amer. Math. Soc. (1992).
46. "Special values of Selbergs zeta function," *Number theory trace formulas and discrete groups*, Bombieri-Goldfeld, eds., 457-465, (1989).
47. (with A. Eskin and Z. Rudnick) *A proof of Siegel's Weight Formula*, Int. Math. Res. Notices (Duke Journal), **5**, (1991), 65-69.
48. (with X. Xue) *Bounds for Multiplicities of Automorphic Representations*, Duke Math. J., **64**, No. 1, (1991), 207-227.
49. (with W. Duke and Z. Rudnick) *Density of Integral Points on Affine Homogeneous Varieties*, Duke Math. Jnl., **71**, (1993), 143-179.
50. (with P. Buser) *On the Period Matrix of a Riemann Surface of Large Genus*, Invent. Math., **117**, (1994), 27-56.
51. (with S. Katok) *Heegner Points, Cycles and Maass Forms*, Israel Journal of Math., **84**, (1993), 193-227.
52. (with H. Iwaniec)  *$L^\infty$  Norms of Eigenfunctions of Arithmetic Surfaces*, Annals of Math., **141** (1995), 301-320.
53. (with Z. Rudnick) *The behavior of eigenstates of arithmetic hyperbolic manifolds*, Com. Math. Physics, **161**, (1994), 195-213.

54. (with W. Luo) *The Number Variance for arithmetic hyperbolic surfaces*, (1993), Com. Math. Phys., **161**, (1994), 419-432.
55. (with R. Phillips), *Cusp forms for character varieties*, GAFA, Vol. 4, No. 1, (1994), 93-118.
56. *Integrals of Products of Eigenfunctions*, IMRN. No. 6, (1994), 251-260.
57. (with Z. Rudnick) "Zeros of Principal L-Functions and Random Matrix Theory," preprint, (1994), Duke Math. Journal, Vol 81, No. 2, (1996), 269-322.
58. (with Z. Rudnick) "The n-level correlations of the zeros of the zeta function," C.R. Acad. Sc., Paris, **319**, (1994), 1027-1032.
59. (with W. Luo and Z. Rudnick), "On Selbergs eigenvalue conjecture," GAFA, Vol. 5, No. 2, (1995), 387-401.
60. (with M. Rubinstein) "Chebyshevs Bias," Journal of Exp. Math., Vol. 3, No. 3, (1994), 173-197.
61. (with W. Luo) "Quantum Ergodicity of Eigenfunctions on  $PSL_2(\mathbf{Z})\backslash\mathbf{H}^2$ " I.H.E.S., Vol. 81, (1995), 207-237.
62. (with L. Wang) "Some hypersurfaces in  $P^4$  and the Hasse-Principle," C.R. ACAD. SCI., Paris, t. **321**, Series I, (1995), 319-322.
63. "Spectra and Eigenfunctions of Laplacians," in Contor de Researches Mathematiques, CRM Proceedings, Vol. 12, 1997, 261-276.
64. "Spectral Theory and L-functions," to appear in Proc. of Taneguchi Foundation Conference in Analytic Number Theory, Kyoto, (1996).
65. (with Luo and Rudnick) "On the Generalized Ramanujan Conjectures for  $GL(n)$ ," preprint, (1996), Proc. Symp. Pure Math (AMS), Vol. 66, Part 2, (1999), 301-311.
66. "Extremal Geometries," in Extremal Riemann Surfaces, Cont. Math., Vol. 201, (1996), 1-7.
67. "Values of Quadratic Forms at Integers," in "Harmonic Analysis and Number Theory," Editors, S. Drury, R. Murty, CMS Conf. Proc., Vol. 21, (1997), 181-205.
68. "Quantum Chaos, Symmetry and Zeta Functions," in Current Developments in Math, Boston, (1997), (Yau, Editor).
69. (with N. Katz) "Zeros of Zeta Functions, Their Spacings and Their Spectral Nature," preprint, (1997).
70. (with H. Iwaniec), "The Non-vanishing of Central Values of Dirichlet L-Functions," in Number Theory in Progress, Walter DeGruyter, Ed. K. Gyory, (1999), 941-952.
71. (with H. Iwaniec), "The Non-vanishing of Central Values of Automorphic L-Functions and Landau-Siegel Zeros," *Israel Journal of Math.*, **120**, (2000), 155-177.

72. "A Sample of Laxs Contributions to Classical Analysis, Linear Partial Differential Equations and Scattering Theory," Proc. Symp. Pure Math (AMS), Vol. 65, (1999), 169-179.
73. " $L$ -Functions" Documenta Math, Proc. ICM, Berlin, (1998), 453-467.
74. (with N. Katz) "Zeros of Zeta Functions and Symmetry," B.A.M.S., (1999), Vol.36, No. 1, 1-26.
75. (with A.P. Gamburd and D. Jakobson), "Spectra of elements in the group ring of  $SU(2)$ ," J. Eur. Math. Soc., **1**, (1999) 51-85.
76. (with M. Wakayama), *Equidistribution of Holonomy about Closed Geodesics*, Duke Math. Journal, Vol. 100, (1999), 1-57.
77. (with W. Luo and H. Iwaniec), "Low Lying Zeroes of Families of  $L$ -Functions," Publ. *I.H.E.S.* **91**, (2000), 55-131.
78. *Some Problems in Number Theory, Analysis and Mathematical Physics*, in Mathematics: Frontiers and Perspectives 2000 (IMU).
79. "Kloosterman, Quadratic Forms and Modular Forms," NAW, (2000), 140-145.
80. (with H. Iwaniec), "Perspectives on the Analytic Theory of  $L$ -Functions," GAFA, (2000), Special Volume, 705-741.
81. (with Y. Petridis), "Quantum Unique Ergodicity for  $SL_2(O)\backslash\mathbb{H}^3$  and Estimates for  $L$ -Functions," *Jnl of Evolution Equation*, **1**, (2001), 277-290.
82. "Estimates for Rankin Selberg  $L$ -Functions," *Jnl. Funct. Anal.*, **184**, (2001), 419-445.
83. "Ralph Phillips, (1913-1998)," Notices of AMS, May, 2000, Vol. 47, No. 5.
84. (with Z. Rudnick and A. Zaharescu), "The Distribution of Spacings Between Fractional Parts of  $n^2\alpha$ ," *Invent. Math.*, **145**, (2001), No. 1, 37-57.
85. (with A. Zaharescu), "Some Remarks on Landau-Siegel Zeroes," *Duke Math. Jnl*, Vol. 111, (2002), No 3, 495-507.
86. (with Z. Rudnick), "The pair correlation function of fractional parts of polynomials," *Comm. Math. Phys.*, **194**, 61-70, (1998).
87. "Maass Forms with Integer Coefficients." In "A panorama of number theory," Cambridge Press, ed. G. Wustholz, (2002), 121-127.
88. (with W. Luo), "Mass Equidistribution for Hecke Eigenforms," CPAM **56**, (2003), No. 7, 874-891.
89. (with H. Kim), "Refined estimates towards the Ramanujan and Selberg Conjectures," *J. Amer. Math. Soc.*, **16**, No. 1, (2003), 139-183.
90. "Non-vanishing of  $L$ -functions on  $\Re(s) = 1$ ," contributions to automorphic forms, geometry and number theory, Johns Hopkins University Press, (2004), 717-732.

91. (with S. Bocherer and R. Schulze-Pillot), “Arithmetic and equidistribution of measures on the sphere,” *C.M.P.*, Vol. 242, 1-2, (2003), 67-81.
92. “Spectra of Hyperbolic Surfaces,” *BAMS*, Vol. 40, No. 4, (2003), 441-478.
93. (with W. Luo), “Quantum ergodicity of eigenfunctions on  $SL_2(\mathbb{Z})\backslash\mathbb{H}$  II,” *Annal. Inst. Ecole Norm. Sup.*, **37**, (2004), No. 5, 769-799.
94. (with A. Strombergsson), “Minima of Epsteins Zeta Function and heights of flat tori,” *Inventiones Math.*, **165**, (2006), No. 1, 115-151.
95. “The generalized Ramanujan Conjectures,” In “Harmonic analysis, the trace formula, Shimura varieties,” *Clay Math Proc.*, vol. 4, (2005), 659-685.
96. “What is an expander?,” *Notices of the AMS*, Vol. 51, No. 7, (2004), 762-763.
97. (with X. Li), “Number Variance for  $SL(2, \mathbb{Z})\backslash\mathbb{H}$ ,” (revision being prepared).
98. (with S. Gelbart and E. Lapid), “A new method for lower bounds for  $L$ -functions,” *C.R. Math. Acad. Sci., Paris* **339**, (2004), 91-94.
99. “Problems of the Millenium: The Riemann Hypothesis,” 2004, The Proceedings of the ClayMathematics Institute 2004, Budapest, Hungary, <http://www.claymath.org>, (2005).
100. (with J. Bourgain and A. Gamburd), “Sieving and expanders,” *C.R. Math. Acad. Sci., Paris*, **343**, (2006), No. 3, 155-159.
101. (with J. Bourgain and A. Gamburd), “Affine linear sieve, expanders and sum product,” *Invent. Math.*, (2010), **179**, 559-644.
102. (with A. Nevo), “Prime and Almost Prime Integral Points on Principal Homogeneous Spaces,” *Acta Math.* **205** (2010) 361-402.
103. “Reciprocal Geodesics,” *Clay Math Proceedings*, vol. 7, AMS, (2007), 217-237.
104. (with J. Tsimerman), “On Linnik and Selbergs Conjecture about Sums of Kloosterman Sums,” in the “Manin Festschrift,” *Progress in Math.*, Birkhauser, (2008).
105. (with J. Liu), “Integral points on quadrics in three variables whose coordinates have few prime factors,” *Israel Jnl. of Math.* **178** (2010), 393-426.
106. (with H. Holden), “A survey of Peter D. Laxs Contributions to Mathematics,” in *The Abel Prize*, Volume 2008.
107. “Advice to young mathematicians,” in *The Princeton Mathematics Companion*, editor T. Gowers, (2009).
108. “Remembering Paul Cohen,” *MAA Focus*, December Issue (2007), 20-22.
109. (with W. Luo and Z. Rudnick), “The variance of Linnik-Duke measures on the modular surface,” *Jnl of Modern Dynamics*, Vol. 3 (2009), 271-309.
110. (with D. Kelmer), “Strong spectral gaps for compact quotients of  $PSL(2, \mathbb{R})$ ” *JEMS*, **11** (2009), 283-313.

111. (with D. Hejhal), “Some commentary on Selbergs Mathematics” *BAMS*, **45** (2008), 485-487.
112. “Equidistribution and primes,” in *Asterisque*, **163** (2008), *Societe Math de France*.
113. “Integral Apollonian Packing,” *American Mathematical Monthly*, Vol. 118, 4, 291-306 (2011).
114. “Linking numbers of modular knots,” *Commun. Math. Anal.*, **8** (2010), 136-144.
115. (with J. Bourgain and A. Kontorovich), “Sector estimates for hyperbolic isometries,” *GAFSA* **20** (2010) 1175–1200.
116. (with J. Bourgain and A. Gamburd), “Generalizations of Selbergs  $3/16^{\text{th}}$  Theorem and Affine Sieve,” *Acta Math.*, Vol. 207, 225–290, (2012).
117. “Recent progress on QUE,” *BAMS*, **48** (2022) 211–228.
118. “Ilya Piatetski-Shapiro,” in memorium (with J. Cogdell and S. Gelbart). *Notices AMS* **57** (2010) 1260-1275.
119. “The Grand Riemann Hypothesis,” *Milan Jnl. of Math.* **78** (2010), 61-63.
120. (with A. Ghosh), “Real zeros of holomorphic Hecke cusp forms,” *JEMS*, Vol. 14, 2012, 465-487.
121. (with J. Bourgain and T. Ziegler), “Disjointness of Möbius from horocycle flows,” appears in “From Fourier and Number Theory to Radon Transforms and geometry,” in memory of Leon Ehrenpreis, *Developments in Mathematics*, Vol. 28 (2012), 67–83, Springer Verlag.
122. (with A. Ubis), “The horocycle flow at prime times,” *Jnl. de Math. Pures et Appliquées* (9) 103 (2015) 575-618.
123. (with A. Salehi), “The Affine Sieve, *JAMS* 26 (2013) 1085-1105.
124. “Notes on thin matrix groups”, in “Thin Groups and Superstrong Approximations” 343-362, MSRI Publications Vol 61 (2014), Editors E. Breuillard and H. Oh.
125. (with J. Bourgain and Z. Rudnick), “Local statistics for integer points on the sphere,” arXiv 1204.0134. *Contemporary Math. Proceedings of Constructive Functions* 661 (2016), 269-282.
126. (with A. Gosh and A. Reznikov), “Nodal domains for Maass forms I,” *GAFSA* 23 (2013) 1515-1568.
127. (with J. Liu), “The Möbius function and distal flows ” arXiv 1303.4957. *Duke Math. Jnl.* 164 No. 7 (2015), 1353-1399.
128. (with P. Zhao), “The Quantum Variance of the Modular Surface ” arXiv 1303.6972.
129. (with E. Fuchs and C. Meiri), “Hyperbolic monodromy groups for the hypergeometric equation and Cartan involutions ” *JEMS* 16 (2014), 8, 1617-1671.
130. “Möbius randomness and dynamics” *Not. S. Afr. Math. Soc.* 43 (2012) 89-97.

131. (with S. Shin and N. Templier) “Families of  $L$ -functions and their symmetry” arXiv 1401.5507 (2014). Appears as “Families of Automorphic Forms and the Trace Formula” *Simons Symposia*, Editors Mueller, Shin and Templier, Springer (2016) 531-578.
132. (with I. Wigman) “Topologies of nodal sets of random band limited function” arXiv 1312.7858 (2013), *Contemporary Math. (AMS)* 664 (2016), 351-365.
133. (with Y. Canzani) “On the topology of the zero sets of monochromatic random waves” arXiv 1412.4437.
134. (with J. Bourgain and A. Gamburd) “Markoff triples and strong approximation” arXiv 1505.06411, *Comptes Rendus Math* 354:2 (2016), 131-135.
135. (with A. Ghosh and A. Reznikov) “Nodal domains of Maass forms II” arXiv: 1510.02963.
136. (with I. Wigman) “Topologies of nodal sets of random band limited functions” arXiv: 1510.08500.
137. (with J. Bourgain and A. Gamburd) “Markoff surfaces and strong approximation: 1” arXiv: 1607.01530.
138. (with J. Bourgain and Z. Rudnick) “Spatial statistics for lattice points on the sphere I: Individual results” arXiv: 1606.05880.
139. (with Y. Canzani) “Topology and nesting of the zero set components of monochromatic random waves” arXiv: 1701.00034.

LETTERS, LECTURES AND NOTES<sup>†</sup> (can all be found on:)

<sup>†</sup> <http://www.math.princeton.edu/sarnak/>  
and <http://publications.ias.edu/sarnak>

- Notes with Paul Cohen on the trace formula (analytic continuation of Eisenstein series) (1980).
- Letter to E. Bombieri on symplectic pairings and  $L$ -functions (2001).
- Comment on Langlands Lecture “Endoscopy and Beyond” (2001).
- Letter to Z. Rudnick on number variance for the modular group (2002).
- Notes on A. Bookers paper “Poles of Artin  $L$ -functions and the strong Artin Conjecture” (2002).
- Letter to C. Morawetz on  $L^\infty$  norms of eigenfunctions (2004).
- Letter to J. Lagarias on integral Apollonian packings, (2007).
- Letter to A. Reznikov on restrictions of eigenfunctions (2008).



- Letter J. Mozzochi on linking numbers of closed geodesics (2008).
- Letter to B. Mazur on Chebyshevs bias for  $\tau(\rho)$  (2008).
- Letter to S. Aaronson and A. Pollington “The Solovay Kitaev theorem and golden gates” (2015).
- Appendix to S. Miller and N. Sardari “Optimal lifting of integral points”.

### BOOKS

1. *Some applications of modular forms*, this is an expanded version of the Wittemore lectures given at Yale in 1988, Cambridge University Tracts, Vol. **99**, (1990).
2. “Arithmetic Quantum Chaos,” in a monograph by A.M.S., (1995), containing the Schur Lectures by R. Howe and P. Sarnak.
3. (with N. Katz) “Random Matrices, Frobenius Eigenvalues and Monodromy,” A.M.S. Colloquium Publications, Vol. 45, (1999).
4. (with G. Davidoff and A. Valette), “Elementary Number Theory, Group Theory and Ramanujan Graphs,” *London Math. Soc. Students Texts*, **55**, Cambridge (2003).

### BOOKS EDITED

1. (with D. Hejhal and A. Terras), “Selberg Trace Formula and Related Topics,” *Cont. Math.*, **53**, (1986).
2. (with J.R. Quine), “Extremal Riemann Surfaces,” *Cont. Math.*, Vol. 201, (1996).
3. (with J. Cogdell and S. Gindikin), *Selected Works of Ilya Piatetski-Shapiro*, (2002).
4. (with P. Lax and A. Majda), *Selected Papers of P.D. Lax*, Springer, (2005).
5. (with F. Shahidi), “Automorphic Forms and their Applications,” *PCMI Lecture Publ. Series*, Vol. 12, (2007).

January 25, 2017/wtc