

CURRICULUM VITAE

ROGER BAKER

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Personal

Born: November 2, 1947, England
Citizenship: U.K. and U.S.A.

Education

Birkbeck College, London, B.Sc., 1968; prize for best
first class honors in London University
Birkbeck College, London, Ph.D., 1971. Thesis: *Diophantine Analysis on Locally Compact Groups*

Professional Experience

Professor, Brigham Young University, 1991–present.
Professor, Royal Holloway College, University of London, 1990.
Reader, Royal Holloway College, 1982.
Lecturer, Royal Holloway College, 1971.

Visiting Positions

University of Colorado, Fall 2005
University of Arizona, Winter 1998
University of Oxford, 1996
Institute of Advanced Study, Princeton, Fall 1993
Brigham Young University, Fall 1990
University of Adelaide and Macquarie University, Sydney, 1989
University of Ferrara, 1989
University of Hanover, 1988
University of Genoa and University of Naples, 1988
University of Colorado, 1985
University of Ulm, 1985

Academy of Sciences, Vienna, 1985

University of Bordeaux, 1983

Visiting Associate Professor, University of Colorado, Boulder, 1978–79

Service Appointments

London Mathematical Society Editorial Advisory Board, 1990-2000.

Visiting examiner for the mathematics research institute of the University of Nancy, France, 1992, on behalf of the French government (C.N.R.S.).

Publications

1. A Diophantine Problem on Groups I, *Trans. Amer. Math. Soc.* **150** (1970), 499–506.
2. A Diophantine Problem on Groups II, *Proc. Lond. Math. Soc.* **21**, No. 3 (1970), 757–768.
3. A Diophantine Problem on Groups III, *Proc. Camb. Phil. Soc.* **70** (1971), 31–47.
4. Discrepancy Modulo One and Capacity of Sets, *Quart. J. Math.* **22** No. 2 (1971), 596–603.
5. On Wiener’s Theorem on Fourier-Stieltjes Coefficients and the Gaussian Law, *Proc. Lond. Math. Soc.* **25** No. 3 (1972), 525–542.
6. A Diophantine Problem on Groups IV, *Illinois Journal of Math.* **18** (1974), 552–564.
7. Slowly Growing Sequences and Discrepancy Modulo One, *Acta Arithmetica* **23** (1973), 279–293.
8. On a Theorem of Erdős and Taylor, *Bull. Lond. Math. Soc.* **4** (1972), 373–374.
9. Khinchin’s Conjecture and Marstrand’s Theorem, *Mathematika* **21** (1974), 248–260.
10. Some Metrical Theorems in Strong Uniform Distribution, *J. Lond. Math. Soc.* **9** Ser. 2 (1975), 467–477.
11. On a Metrical Theorem of Weyl, *Mathematika* **22** (1975), 29–33.
12. (with J. Gajraj) Some Non-Linear Diophantine Approximations, *Acta Arithmetica* **31** (1976), 325–341.
13. (with J. Gajraj) On the Fractional Parts of Certain Additive Forms, *Math. Proc. Camb. Phil. Soc.*, **79** (1976), 463–467.
14. Riemann Sums and Lebesgue Integrals, *Quart. J. Math. Oxford* **27** Ser. 2 (1976), 191–198.
15. On Approximation with Algebraic Numbers of Bounded Degree, *Mathematika* **23** (1976), 18–31.
16. Dyadic Methods in the Measure Theory of Numbers, *Trans. Amer. Math. Soc.*, **221** (1976), 419–432.
17. Metric Diophantine Approximation on Manifolds, *J. Lond. Math. Soc.* **14** (1976), 43–48.
18. Sprindžuk’s Theorem and Hausdorff Dimension, *Mathematika* **23** (1976), 184–197.

19. Dirichlet's Theorem on Diophantine Approximation, *Math. Proc. Camb. Phil. Soc.* **81** (1977), 37–59.
20. Singular n -tuples and Hausdorff Dimension, *Math. Proc. Camb. Phil. Soc.* **81** (1977), 377–385.
21. Fractional Parts of Several Polynomials, *Quart. J. Math.* **28** (1977), 453–471.
22. Fractional Parts of Several Polynomials, II, *Mathematika* **25** (1978), 76–93.
23. On Irregularities of Distribution, *Bull. Lond. Math. Soc.* **10** (1978), 289–296.
24. On Numbers with Many Rational Approximations, *Math. Proc. Camb. Phil. Soc.* **86** (1979), 25–27.
25. On the Distribution Modulo 1 of the Sequence $\alpha n^3 + \beta n^2 + \gamma n$, *Acta Arithmetica* **39** (1981), 399–405.
26. (with W. M. Schmidt) Diophantine Problems with Variables Restricted to the Values 0 and 1, *J. Number Theory* **12** (1980), 460–486.
27. Exceptional Sets in Uniform Distribution, *Proc. Edinburgh Math. Soc.* **22** (1979), 145–160.
28. Fractional Parts of Several Polynomials, III, *Quart. J. Math.* Oxford, **31** (1980), 19–36.
29. Recent Results on Fractional Parts of Polynomials, *Number Theory, Carbondale 1979*. Lecture notes in Mathematics, No. 751, Springer, Berlin, 10–17.
30. Small Solutions of Quadratic and Quartic Congruences, *Mathematika* **27** (1980), 30–45.
31. (with G. Harman) Small Fractional Parts of Quadratic and Additive Forms, *Math. Proc. Camb. Phil. Soc.* **90** (1981), 5–12.
32. On the Fractional Parts of αn^2 and βn , *Glasgow Math. Journal* **28** (1981), 181–183.
33. Small Fractional Parts of the Sequence αn^k , *Michigan Math. Journal* **28** (1981), 223–228.
34. Metric Number Theory and the Large Sieve, *J. Lond. Math. Soc.* **24** (1981), 34–40.
35. On the Fractional Parts of $\alpha n^3, \beta n^2$ and γn , *Journées d'Arithmétiques, 1980* ed. J. V. Armitage, Cambridge, 1982.
36. (with G. Harman) Small Fractional Parts of Quadratic Forms, *Proc. Edinburgh Math. Soc.* **25** (1982), 269–277.
37. Weyl Sums and Diophantine Approximation, *J. Lond. Math. Soc. Ser. 2* **25** (1982), 25–34.
38. (with G. Harman) Diophantine Approximation with Prime Numbers, *J. Lond. Math. Soc. Ser. 2* **25** (1982), 201–215.
39. (with G. Harman) Small Fractional Parts of Polynomials, *Topics in Classical Number Theory*, Coll. Math. Soc. Janos Bolyai 34, Elsevier, North Holland, 1984.
40. Cubic Diophantine Inequalities, *Mathematika* **29** (1982), 83–92.
41. (with G. Harman) Diophantine Inequalities with Mixed Powers, *J. Number Theory* **18** (1984), 69–85.

42. Small Solutions of Congruences, *Mathematika* **30** (1983), 164–188.
43. Petites Solutions des Congruences, *Seminaire de Theorie des Nombres de Bordeaux* (1982-83), exposé no. 37.
44. Entire Functions and Uniform Distribution Modulo One, *Proc. London Math. Soc.* **49** No. 3 (1984), 87–110.
45. (with G. Kolesnik) On the Distribution of p^α Modulo One, *J. Reine Angew Math.* **356** (1985), 73–79.
46. (with J. Pintz) The Distribution of Square Free Numbers, *Acta Arithmetica* **46** (1985), 73–79.
47. (with G. Harman) Unbalanced Quadratic Residues and Non-Residues, *Math. Proc. Camb. Phil. Soc.* **98** (1985), 9–18.
48. The Greatest Prime Factor of the Integers in an Interval, *Acta Arithmetica* **47** (1986), 193–231.
49. Diophantine Inequalities, *London Math. Soc. Monograph*, Oxford Univ. Press (1986), 275 pp.
50. Entire Functions and Discrepancy, *Monatsh. Math.* **102** (1986), 179–182.
51. Square Free Points on Ellipsoids, *Acta Arithmetica* **50** (1988), 215–219.
52. (with H. P. Schlickewei) Indefinite Quadratic Forms, *Proc. Lond. Math. Soc.* **54** No. 3 (1987), 385–411.
53. (with H. L. Montgomery) Oscillations of Quadratic L -Functions, *Analytic Number Theory*, 23–40 Birkhäuser, Boston, 1990.
54. Diagonal Cubic Equations I, *Théorie des Nombres* 15–28, J.M. de Koninck and C. Levesque (ed.), Walter de Gruyter, Berlin–New York 1989.
55. Diagonal Cubic Equations II, *Acta Arithmetica*, **53** (1989), 217–250.
56. Diagonal Cubic Equations III, *Proc. Lond. Math. Soc.* **58** Ser. 3 (1989), 495–518.
57. (with J. Brüdern) On Pairs of Additive Cubic Equations, *J. Reine Angew. Math.* **391** (1988), 157–180.
58. (with G. Harman) Sequences with Bounded Logarithmic Discrepancy, *Math. Proc. Camb. Phil. Soc.* **107** (1990), 213–225.
59. (with G. Harman) Exponential Sums Formed with the Möbius Function, *Bull. Lond. Math. Soc.* **43** No. 2 (1991), 193–198.
60. (with J. Brüdern) Sums of Cubes of Square-Free Integers, *Monatsh. Math.* **111** (1991), 1–21.
61. (with G. Harman) On the Distribution of αp^k Modulo One, *Mathematika* **75** (1991), 170–184.
62. (with J. Brüdern and G. Harman) The Fractional Part of αn^k for Square-Free n , *Quart. J. Math. Oxford* **42** Ser. 2 (1991), 421–431.
63. (with S. Schäffer) Pairs of Additive Quadratic Forms Modulo One, *Acta Arithmetica* **62** (1992), 45–69.

64. (with J. Brüdern) Sums of Cubes of Square-Free Integers II, *Monatsh. Math.* **112** (1991), 177–207.
65. (with J. Brüdern) Pairs of Quadratic Forms Modulo One, *Glasgow Math. J.*, **35** (1993), 51–61.
66. Singular n -tuples and Hausdorff Dimension II, *Math. Proc. Camb. Phil. Soc.* **111** (1992), 577–584.
67. (with J. Brüdern and G. Harman) Simultaneous Diophantine Approximation with Square-Free Numbers, *Acta Arith.* **63** (1993), 51–60.
68. (with G. Harman and J. Rivat) Primes of the Form $[n^c]$, *Journal of Number Theory*, **50** (2) (1995), 261–277.
69. The Square-Free Divisor Problem, *Quart. J. Math. Oxford*, **45** (2) (1994), 269–277.
70. (with G. Harman) Primes of the form $[c^p]$, *Math. Zeit.* **221** (1996), 73–81.
71. (with J. Brüdern) On sums of two squarefull numbers, *Math. Proc. Camb. Phil. Soc.* **16** (1994), 1–5.
72. (with G. Harman) Numbers with a large prime factor, *Acta Arith.* **73** (1995), 119–145.
73. (with J. Brüdern and T. D. Wooley) Cubic diophantine inequalities, *Mathematika* **42** (1995), 264–277.
74. (with G. Harman) Sparsely totient numbers, *Ann. Fac. Sci. Toulouse Math.*, **5** (2) (1996), 183–190.
75. (with G. Harman) Small remainder of a vector to suitable modulus, *Math. Zeit.* **221** (1996), 59–71.
76. The Brun-Titchmarsh Theorem, *J. Number Theory* **56** (1996), 343–365.
77. The square-free divisor problem II, *Quart. J. Math. (Oxford)* (2) **47** (1996), 133–146.
78. (with G. Harman) The difference between consecutive primes, *Proc. London Math. Soc.*, **72** (3) (1996), 261–280.
79. (with G. Harman) The Brun-Titchmarsh theorem on average, *Analytic Number Theory*, Birkhäuser, Boston (1996), 39–103.
80. (with G. Harman) The sequence x/n and its subsequences, Symposium on Diophantine Problems (Boulder, CO, 1994). *Rocky Mountain J. Math.*, **26** (3) (1996) 795–814.
81. (with G. Harman and J. Pintz) The exceptional set for Goldbach’s problem for short intervals, *Sieve Methods, Exponential Sums and their Applications in Number Theory*, 1–54, Cambridge, 1996.
82. (with G. Harman) The three primes theorem with almost equal summands, *Phil. Trans. Royal Soc. London A*, **356** (1998), 763–780.
83. (with G. Harman) Shifted primes without large prime factors, *Acta Arith.*, **83** (1998), 331–361.

84. On irregularities of distribution II, *J. London Math. Soc.* (2) **59** (1999), 50–64.
85. Small solutions of congruences II, *Funct. Approx. Comment. Math.*, **28** (2000), 19–34.
86. Small fractional parts of quadratic forms, *Number Theory for the Millennium, I* (Urbana, IL, 2000), 1–20, A. K. Peters, 2002.
87. (with G. Harman and J. Pintz) The difference between consecutive primes II, *Proc. London Math. Soc.*, (3) **83** (2001), 532–562.
88. *Linear Algebra*. Rinton Press, 2001, 264 pp.
89. *Kloosterman sums and Maass forms*, vol. 1. Kendrick Press, 2003, 285 pp.
90. Schäffer’s determinant argument. *Diophantine Approximation*, 21–39, Springer, 2008.
91. Editor and translator, *Bernhard Riemann, Collected Papers*, Kendrick Press, 2004. With the assistance of C. Christensen and H. Orde.
92. The values of quadratic forms at square-free points, *Acta Arith.* **124** (2006), 101–137.
93. Editor and author of Introduction, 1–10, *Euler Reconsidered*, Kendrick Press 2007.
94. Sums of two relatively prime cubes, *Acta Arithmetica*, **129** (2007), 103–146.
95. (with G. Harman) Numbers with a large prime factor II, *Analytic Number Theory: Essays in Honour of Klaus Roth*, 1–14, Cambridge University Press, 2009.
96. Numbers in a given set with (or without) a large prime factor in a given set, *Ramanujan J.*, **20** (2009), 275–295.
97. Editor, Jean-Pierre Kahane, *Selected Works*, Kendrick Press, 2009.
98. Primitive lattice points in planar domains, *Acta Arith.*, **142** (2010), 267–302.
99. Sums of two relatively prime k th powers, *Functiones et Approximatio*, **42** (2010), 67–112.
100. (with K. Powell) The distribution of k -free numbers, *Acta Math. Hungar.*, **126** (2010), 181–197.
101. The zeros of a quadratic form at square-free points, *J. Number Theory*, **130** (2010), 2119–2146.
102. Weyl’s theorem in the measure theory of numbers, *Dependence in Probability, Analysis and Number Theory*, 51–72, Kendrick Press, 2010.
103. Sequences that omit a box (modulo 1), *Adv. Math.* **227** (2011), 1757–1771.
104. Primes in arithmetic progressions to spaced moduli. *Acta Arith.* **153** (2012), 133–159.
105. Kloosterman sums with prime variable, *Acta Arith.* **156** (2012), 351–372.
106. (with W. Banks, J. Brüdern, I. Shparlinski and A. Weingartner) Piatetski-Shapiro sequences, *Acta Arith.* **157** (2013), 37–68.
107. (with A. Weingartner) Some applications of the double large sieve, *Monatsh. Math.* **170** (2013), 261–304.

- 108. (with A. Weingartner) A ternary Diophantine inequality over primes, *Acta Arith.* **162** (2014), 159–196.
- 109. (with K. Kuttler) Linear Algebra with Applications, *World Scientific*, 2014.
- 110. (with William D. Banks, Zhenyu V. Guo, and Aaron M. Yeager) Piatetski-Shapiro primes from almost primes, *Monatsh. Math.* **174** (2014), 357–370.
- 111. The intersection of Piatetski-Shapiro sequences, *Mathematika* **60** (2014), 347–362.
- 112. Primes in arithmetic progressions to spaced moduli. II. *Quart. J. Math.* **65** (2014), 597–625.
- 113. (with William D. Banks) Character sums with Piatetski-Shapiro sequences, *Quart. J. Math.* **66** (2015), 393–416.

Accepted for Publication

- 114. (with Paul Pollack) Bounded gaps between primes with given primitive root, II, *Forum Math.* Published online 07/15/2015.
- 115. (with Liangyi Zhao) Gaps between primes in Beatty sequences, *Acta Arith.*, to appear.

Submitted for Publication

- 116. (with Liangyi Zhao) Gaps of smallest possible order between primes in an arithmetic progression, arXiv:1412.0574, submitted to *International Mathematics Research Notices*.
- 117. (with Alastair J. Irving) Bounded intervals containing many primes, arXiv: 1505.01815, submitted to *Math. Zeitschrift*.
- 118. (with Paul Pollack) Clusters of primes with square-free translates, arXiv: 1505.02744, submitted to *Revista Mat. Iberoamericana*.
- 119. (with Tristan Freiberg) Limit points and long gaps between primes, arXiv: 1510.08054, submitted to *Quart. J. Math.*

Ph.D. Students

- J. Gajraj, Ph.D. 1976, Thesis: Diophantine Inequalities. (He became an Income Tax Inspector.)
- G. Harman, Ph.D. 1982, Thesis: Prime Number Theory and Diophantine Approximation. (Harman and I now have 25 joint papers. He has over 770 citations on MathSciNet.)
- S. Stibbe, Ph.D. 1989, Thesis: Exponential Sums with Generalized Divisor Functions. (She became an Actuary.)

Invited Addresses at International Conferences

- 1. Diophantine Approximation and Analytic Number Theory, Banff, Canada, 2010.
- 2. Dependence in Probability, Analysis and Number Theory, Graz, Austria, 2009.
- 3. Vienna Symposium for the 70th birthday of Wolfgang Schmidt, 2003.
- 4. Millennial Conference in Number Theory, Urbana, Illinois, 2000.

5. Analytic Number Theory, Hong Kong, April 1997.
6. 101 Years of the Prime Number Theorem, Ulm, Germany, July 1997.
7. Analytic number theory, Kyoto, 1996.
8. Diophantine approximation and the Hardy-Littlewood method, Oberwolfach, 1996.
9. Analytic number theory, Allerton Park, Illinois, 1995.
10. Analytic theory of numbers, Cardiff, U.K., 1995.
11. Diophantine Problems, Boulder, Colorado, 1994.
12. Elementary and Analytic Number Theory, Lillafüred, Hungary, 1993.
13. Diophantine Problems, Nara, 1990.
14. Journées Arithmétiques, Ulm, 1987.
15. International Number Theory Conference, Quebec, 1987.
16. Imperial College Symposium on Analytic Number Theory, London, 1985.
17. Oberwolfach Meeting in Analytic Number Theory, 1994.
18. Oberwolfach Meeting in Analytic Number Theory, 1991.
19. Oberwolfach Meeting in Diophantine Approximation, 1986.
20. Oberwolfach Meeting in Exponential Sums, 1984.
21. Analytic Number Theory, Gregynog, U.K., 1982.

Grants

NSF research grants, 1992–1995, 1997–1999, 2000–2003.

NSA research grants for two years, 1995–1996, 2011–2012.

Prizes

I twice won the Distinguished Prize of the Hardy-Ramanujan Society (India), once for the paper [78] published in 1996 and once for the paper [87] published in 2001. The prizes were shared with my coauthors (Harman in 1996, Harman and Pintz in 2001).