

CURRICULUM VITÆ

3rd January 2007

Name Robert Charles VAUGHAN

Date of Birth 24th March 1945

Nationality British

Personal

Married Anita Bernice Bosky, 12th September 1992

One son, Thomas Andres William Vaughan, born 27th June 1994

Education

Hillingdon Primary School, 1950-56.

Bishopshalt Grammar School, Hillingdon, Middlesex, 1956-63.

University College, London, 1963-69.

Qualifications

B.Sc.(Special) with Second Class Honours (upper division) in Mathematics, London University, 1st August 1966.

Ph.D., London University, 20th January 1970. Thesis title "On the representation of numbers as sums of squares, cubes and fourth powers and as sums of powers of primes". Supervisor Professor T. Estermann.

D.Sc., London University, 19th December 1990.

Honours, Prizes and Fellowships

Invited Lecturer International Mathematical Congress, Helsinki, 14.08-24.08.1978.

Awarded Junior Berwick Prize by the London Mathematical Society, 1979.

Elected Fellow Royal Society 15th March 1990.

Awarded EPSRC(formerly SERC) Senior Fellowship, 1st October 1991.

Employment

- 09.1969-09.1970 Postdoctoral fellow at Nottingham University.
- 10.1970-09.1972 Junior Research Fellow at Sheffield University.
- 10.1972-09.1975 Probationary Lecturer in Mathematics at Imperial College London.
09.1974-08.1975 Visiting Assistant Professor at University of Michigan, Ann Arbor.
- 09.1975-09.1976 Lecturer in Mathematics at Imperial College London.
- 10.1976-09.1980 Reader in Pure Mathematics at Imperial College London
09.1977-12.1977 Visiting Professor, Mittag-Leffler Institute, Djursholm, Sweden.
- 10.1980-12.1997 Professor of Pure Mathematics at Imperial College London.
09.1982-12.1983 Visiting Professor at University of Michigan, Ann Arbor.
07.1983-08.1983 Visiting Professor at Macquarie University, Sydney.
10.1988-09.1990 Head of Pure Mathematics Section, Imperial College.
09.1990-05.1991 Visiting member Institute for Advanced Study, Princeton.
06.1991-08.1991 Visiting Professor at Macquarie University, Sydney.
09.1991-12.1991 Visiting Professor at University of Michigan, Ann Arbor, Michigan.
01.1992-12.1996 EPSRC Senior Research Fellow.
01.02.93-30.04.93 Visiting Professor at the Isaac Newton Institute, Cambridge.
01.1997-12.1997 Visiting Professor at University of Michigan, Ann Arbor, Michigan.
- 01.1998-04.1998 Visiting Professor at University of Michigan, Ann Arbor, Michigan.
- 05.1998-12.1998 Visiting Scholar at University of Michigan, Ann Arbor, Michigan.
- 01.1999- Professor at Pennsylvania State University.
01.2005-07.2005 Visiting Professor at University of Cambridge.
09.2005-12.2005 Visiting Professor at University of Michigan.

Membership of Learned Bodies

Ordinary Member London Mathematical Society, elected 19th March 1970.

Fellow Royal Society, elected 15th March 1990.

Ordinary Member American Mathematical Society, 1992.

Research Grants, etc.

£15,000 (with W. W. L. Chen) from SERC for Symposium in Honour of K. F. Roth, July 1985.

SERC Senior Visiting Fellowship for J. H. H. Chalk, October 1987 - September 1988.

SERC Visiting Fellowship for A. D. Pollington, July - August 1988.

SERC Visiting Fellowship for A. D. Pollington, June - July 1992.

SERC Visiting Fellowship for T. D. Wooley, June - July 1992.

EPSRC Visiting Fellowship for A. D. Pollington, June - August 1997.

NSF Research Grant DMS-9970632, July 1999-June 2002.

NSA Research Grant MDA904-03-1-0082, February 2003-February 2005.

NSA Research Grant H98230-06-0077, February 2006-February 2008.

Teaching duties

Have taught extensively at all levels of the University curriculum in both England and the United States. This has included lectures on Calculus, Advanced Calculus and Linear Analysis (to both specialists and non-specialists), Real and Complex Analysis to specialist undergraduates, Linear Algebra, and Number Theory to both undergraduates and postgraduates, as well as tutorials in all the more elementary mathematical subjects.

Administrative duties

Imperial College. Have served on most of the departmental committees, including the Library committee, Computing committee (Chair 1987-1990), Syllabus committees, Departmental Management Committee, Promotions committee, various Appointment committees, as well as being Head of Pure Mathematics Section 1988-1990. In particular, the latter involved assigning teaching duties, conducting regular personnel assessment exercises and making recommendations to the promotions committee.

Penn. State. Promotion and Tenure committee 1999–2002, Chowla Appointments committee 1999–2003. Class observations of junior faculty. Manager of Algebra and Number Theory Seminar 2000–2004. Shapiro committee 2002-2006. Library committee 2003–2004. Colloquium committee 2003–6. Personnel Committee 2006–. Graduate Studies Committee 2006–.

Invited Lectures

1. Oberwolfach 15.03-21.03.1970. An application of the large sieve to a diophantine equation.
2. Imperial College London 03.03.1971. Some applications of Montgomery's sieve.

3. St. Louis 27.03-31.03.1972. A new estimate for the exceptional set in Goldbach's problem.
4. Vancouver 10.04.1972. Some applications of Montgomery's sieve.
5. Cambridge 16.05.1972. Error terms in additive prime number theory.
6. Oberwolfach 9.07-15.07.1972. Omega theorems in additive prime number theory.
7. Nottingham 13.10.1972. On Hilbert's inequality.
8. Cardiff 01.12.1972. On the exceptional set in Goldbach's problem.
9. Bordeaux 18.03-23.03.1972. a) Recent progress in additive prime number theory. b) Diophantine approximation by prime numbers. c) Mean value theorems in prime number theory.
10. Oberwolfach 13.01-19.01.1974. Mean value theorems in prime number theory.
11. Urbana 13.12.1974. a) Recent progress in additive prime number theory. b) Bounds for the coefficients of cyclotomic polynomials.
12. Ann Arbor 20.12.1974. Recent progress in additive prime number theory.
13. Nottingham 22.10.1975. Bounds for the coefficients of cyclotomic polynomials.
14. Oberwolfach 02.11-08.11.1975. Bounds for the coefficients of cyclotomic polynomials.
15. Royal Holloway College 09.03.1976. Daboussi's theorem.
16. Sheffield 11.11.1976. Some interesting problems.
17. Nottingham 06.05.1977. An elementary method in prime number theory.
18. Institut Mittag-Leffler, Djursholm, 19.19.9.77-09.12.77. a) 10 hours: On the estimation of trigonometrical sums over primes, and related questions. b) 2 hours: Around the Goldbach problem.
19. Oberwolfach 06.11-12.11.1977. An elementary method in prime number theory.
20. Turku 21.11.1977. An elementary method in prime number theory.
21. Uppsala 29.11.1977. Inefficiency in packing large squares with unit squares.
22. Cardiff 03.03.1978. The distribution of squarefree numbers.
23. B. M. C., Lancaster 04.04-08.04.1978. An elementary method in prime number theory.
24. Nottingham, Number Theory Meeting, 11.06.1978-14.06.1978. An elementary method in prime number theory.
25. Marseille, Journées Arithmétiques. 20.6-24.6.1978. A survey of some important problems in additive number theory.
26. I. M. C., Helsinki, 14.08-24.08.1978. Recent progress in additive prime number theory.
27. York 14.03.1979. A survey of the large sieve.
28. Durham 22.07-01.08.1979. An elementary method in prime number theory.
29. Exeter 26.10.1979. An elementary method in prime number theory.
30. Canterbury 02.11.1979. An elementary method in prime number theory.
31. Oxford 06.03.1980. Bounds for the coefficients of cyclotomic polynomials.

32. Oberwolfach 02.11-08.11.1980. Some remarks on Weyl sums.
33. Institut Mittag-Leffler, Djursholm 23.03-25.04.1981. a) 2 hours: Some remarks on Weyl sums. b) 2 hours: On the coefficients of cyclotomic polynomials.
34. Budapest 18.07-26.07.1981. Some remarks on Weyl sums.
35. Bordeaux 18.03-22.03.1982. Identities in prime number theory.
36. Nottingham 14.05.1982. Coefficients of cyclotomic polynomials.
37. Gregynog 21.05-24.05.1984. On sums of primes.
38. Oberwolfach 03.10-09.10.1982. On sums of primes.
39. Ann Arbor 19.10.1982. On sums of primes.
40. Austin 15.11.1982. a) On sums of primes. b) Coefficients of cyclotomic polynomials.
41. College Park, Maryland 03.12.1982. On sums of primes.
42. Waterloo, Ontario 25.01.1983. Sums of primes.
43. Toronto 23.02.1983. Coefficients of cyclotomic polynomials.
44. Boulder 01.04.1983. Sums of primes.
45. Urbana 05.04.1983. On Weyl sums.
46. Normal, Illinois 08.04-09.04.1983. On the order of magnitude of the coefficients of cyclotomic polynomials, I & II.
47. University of N. S. W., Sydney 01,08.08.1983. Coefficients of cyclotomic polynomials, I & II.
48. University of Sydney 05.08.1983. Sums of primes.
49. Macquarie University, Sydney 12.08.1983. Coefficients of cyclotomic polynomials III.
50. Armidale, N. S. W. 16.08.1983. An analytic inequality related to zero sets of functions on the unit disc.
51. Royal Holloway College 06.03.1984. Coefficients of cyclotomic polynomials II.
52. Cambridge 14.03.1984. Coefficients of cyclotomic polynomials III.
53. Kings College London 21.03.1984. Complete exponential sums.
54. Stillwater, Oklahoma 24.06-03.07.1984. a) The distribution of reduced residues. b) On complete exponential sums. c) Coefficients of cyclotomic polynomials.
55. Ann Arbor 09.07.1984. The distribution of reduced residues.
56. Brunswick, Maine 15.09-21.09.1984. Complete exponential sums.
57. Zaurautz, N. Spain 19.08-25.08.1984. a) Coefficients of cyclotomic polynomials. b) The distribution of reduced residues. c) Complete exponential sums.
58. Oberwolfach 14.10-20.10.1984. Waring's problem for smaller exponents.
59. Symposium in Honour of K. F. Roth, Imperial College, 1.7-10.7.85. On Waring's problem I, II.
60. Ann Arbor 16 & 21.9.85. Waring's problem for smaller exponents I, II.

61. Littlewood Centennial Meeting, Trinity College, Cambridge, 19 & 20.12.85. The Hardy-Littlewood Method: Recent Progress in Waring's Problem.
62. University of East Anglia, Norwich, 25.6.86. On the distribution of reduced residues.
63. Oberwolfach, 21.9-27.9.86. On Waring's problem for cubes.
64. Cambridge, 15.10.86. On the distribution of reduced residues.
65. Cardiff, 14.11.86. On the distribution of reduced residues.
66. University College London, 9.1.87. On the distribution of reduced residues.
67. King's College London, 22.4.87. Sums of cubes II.
68. Conference in Honour of A. Selberg, Oslo, 14.6-21.6.87. A new iterative method in Waring's problem.
69. Birmingham, 12.7-18.7.87; Inequalities: Symposium to mark 50th anniversary of Hardy-Littlewood-Pólya. Hilbert's Inequality.
70. Bordeaux, 12.7-18.7.87, Weizman Institute-Bordeaux University joint conference. Adventures in Analytic Number Theory.
71. British Mathematical Colloquium, Exeter, 11.4-14.4.88. Recent Progress in Additive Number Theory.
72. Oberwolfach, 25.9-1.10.88. On Waring's Problem.
73. Cambridge, 7.3.89. On the Erdős-Fuchs theorem.
74. Sussex University, 14.3.89. On the distribution of reduced residues.
75. University of Michigan, 20.4.89. On the Duffin and Schaeffer conjecture.
76. Bateman retirement conference, Illinois, 24.4-28.4.89. On the Erdős-Fuchs theorem.
77. University of Michigan, 1.5.89. On Waring's problem for cubes.
78. University of Michigan, 23.4.90. On a problem related to one of Littlewood and Offord.
79. University of Michigan, 30.4.90. Wooley's Theorem.
80. Brigham Young University, Utah, 04.05.90. On a problem related to one of Littlewood and Offord.
81. Brigham Young University, Utah, 09.05.90. Hilbert's inequality.
82. Brigham Young University, Utah, 11.05.90. Recent work on Waring's problem.
83. Brigham Young University, Utah, 15.05.90. On the distribution of reduced residues.
84. Brigham Young University, Utah, 17.05.90. The L_1 mean of exponential sums over primes.
85. Manhattan, Kansas, Regional Conference on Interface between Number Theory and Harmonic Analysis, 20.05-26.05.90. Recent work on Waring's problem.
86. University of Michigan, 18.9.90. A matrix related to the Riemann hypothesis.
87. Institute for Advanced Study, Princeton, 5.11.90. On a problem related to one of Littlewood and Offord.
88. University of Michigan, 7.12.90. On Waring's problem for fifth powers.

89. University of Illinois, Urbana, 11.12.90. On a problem related to one of Littlewood and Offord.
90. Institute for Advanced Study, Princeton, 17.01.91. On Waring's problem, I.
91. Institute for Advanced Study, Princeton, 31.01.91. On Waring's problem, II.
92. Institute for Advanced Study, Princeton, 07.02.91. On Waring's problem, III.
93. Institute for Advanced Study, Princeton, 02.05.91. On Weyl sums.
94. Brigham Young University, Utah, 22.05.91. On the eigenvalues of Redheffer's matrix.
95. University of New South Wales, Sydney, 25.06.91. Conference in honour of George Szekere's 80th Brithday. On a problem related to one of Littlewood and Offord.
96. Melbourne University, 11.07.91. Australian Mathematical Society Annual Meeting. A survey of recent work on Waring's problem.
97. Adelaide University, 23.07.91. A survey of recent work on Waring's problem.
98. Flinder's University, Adelaide, 25.07.91. On a problem related to one of Littlewood and Offord.
99. Macqaurie University, Sydney, 05.08.91. A survey of recent work on Waring's problem.
100. Wayne State University, Detroit, 11.11.91. Recent work on Waring's problem.
101. Cambridge, 05.03.92. On some interesting problems in number theory.
102. University of Georgia, Athens, 22.04.92. A matrix connected with the Riemann Hypothesis.
103. University of Georgia, Athens, 24.04.92. Recent work on Waring's problem.
104. Cardiff, 17.06.92. A matrix connected with the Riemann Hypothesis.
105. Rademacher Centenary Conference, 25.07.92. On a certain nonary cubic form.
106. Isaac Newton Institute, Cambridge, 04.03.93. The use in additive number theory of numbers without large prime factors.
107. Cardiff, 19.03.93. The use of smooth numbers in additive number theory.
108. Isaac Newton Institute, Cambridge, 09.04.93. A matrix connected with the Riemann Hypothesis.
109. University of Michigan, Ann Arbor, 03.05.93. On a certain nonary cubic form.
110. AMS regional meeting, DeKalb, special session dedicate to Paul Erdős, 01.07.93. On a problem related to one of Erdős.
111. University of Michigan, Ann Arbor, 22.11.93. On a certain nonary cubic form, II.
112. Oberwolfach, 17.03.94. On a certain nonary cubic form.
113. Cambridge, 07.06.94. On the distribution of Gauss sums.
114. Conference in Honour of W. M. Schmidt, Boulder, Colorado, 30.06.94. On a certain nonary cubic form.
115. CNTA4, Halifax, Nova Scotia, 03.07.94. On the distribution of Gauss sums.
116. University College, London, 19.10.94. On the distribution of Gauss sums.

117. Nottingham, 21.10.94. On the distribution of Gauss sums.
118. University of Michigan, Ann Arbor, 31.10.94. Error terms in Waring's problem.
119. Brigham Young University, Provo, Utah, 11.11.94. On the distribution of Gauss sums.
120. University of Michigan, Ann Arbor, 30.01.95. On the distribution of Gauss sums.
121. Allerton Park, University of Illinois, conference in honour of H. Halberstam, 16.05.95. On the extreme values of $L(1, \chi)$.
122. University of Cardiff, conference in honour of C. Hooley, 06.07.95. On the Montgomery Hooley asymptotic formula.
123. University of Michigan, 21.09.95. On the extreme values of $L(1, \chi)$.
124. University of Michigan, 08.02.96. On the Montgomery-Hooley asymptotic formula.
126. University of Michigan, 03.03.97. On a variance associated with the distribution of sequences in arithmetic progressions.
127. University of Michigan, 21.04.97. On the distribution of generating functions.
128. Pennsylvania State University, 23.10.97. On the distribution of generating functions.
129. Pennsylvania State University, 23.10.97. Hardy's legacy to number theory.
130. Macquarie University, Sydney, 28.11.97. On a variance associated with the distribution of sequences in arithmetic progressions.
131. Sydney University, 01.12.97 & 02.12.97. Two lectures on Hardy's legacy to number theory.
132. Pennsylvania State University, 26.02.98. The distribution of primes in arithmetic progressions.
133. Oberwolfach, 12.03.98. A general moment theorem for primes in arithmetic progression.
134. Imperial College London, 08.05.99. On the Montgomery-Hooley theorem and its generalisations.
135. The London Number Theory Seminar, University College, 08.03.00. A generalised divisor problem.
136. Imperial College London, 12.05.00. On sigma-phi numbers.
137. Millennial Conference on Number Theory, Urbana, Plenary Address, 23.05.00. Waring's Problem: A Survey.
138. University of Wisconsin, Madison, 16.02.01. Waring's Problem: A Survey.
139. Queen Mary Westfield College, London, 05.03.01. Waring's Problem: A Survey.
140. Imperial College, London, 09.03.01. Waring's Problem: A Survey.
141. University of Michigan, Ann Arbor, 19.03.01. On sigma-phi numbers.
142. University of Princeton, Princeton, 12.04.01. A generalised divisor problem.
143. Illinois Number Theory Meeting, Urbana, 17.05.01. A generalised divisor problem.

144. Workshop on probabilistic number theory, Urbana, 19.05.01. On the distribution of generating functions.
145. Conference on the occasion of Richard Hall's retirement, University of York, 05.10.01. A generalised divisor problem.
146. University of Cambridge, UK, 05.03.02. Moments for primes in arithmetic progression.
146. Queen Mary Westfield College, London, 06.03.02. Moments for primes in arithmetic progression.
147. University of Michigan, Ann Arbor, 25.03.02. Moments for primes in arithmetic progression.
148. Oberwolfach, 10.03.03. Mean value theorems for primes in arithmetic progressions.
149. University of York, 04.02.04. Waring's Problem: A Survey.
150. Newton Institute, Cambridge, 18.03.04. Mean value theorems for primes in arithmetic progressions.
151. Oberwolfach, 23.09.04. Squarefree numbers in arithmetic progressions.
152. University of Waterloo, 19.01.05. Diophantine approximation on planar curves and the distribution of rational points.
153. University of Cambridge, 28.02.05. Partitions into primes.
154. University of York, 08.06.05. A matrix connected with the Riemann hypothesis.
155. University of York, 26.10.05. Rational approximation to planar curves.
156. University of Bristol, 28.10.05. Partitions into primes.
157. American Institute of Mathematics, Palo Alto, 29.11.05. The Bombieri–Vinogradov Theorem.
158. Royal Holloway College, 08.03.06. On the number of partitions into primes.

Editorial duties

Editorial Board, *Journal of Number Theory*, 1987-....

Editorial Advisor, *Acta Arithmetica*, 1990-....

Editorial Board, *Mathematika*, 1991-....

Editorial Board, *Philosophical Transactions of the Royal Society of London, A*, 1992-7.

Edited theme issue of the *Philosophical Transactions of the Royal Society of London, A*, "Theory and applications of numbers without large prime factors", 345(1993), 327-423.

Edited theme issue of the *Philosophical Transactions of the Royal Society of London, A*, "Applications of the Hardy-Littlewood method", 356(1998), 671-809.

Conferences organised Joint organiser with H. L. Montgomery (U. of Michigan) and J. Brüdern (Stuttgart) of “Elementaren und Analytische Zahlentheorie” at Mathematische Forschungsinstitut Oberwolfach, 9th-15th March 2003.

Research Students

P. M. Ross, Ph.D. 1976

T. D. Wooley, Ph.D. 1990

R. A. Ashton, Ph.D. 1993

W. A. K. Loh, Ph.D. 1994

M. Dancs, Ph.D. 2002