

## Roger Smith, Curriculum Vitae

### Personal Details

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### Professional Preparation

1972 - B.A., Oxford University

1973 - S.M., Massachusetts Institute of Technology

1975 - D.Phil., Oxford University

(all in mathematics)

### Appointments

1989-present, Texas A&M University, Professor

1981-1989, Texas A&M University, Associate Professor

1986-87, Oxford University, Visiting Fellow

1977-81, Texas A&M University, Assistant Professor

1975-77, Texas A&M University, Visiting Assistant Professor

### Publications

1. Borel structures on compact convex sets, *J. London Math. Soc.* (2), **16** (1977), 99-111.
2. L-ideals and numerical range preservation, *Illinois J. Math.*, **21** (1977), 365-373. (with C. Chui, P. Smith and J. Ward)
3. The R-Borel structure on a Choquet simplex, *Pacific J. Math.*, **73** (1977), 221-226.
4. M-ideal structure in Banach algebras, *J. Funct. Anal.*, **27** (1978), 337-349. (with J. Ward)
5. Spectral theory for universal caps, *J. London Math. Soc.* (2), **17** (1978), 119-128.

6. An addendum to: "M-ideal structure in Banach algebras" *J. Funct. Anal.*, **32** (1979), 269-271.
7. On non-unital Jordan-Banach algebras, *Math. Proc. Cambridge Philos. Soc.*, **82** (1977), 375-380.
8. M-ideals in  $B(\ell_p)$ , *Pacific J. Math.*, **81** (1979), 227-237. (with J. Ward)
9. Applications of convexity and M-ideal theory to quotient Banach algebras, *Quart. J. Math. Oxford Ser. (2)*, **30** (1979), 365-384. (with J. Ward)
10. On Banach algebra elements of thin numerical range, *Math. Proc. Cambridge Philos. Soc.*, **86** (1979), 71-83.
11. Matrix ranges for Hilbert space operators, *Amer. J. Math.*, **102** (1980), 1031-1081. (with J. Ward)
12. Locally isometric liftings from quotient C\*-algebras, *Duke Math. J.*, **47** (1980), 621-631. (with J. Ward)
13. The geometric structure of generalized state spaces, *J. Funct. Anal.*, **40** (1981), 170-184. (with J. Ward)
14. The numerical range in the second dual of a Banach algebra, *Math. Proc. Cambridge Philos. Soc.*, **89** (1981) 301-307.
15. A note on polynomial operator approximation, *Proc. Amer. Math. Soc.*, **88** (1983), 491-494. (with J. Ward)
16. Completely bounded maps between C\*-algebras, *J. London Math. Soc. (2)*, **27** (1983), 157-166.
17. M-structure in the Banach algebra of operators on  $C_0(\Omega)$ , *Trans. Amer. Math. Soc.*, **281** (1984), 233-242. (with P. Flinn)
18. Completely contractive factorizations of C\*-algebras, *J. Funct. Anal.*, **64** (1985), 330-337.

19. Finite rank operators with large trace, *Israel J. Math.*, **51** (1985), 262-272. (with D. Lewis)
20. The decomposition property for C\*-algebras, *J. Operator Theory*, **16** (1986), 51-74. (with D. Williams)
21. Multilinear maps and tensor norms on operator systems, *J. Funct. Anal.*, **73** (1987), 258-276. (with V. Paulsen)
22. Separable injectivity for C\*-algebras, *Indiana Univ. Math. J.*, **37** (1988), 111-133. (with D. Williams)
23. Completely bounded multilinear maps and Grothendieck's inequality, *Bull. London Math. Soc.*, **20** (1988), 606-612.
24. Schur products and matrix completions, *J. Funct. Anal.*, **85** (1989), 151-178. (with V. Paulsen and S. Power)
25. Liftings and extensions of maps on C\*-algebras, *J. Operator Theory*, **21** (1989), 117-131. (with G. Robertson)
26. Extension problems for maps on operator systems, *Mappings of operator algebras (Philadelphia, PA, 1988)*, *Progr. Math.*, **84**, Birkhäuser Boston, Boston, MA, 1990, pp. 265-273.
27. Cohomology for operator algebras: cones and suspensions, *Proc. London Math. Soc. (3)*, **65** (1992), 175-198. (with F. Gilfeather)
28. Completely bounded module maps and the Haagerup tensor product, *J. Funct. Anal.*, **102** (1991), 156-175.
29. The dual of the Haagerup tensor product, *J. London Math. Soc. (2)*, **45** (1992), 126-144. (with D. Blecher)
30. Cohomology for operator algebras: joins, *Amer. J. Math.*, **116** (1994), 541-561. (with F. Gilfeather)
31. Operator algebras with arbitrary Hochschild cohomology, *Contemp. Math.*, **120** (1991), 33-40. (with F. Gilfeather)
32. The central Haagerup tensor product and maps between von Neumann algebras, *J. Funct. Anal.*, **112** (1993), 97-120. (with A. Chatterjee)

33. Cohomology for operator algebras, *Proc. Internat. Workshop on Elementary Operators*, (1992), 189-195. (with F. Gilfeather)
34. Elementary operators and the Haagerup tensor product, *Proc. Internat. Workshop on Elementary Operators*, (1992), 233-241.
35. The ideal structure of the Haagerup tensor product of C\*-algebras, *J. Reine Angew. Math.*, **442** (1993), 111-148. (with S. Allen and A. Sinclair)
36. Schur products and completely bounded maps on the hyperfinite type  $\text{II}_1$  factor, *J. London Math. Soc. (2)*, **52** (1995), 594-604. (with F. Pop)
37. Cohomology for certain finite factors, *Bull. London Math. Soc.*, **26** (1994), 303-308. (with F. Pop)
38. On the cohomology groups of certain finite von Neumann algebras, *Math. Ann.*, **307** (1997), 71-92. (with E. Christensen, F. Pop and A. Sinclair)
39. The Haagerup invariant for von Neumann algebras, *Amer. J. Math.*, **117** (1995), 441-456. (with A. Sinclair)
40. Cartan subalgebras of finite von Neumann algebras, *Math. Scand.*, **85** (1999), 105-120. (with A. Sinclair)
41. An embedding invariant for operator spaces, *C. R. Math. Rep. Acad. Sci. Canada*, **16** (1994), 263-267. (with F. Pop)
42. The Haagerup invariant for tensor products of operator spaces, *Math. Proc. Cambridge Philos. Soc.*, **120** (1996), 147-153. (with A. Sinclair)
43. Hochschild cohomology of von Neumann algebras, *London Mathematical Society Lecture Note Series*, **203** Cambridge University Press, Cambridge, 1995. (with A. Sinclair)
44. Cohomology for operator algebras: the Mayer-Vietoris sequence, *J. Funct. Anal.*, **148** (1997), 1-27. (with F. Gilfeather and F. Pop)

45. Higher-dimensional virtual diagonals and ideal cohomology for triangular algebras, *Trans. Amer. Math. Soc.*, **349** (1997), 1919-1943. (with A. Paterson)
46. Derivations and automorphisms of certain operator algebras, *Quart. J. Math. Oxford*, **50** (1999), 437-456. (with F. Gilfeather)
47. Factorization of completely bounded bilinear operators and injectivity, *J. Funct. Anal.*, **157** (1998), 62-87. (with A. Sinclair)
48. The completely bounded approximation property for discrete crossed products, *Indiana Univ. Math. J.*, **46** (1997), 1311-1321. (with A. Sinclair)
49. Hochschild cohomology for von Neumann algebras with Cartan subalgebras, *Amer. J. Math.*, **120** (1998), 1043-1057. (with A. Sinclair)
50. The Hochschild cohomology problem for von Neumann algebras, *Proc. Natl. Acad. Sci. USA*, **95** (1998), 3376-3379. (with A. Sinclair)
51. Cohomology for finite index inclusions of factors, *J. Operator Theory*, **44** (2000), 335-345. (with A. Sinclair).
52. Finite dimensional injective operator spaces, *Proc. A.M.S.*, **128** (2000), 3461-3462.
53. Norming  $C^*$ -algebras by  $C^*$ -subalgebras, *J. Funct. Anal.*, **175** (2000), 168-196. (with F. Pop and A. Sinclair).
54. Approximation properties for crossed products by actions and coactions, *Internat. J. Math.*, **12** (2001), 595-608. (with M. Nilsen)
55. Diagonals in tensor products of operator algebras, *Proc. Edinburgh Math. Soc.*, **45** (2002), 647-652. (with V. Paulsen)
56. Strongly singular masas in type  $II_1$  factors, *Geom. and Funct. Anal.*, **12** (2002), 199-216. (with A. Sinclair)
57. The laplacian masa in a free group factor, *Trans. A.M.S.*, **355** (2003), 465-475. (with A. Sinclair)

58. Hochschild cohomology of factors with property  $\Gamma$ , *Ann. of Math.*, **158** (2003), 597-621. (with E. Christensen, F. Pop and A. Sinclair)
59. One-sided projections on  $C^*$ -algebras, *J. Operator Theory*, **51** (2004), 201-219. (with D. Blecher and V. Zarikian)
60. Crossed products and entropy of automorphisms, *J. Funct. Anal.*, **206** (2004), 210-232. (with C. Pop)
61. Strong singularity for subalgebras of finite factors, *Internat. J. Math.*, **14** (2003), 235-258. (with G. Robertson and A.M. Sinclair)
62. Property  $\Gamma$  factors and the Hochschild cohomology problem, *Proc. Natl. Acad. Sci. USA*, **100** (2003), 3865-3869. (with E. Christensen, F. Pop and A. Sinclair)
63. Perturbations of subalgebras of type  $II_1$  factors, *J. Funct. Anal.*, **213** (2004), 346-379. (with S. Popa and A. Sinclair)
64. A survey of Hochschild cohomology for von Neumann algebras, *Contemp. Math.*, **365** (2004), 383-400. (with A. Sinclair)
65. Representations of group algebras in spaces of completely bounded maps, *Indiana Univ. Math. J.*, **54** (2005), 873-896. (with N. Spronk)
66. The completely bounded approximation property for extended Cuntz-Pimsner algebras, *Houston J. Math.*, **31** (2005) 829-840. (with K. Dykema)
67. The Pukánszky invariant for group von Neumann algebras, *Illinois J. Math.*, **49** (2005) 325-343. (with A. Sinclair)
68. Corrigendum to: "Perturbations of subalgebras of type  $II_1$  factors" [*J. Funct. Anal.* **213** (2004), 346-379]. *J. Funct. Anal.* **235** (2006), 355-356. (with S. Popa and A. Sinclair)
69. Values of the Pukánszky invariant in free group factors and the hyperfinite factor, *J. Funct. Anal.*, **240** (2006), 373-398. (with K. Dykema and A. Sinclair)
70. Strong singularity of singular masas, *Illinois J. Math.*, **51** (2007), 1077-1084. (with A. Sinclair, S. White and A. Wiggins)

71. Cones arising from  $C^*$ -subalgebras and complete positivity, *Math. Proc. Cam. Phil. Soc.*, **145** (2008), 121–127. (with F. Pop)
72. Generators of  $II_1$  factors, *Oper. Matrices* **2** (2008), 555–582. (with K. Dykema, A. Sinclair and S. White)
73. *Finite von Neumann algebras and masas*. London Mathematical Society Lecture Note Series, vol. 351. Cambridge University Press, Cambridge, 2008. (with A. Sinclair)
74. Normalizers of irreducible subfactors, *J. Math. Anal. Appl.* **352** (2009), 684–695. (with S. White and A. Wiggins)
75. Groupoid normalizers of tensor products, *J. Funct. Anal.*, **258** (2010), 20–49. (with J. Fang, S. White and A. Wiggins)
76. On the cohomology groups of certain von Neumann algebras with coefficients in  $K(H)$ , *Proceedings of the Timișoara 2008 operator theory conference*, pp. 125–133 (2010), The Theta Foundation, Bucharest. (with F. Pop)
77. Perturbations of  $C^*$ -algebraic invariants, *Geom. Funct. Anal.*, **20**, (2010), 368–397. (with E. Christensen, A. Sinclair and S. White)
78. Perturbations of nuclear  $C^*$ -algebras, *Acta Math.*, **208** (2012), 93–150. (with E. Christensen, A. Sinclair, S. White and W. Winter)
79. The spatial isomorphism problem for close separable  $C^*$ -algebras, *Proc. Natl. Acad. Sci. USA*, **107** (2010), 587–591. (with E. Christensen, A. Sinclair, S. White and W. Winter)
80. Groupoid normalizers of tensor products: infinite von Neumann algebras, *J. Operator Theory*, to appear. (with J. Fang and S. White)
81. Vanishing of second cohomology for tensor products of type  $II_1$  von Neumann algebras, *J. Funct. Anal.*, **258** (2010), 2695–2707. (with F. Pop)
82. The relative weak asymptotic homomorphism property for inclusions of finite von Neumann algebras, *Internat. J. Math.*, **22**, (2011) 991–1011. (with J. Fang and M. Gao)

83.  $C^*$ -algebras nearly contained in type I algebras, *Canad. J. Math.*, to appear. (with E. Christensen, A. Sinclair, and S. White)
84. The Carpenter and Schur-Horn problems for masas in finite factors, *Illinois J. Math.*, to appear. (with K. Dykema, J. Fang and D. Hadwin)

### **Recent Conference Invited Talks**

- Fields Institute Instructional conference 2005 (Five 90 min. talks)
- Canadian Math. Soc. Summer Meeting 2005 (1 hr. talk)
- Wabash conference on functional analysis 2005 (1 hr. talk)
- Conference on Operator Spaces, CIRM, 2007 (1 hr. talk)
- Conference on Harmonic Analysis and Operator Spaces, BIRS, 2007 (1 hr. talk)
- Great Plains Operator Theory Symposium 2008 (1 hr. talk)
- Canadian Abstract Harmonic Analysis Symposium 2009 (1 hr. talk)
- Canadian Operator Symposium 2009 (1 hr. talk)
- Operators and Operator Algebras 2009 (1 hr. talk)

### **Funding**

23 years of NSF funding, most recently 20011–20014.

### **Graduate Students**

- R. Christ (1993), co-chair
- K. Coates (1993), co-chair
- A. Husain (2004), co-chair
- A. Wiggins (2007), chair
- J. Cameron (2009), chair
- W.-K. Chan (current), chair
- T. Rainone (current), co-chair

### **Postdoctoral Associates**

Florin Pop (1993-1995)

Corran Webster (1997-1999)

May Nielsen (1999-2001)

Ciprian Pop (2000-2002)

Nicolaas Spronk (2002-2004)

Monica Ilie (2003-2004)

Stuart White (2006-2007)

Junsheng Fang (2008-2010)

### **Awards**

1998: Departmental Outstanding Service Award

2003: Departmental Outstanding Teaching Award

2008: Departmental Outstanding Service Award

### **Significant Service Items**

Chair, Undergraduate Program

Chair, Committee of Professors

Chair, Postdoc hiring committee

Member, University Grievance Committee

Chair, Awards Committee

Member, Executive committee (several and currently)

Member, Search committee for *Dean of Science*

Chair, Search committee for *Head of Mathematics*

Member, Graduate Committee

Chair, Promotion committee

Chair, Speakers committee (current)

Editorial board, *Bulletin, Journal and Proceedings of the London Math. Soc.* (current)

## Teaching

Precalculus: 102, 104, 150

Business Math.: 141, 142

Engineering Math.: 151, 152, 251, 308, 311, 601

Math. Major Calculus: 171, 172, 451

Elementary Ed.: 365

Topology: 436

Probability: 411

Linear Algebra: 222, 304, 323, 423

Complex Analysis: 407, 617, 618

Applied Analysis: 641, 642

Real Analysis: 409, 410, 446, 447, 607, 608

Functional Analysis: 655, 656, 689

Reading courses: 485, 685

Research Hours: 691

Frontiers: 695