

## Publications

1. (with S. Weinberger and Z. Xie) Additivity of higher rho invariants and nonrigidity of topological manifolds, 100 pages, to appear in *Communications in Pure and Applied Mathematics*, 2018.
2. (with S. Chang and S. Weinberger) Positive scalar curvature and a new index theory for noncompact manifolds, to appear in *Journal of Geometry and Physics*, 31 pages, 2018.
3. (with H. Oyono-Oyono) Quantitative operator K-theory and the Kunneth formula, to appear in *Journal of Functional Analysis*, 66 pages, 2018.
4. (with E. Guentner and R. Willett) Dynamic asymptotic dimension and controlled operator K-theory, 99 pages, submitted, 2018.
5. (with Z. Xie) Delocalized eta invariants, algebraicity, and K-theory of group C\*-algebras, submitted, 2018.
6. (with B. Liao) K-theory of group Banach algebras and Banach property RD, submitted, 2018.
7. (with Xiaoman Chen, Jinming Wang, and Zhizhang Xie) The Connes-Chern character of higher rho invariants, 38 pages, preprint, 2018.
8. (with Sherry Gong and Jianchao Wu), The Novikov conjecture, the group of volume preserving diffeomorphisms, and Hilbert-Hadamard spaces, 62 pages, preprint.
9. (with Z. Xie and R. Zeidler) On the range of the relative higher index and the higher rho-invariant for positive scalar curvature, arxiv, 2017.
10. ( with R. G. Douglas, M. Jabbari and X. Tang ) A new index theorem for monomial ideals by resolutions, *Journal of Functional Analysis*, 275 (2018), no. 3, 735–760.
11. The algebraic K-theory Novikov conjecture for group algebras over the ring of Schatten class operators, *Advances in Mathematics*, 307 (2017) 727–753.
12. (with Z. Xie) Higher rho invariants and the moduli spaces of positive scalar curvature metrics, *Advances in Mathematics*, 307 (2017) 1046–1069.

13. (with R. Douglas and X. Tang) An analytic Grothendick-Rieman-Roch theorem, *Advances in Mathematics*, 294 (2016) 307–331.
14. (with E. Guentner and R. Willett) Dynamic Asymptotic Dimension: relation to dynamics, topology, coarse geometry, and  $C^*$ -algebras, *Mathematische Annalen*, published online, 1-45, 2016.
15. (with Oyono-Oyono) Persistence approximation property and controlled operator K-theory, *Münster Journal of Mathematics*, 10 (2017) 201-268.
16. (with S. Chang and S. Weinberger) Contractible manifolds with exotic positive scalar curvature behaviour, *Contemporary Mathematics*, 682 (2017) 51–64.
17. (with Z. Xie) Noncommutative geometry of discrete groups, *Introduction to Modern Mathematics, Series: Advanced Lectures in Mathematics*, No: 33, (2015) 441–443.
18. (with S. Weinberger) Finite part of operator K-theory for groups finitely embeddable into Hilbert space and the degree of nonrigidity of manifolds, *Geometry and Topology*, 19 (2015) 2507-2540.
19. (with X. Chen and Q. Wang) The coarse Novikov conjecture and Banach spaces with Property (H), *Journal of Functional Analysis*, Vol. 268, 9 (2015) 2754–2786.
20. (with H. Oyono-Oyono) On a quantitative Baum-Connes conjecture, *Annales de l’Institut Fourier*, 65, 2 (2015) 605–674.
21. (with D. Ramras and R. Tessera) Finite decomposition complexity and the integral Novikov conjecture for higher algebraic K-theory, *Journal für die Reine und Angewandte Mathematik (Crelle)*, 694 (2014), 129–178.
22. (with Z. Xie) Positive scalar curvature, higher rho invariants and localization algebras, *Advances in Mathematics*, 262 (2014) 823–866.
23. (with R. Willett) Geometric property (T), *Chinese Annals of Mathematics*, Ser. B 35 (2014), no. 5, 761–800.
24. (with Z. Xie) A relative higher index theorem, positive scalar curvature, and diffeomorphisms, *Advances in Mathematics*, 250 (2014) 35–73.

25. (with X. Chen and Q. Wang) The maximal coarse Baum-Connes conjecture for spaces which admit a fibred coarse embedding into Hilbert space, *Advances in Mathematics*, 249 (2013) 88–130.
26. (with D. Ramras and R. Willett) A finite dimensional approach to the Novikov conjecture, *Algebraic and Geometric Topology*, 13 (2013) 2283–2316.
27. (with E. Guentner and R. Tessera) Discrete groups with finite decomposition complexity, *Groups, Geometry and Dynamics*, Vol. 7, 2 (2013) 377–402.
28. (with G. Kasparov) The Novikov conjecture and geometry of Banach space, *Geometry and Topology*, 16 (2012) 1859–1880.
29. (with R. Willett) Higher index theory for certain expanders and Gromov’s monster groups I, *Advances in Mathematics*, 229 (2012) 1380–1416.
30. (with R. Willett) Higher index theory for certain expanders and Gromov’s monster groups II, *Advances in Mathematics*, 229 (2012) 1762–1803.
31. (with E. Guentner and R. Tessera) A notion of geometric complexity and its application to topological rigidity, *Inventiones Mathematicae*, Vol. 189, 2 (2012) 315–357.
32. Large scale geometry and its applications, *Contemporary Mathematics*, AMS, Vol. 546, 2011, 305–315.
33. (with E. Guentner and R. Tessera) Operator norm localization for linear groups and its applications to K-theory, *Advances in Mathematics*, Vol. 226, 4 (2011), 3495–3510.
34. (with S. Chang and S. Weinberger) Taming 3-manifolds using scalar curvature, *Geometriae Dedicata*, Vol. 148, 1 (2010), 3–14.
35. A characterization of the image of the Baum-Connes map, *Clay Mathematics Proceedings*, Vol. 11, 2010, 649–657.
36. (with H. Oyono-Oyono) K-theory for a certain expanders, *Journal of Functional Analysis*, Vol. 257, 10 (2009), 3239–3292.

37. (with X. Chen, R. Tessera and X. Wang) Metric sparsification and operator norm localization property, *Advances in Mathematics*, 218 (2008), no. 5, 1496–1511.
38. (with P. Nowak) What is Property A? *Notices of AMS*, Volume 55, Issue 4, 2008.
39. (with G. Gong and Q. Wang) Geometrization of the strong Novikov conjecture for residually finite groups. *J. Reine Ang. Math.* 621 (2008), 159–189.
40. (with S. Chang and S. Ferry) Bounded rigidity of manifolds and asymptotic dimension growth. *Journal of K-theory*, 1 (2008), no. 1, 129–144.
41. Higher index theory of elliptic operators and geometry of groups. *Proceedings of International Congress of Mathematicians, Madrid, Vol. 2*, 1623–1639, 2006.
42. (with G. Kasparov) The coarse geometric Novikov conjecture and uniform convexity. *Advances in Mathematics*, Vol. 206, 1(2006) 1–56.
43. Hyperbolic groups admit proper affine isometric action on  $l^p$ -spaces. *Geometric and Functional Analysis*, Vol. 15, 5 (2005) 1114–1151.
44. (with X. Chen, M. Dardalat and E. Guentner) Uniform embedding into Hilbert space and exactness of free product of groups. *Journal of Functional Analysis*, Vol. 205, 1(2003) 168–179.
45. (with G. Skandalis and J.-L. Tu) The coarse Baum-Connes conjecture and groupoids. *Topology*, Vol. 41, (2002) 807–834.
46. (with I. Mineyev) The Baum-Connes conjecture for hyperbolic groups, *Inventiones Mathematicae*. Vol. 149, (2002) 97–122.
47. (with A. Dranishnikov, G. Gong and V. Lafforgue) Uniform embeddings into Hilbert space and a question of Gromov. *Bulletin of Canadian Math. Society*, Vol. 45, 1 (2002) 60–70.
48. (with G. Gong) Volume growth and positive scalar curvature. *Geometric and Functional Analysis*, Vol. 10, 4 (2000) 821–828.

49. The coarse Baum-Connes conjecture for spaces which admit a uniform embedding into Hilbert space. *Inventiones Mathematicae*, Vol. 139, 1 (2000) 201–240.
50. (with J. Kaminker) Boundary amenability and positive scalar curvature. *K-Theory*, Vol. 18, (1999) 93–97.
51. The Novikov conjecture for groups with finite asymptotic dimension. *Annals of Mathematics*, Vol. 147, 2 (1998) 325–355.
52. Asymptotic Fredholm modules, vector bundles with small variation and a non-vanishing theorem for K-theoretic indices. *K-Theory*, Vol. 13, 4 (1998) 331–346.
53. Localization algebras and the coarse Baum-Connes conjecture. *K-Theory*, Vol. 11, 4 (1997) 307–318.
54. Zero-in-the-spectrum conjecture, positive scalar curvature and asymptotic dimension. *Inventiones Mathematicae*, 127 (1997) 99–126.
55. K-theoretic indices of Dirac type operators on complete manifolds and the Roe algebra. *K-Theory*, Vol. 11, 1 (1997) 1–15.
56. Cyclic cohomology and higher indices for noncompact complete Riemannian manifolds. *Journal of Functional Analysis*, 133 (1995) 442–473.
57. (with R. Douglas, J. Glazebrook, and T. Kamber) Index formulas for geometric Dirac operators in Riemannian foliations. *K-Theory*, Vol. 9, 5 (1995) 407–441.
58. Baum-Connes conjecture and coarse geometry. *K-Theory*, Vol. 9, 3 (1995) 223–231.
59. Coarse Baum-Connes conjecture. *K-Theory*, Vol. 9, 3 (1995) 199–221.
60. (with N. Higson and J. Roe) A coarse Mayer-Vietoris sequence. *Math. Proc. Camb. Phil. Soc.* 114, 85 (1993) 85–97.
61. Cyclic cohomology and index theory of transversally elliptic operators. *Contemp. Math.* 120. 1991.
62. Reducibility of a class of operators and their complete unitary invariants. *Dongbei Shuxue*, 3, 4 (1987) 410–418.

## **Book**

(With Piotr Nowak) Large Scale Geometry, European Mathematical Society Publishing House, 2012.

(With Rufus Willett) Higher Index Theory, Draft, 2018.