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FURTHER REFERENCES
ON THE BAUM-CONNES CONJECTURE
(compiled and classified by Alain VALETTE)

1) *K-homology*

- ATIYAH, M. F. Global theory on elliptic operators. *Proc. Int. Symp. on Functional Analysis*. Univ. of Tokyo Press, Tokyo, 1969, 21–30.
- Elliptic operators, discrete groups and von Neumann algebras. *Astérisque* 32-33 (1976), 43–72.
- BAUM, P. and R. G. DOUGLAS. *K*-theory and index theory. *Proc. Symp. Pure Math.* 38. Part 1 (Operator Algebras and Applications, R. Kadison ed.), Amer. Math. Soc. (1982), 117–173.
- KASPAROV, G. G. Topological invariants of elliptic operators, I: *K*-homology (English translation). *Math. USSR Izvestija* 9 (1975), 751–792.

2) *Chern characters*

- BAUM, P., J. BLOCK and N. HIGSON. Chern character for totally disconnected groups. Preprint.
- BAUM, P. and A. CONNES. Chern character for discrete groups. *A Fête of Topology*. North Holland, 1987, 163–232.
- BAUM, P., N. HIGSON and R. J. PLYMEN. Equivariant homology for $SL(2)$ of a p -adic field. *Contemp. Math.* 148 (1993), 1–18.
- HIGSON, N. and V. NISTOR. Cyclic homology of totally disconnected groups acting on buildings. *J. Funct. Anal.* 141 (1996), 466–495.
- SCHNEIDER, P. The cyclic homology of p -adic reductive groups. *J. reine angew. Math.* 475 (1996), 39–54.

3) *Kasparov theory (KK-theory)*

- BAAJ, S. and P. JULG. Théorie bivariante de Kasparov et opérateurs non bornés dans les C^* -modules hilbertiens. *C. R. Acad. Sci. Paris, Sér. I Math.* 296 (1983), 875–878.
- CUNTZ, J. and G. SKANDALIS. Mapping cones and exact sequences in *KK*-theory. *J. Operator Theory* 15 (1986), 163–180.
- KASPAROV, G. G. The operator *K*-functor and extensions of C^* -algebras (English translation). *Math. USSR Izvestiya* 16 (1981), 513–572.
- An index for invariant elliptic operators, *K*-theory, and representations of Lie groups (English translation). *Soviet Math. Dokl.* 27 (1983), 105–109.
- Operator *K*-theory and its applications: elliptic operators, group representations, higher signatures, C^* -extensions. *Proc. ICM*, vol. 2, Warsaw (1983), 987–1000.
- KNUDSEN JENSEN, M. and K. THOMSEN. *Elements of KK-Theory*. Birkhäuser, 1991.

KUCEROVSKI, D. Kasparov products in KK -theory and unbounded operators with applications to index theory. PhD thesis, Magdalen College, Oxford, 1994.

PIMSNER, M. KK -groups of crossed products by groups acting on trees. *Invent. Math.* 86 (1986), 603–634.

4) E -theory

CONNES, A. and N. HIGSON. Déformations, morphismes asymptotiques et K -théorie bivariante. *C. R. Acad. Sci. Paris, Sér. I Math.* 311 (1990), 101–106.

GUENTNER, E., N. HIGSON and J. TROUT. Equivariant theory for C^* -algebras. Preprint, 1997.

HIGSON, N., G. G. KASPAROV and J. TROUT. A Bott periodicity theorem for infinite-dimensional Euclidian space. *Adv. Math.* 135 (1998), 1–40.

5) K -amenability

CUNTZ, J. K -theoretic amenability for discrete groups. *J. reine angew. Math.* 344 (1983), 180–195.

FOX, J. and P. HASKELL. K -amenability for $SU(n, 1)$. *J. Funct. Anal.* 117 (1993), 279–307.

JULG, P. and A. VALETTE. K -theoretic amenability for $SL_2(\mathbb{Q}_p)$ and the action on the associated tree. *J. Funct. Anal.* 58 (1984), 194–215

SKANDALIS, G. Une notion de nucléarité en K -théorie. *K-Theory* 1 (1988), 549–573.

6) Connes-Kasparov conjecture (connected Lie groups)

CONNES, A. An analogue of the Thom isomorphism for crossed products of a C^* -algebra by an action of \mathbf{R} . *Adv. Math.* 39 (1981), 31–55.

PENINGTON, M. and R. J. PLYMEN The Dirac operator and the principal series for complex semi-simple Lie groups. *J. Funct. Anal.* 53 (1983), 269–286.

VALETTE, A. K -theory for reduced C^* -algebra of a semisimple Lie group with rank 1 and finite centre. *Quart. J. Math. Oxford Ser. (2)* 35 (1984), 341–359.

— Dirac induction for semi-simple Lie groups having one conjugacy class of Cartan subgroups. *Proc. Conf. on Operator algebras, ergodic theory and topology*, Busteni (Roumanie) 1983. Springer Lecture Notes in Math. 1132 (1985), 526–555.

WASSERMANN, A. Une démonstration de la conjecture de Connes-Kasparov pour les groupes de Lie linéaires connexes réductifs. *C. R. Acad. Sci. Paris, Sér. I Math.* 304 (1987), 559–562.

7) Baum-Connes conjecture – surjectivity of μ

BAUM, P. and A. CONNES. Geometric K -theory for Lie groups and foliations. Preprint, 1982. *L'Enseignement Math.* (2) 46 (2000), 3–42.

— K -theory for Discrete Groups in Operator Algebras and Applications. D. Evans and M. Takesaki eds. Cambridge Univ. Press (1988), 1–20.

- BAUM, P., A. CONNES and N. HIGSON. Classifying space for proper actions and K -theory of group C^* -algebras. In *C^* -Algebras: 1943-1993, a Fifty Year Celebration*, R. S. Doran ed. *Contemp. Math.* 167 (1994), 240–291.
- BAUM, P., N. HIGSON and R. J. PLYMEN. A proof of the Baum-Connes conjecture for p -adic $GL(n)$. *C. R. Acad. Sci. Paris, Sér. I Math.* 325 (1997), 171–176.
- BÉGUIN, C., H. BETTAIEB and A. VALETTE. K -theory for C^* -algebras of one-relator groups. *K-Theory* 16 (1999), 277–298.
- BLOCK, J. Some remarks concerning the Baum-Connes conjecture. *Comm. Pure Appl. Math.* 50 (1997), 813–820.
- CONNES, A. *Noncommutative Geometry*. Academic Press, 1994.
- GROMOV, M. Positive curvatures, macroscopic dimension, spectral gaps, and higher signatures. *Functional Analysis on the Eve of the 21st Century*, Vol. II (New Brunswick, NJ, 1993), *Progr. Math.* 132 (1996), 1–213.
- HIGSON, N. and G. G. KASPAROV. Operator K -theory for groups which act properly and isometrically on Hilbert space. *Electron. Res. Announc. Amer. Math. Soc.* 3 (1997), 131–142.
- JULG, P. Remarks on the Baum-Connes conjecture and Kazhdan's property (T) . *Fields Inst. Commun.* 13 (1997), 145–155.
- Travaux de N. Higson et G. Kasparov sur la conjecture de Baum-Connes. *Séminaire Bourbaki*, Exposé 841 (1998).
- JULG, P. and G. G. KASPAROV. Operator K -theory for the group $SU(n, 1)$. *J. reine angew. Math.* 463 (1995), 99–152.
- KASPAROV, G. G. Lorentz groups: K -theory for unitary representation and crossed products. (English translation). *Soviet Math. Dokl.* 29 (1984), 256–260.
- KESWANI, N. Homotopy invariance of relative eta-invariants and C^* -algebra K -theory. *Electron. Res. Announc. Amer. Math. Soc.* 4 (1998), 18–26.
- LAFFORGUE, V. Une démonstration de la conjecture de Baum-Connes pour les groupes réductifs sur un corps p -adique et pour certains groupes discrets possédant la propriété (T) . *C. R. Acad. Sci. Paris, Sér. I Math.* 327 (1998), 439–444.
- Compléments à la démonstration de la conjecture de Baum-Connes pour certains groupes possédant la propriété (T) . *C. R. Acad. Sci. Paris, Sér. I Math.* 328 (1999), 203–208.
- OYONO-OYONO, H. La conjecture de Baum-Connes pour les groupes agissant sur les arbres. *C. R. Acad. Sci. Paris, Sér. I Math.* 326 (1998), 799–804.
- Baum-Connes conjecture and extensions. Preprint, September 1999.
- ROSENBERG, J. Group C^* -algebras and topological invariants. *Monographs Stud. Math.* 18, Pitman (1984), 95–115.
- SKANDALIS, G. Progrès récents sur la conjecture de Baum-Connes. Contribution de Vincent Lafforgue. *Sém. Bourbaki* (1999), Exposé 869.
- TU, J.-L. The Baum-Connes conjecture and discrete group actions on trees. *K-Theory* 17 (1999), 303–318.
- VALETTE, A. The conjecture of idempotents: a survey of the C^* -algebraic approach. *Bull. Soc. Math. Belg. Sér. A* 41 (1989), 485–521.
- Introduction to the Baum-Connes conjecture. Preprint, January 2000, <http://www.math.ethz.ch/~indira/Valette.dvi>.

8) *Injectivity of μ – Novikov conjecture*

- BETTAIEB, H. and A. VALETTE. Sur le groupe K_1 des C^* -algèbres de groupes discrets. *C. R. Acad. Sci. Paris, Sér. I Math.* 322 (1996), 925–928.
- CONNES, A. and H. MOSCOVICI. Cyclic cohomology, the Novikov conjecture and hyperbolic groups. *Topology* 29 (1990), 345–388.
- ELLIOTT, G. and T. NATSUME. A Bott periodicity map for crossed products of C^* -algebras by discrete groups. *K-Theory* 1 (1987), 423–435.
- FERRY, S., A. RANICKI and J. ROSENBERG. A history and survey of the Novikov conjecture. *Novikov Conjectures, Index Theorems and Rigidity*, Vol. 1, S. Ferry, A. Ranicki and J. Rosenberg eds. London Math. Soc. Lecture Note Ser. 226. Cambridge Univ. Press, 1995, 7–66.
- HIGSON, N. Bivariant K -theory and the Novikov conjecture. Preprint, summer 1999.
- HIGSON, N. and J. ROE. On the coarse Baum-Connes conjecture. *Novikov Conjectures, Index Theorems and Rigidity*, Vol. 2. London Math. Soc. Lecture Note Ser. 227 (1995), 227–254.
- Amenable group actions and the Novikov conjecture. Preprint, November 1998.
- HURDER, S. Exotic index theory and the Novikov conjecture. *Novikov Conjectures, Index Theorems and Rigidity*, Vol. 2. London Math. Soc. Lecture Note Ser. 227 (1995), 255–276.
- KASPAROV, G.G. Equivariant KK -theory and the Novikov conjecture. *Invent. Math.* 91 (1988), 147–201.
- K -theory, group C^* -algebras, and higher signatures (Conspectus). *Novikov Conjectures, Index Theorems and Rigidity*, Vol. 1. London Math. Soc. Lecture Note Ser. 226. Cambridge Univ. Press (1995), 101–146.
- KASPAROV, G.G. and G. SKANDALIS. Groups acting on buildings, operator K -theory and the Novikov conjecture. *K-Theory* 4 (1991), 303–337.
- Groupes “boliques” et conjecture de Novikov. *C. R. Acad. Sci. Paris, Sér. I Math.* 319 (1994), 815–820.
- MISHCHENKO, A. S. Infinite-dimensional representations of discrete groups, and higher signatures. *Math. USSR Izvestija* 8 (1974), 85–111.
- NATSUME, T. The Baum-Connes conjecture, the commutator theorem and Rieffel projections. *C. R. Math. Rep. Acad. Sci. Canada* 10 (1988), 13–18.
- OGLE, C. Assembly maps, K -theory and hyperbolic groups. *K-Theory* 6 (1992), 235–265.
- ROE, J. Coarse cohomology and index theory on complete Riemannian manifolds. *Mem. Amer. Math. Soc.* 104 (1993).
- Index theory, coarse geometry and topology of manifolds. *CBMS Regional Conference Series in Math.* 90. Amer. Math. Soc., 1996.
- ROSENBERG, J. C^* -algebras, positive scalar curvature and the Novikov conjecture. *Publ. Math. I.H.E.S.* 58 (1983), 197–212.
- ROSENBERG, J. and S. WEINBERGER. An equivariant Novikov conjecture. *K-Theory* 4 (1990), 29–53.
- WEINBERGER, S. Aspects of the Novikov conjecture. In *Geometric and Topological Invariants of Elliptic Operators. Contemp. Math.* 105 (1990), 281–297.
- YU, G. L. Coarse Baum-Connes conjecture. *K-Theory* 9 (1995), 199–221.
- Baum-Connes conjecture and coarse geometry. *K-Theory* 9 (1995), 223–231.

- Localization algebras and the coarse Baum-Connes conjecture. *K-Theory* 11 (1997), 307–318.
- The coarse Baum-Connes conjecture for spaces which admit a uniform embedding into Hilbert space. Preprint, July 1998.

9) *Groupoids and foliations*

- HECTOR, G. Groupoïdes, feuilletages et C^* -algèbres (quelques aspects de la conjecture de Baum-Connes). *Geometric Study of Foliations (Tokyo, 1993)*, 3–34. World. Sci. Publishing (1994).
- MACHO STADLER, M. La conjecture de Baum-Connes pour un feuilletage sans holonomie de codimension un sur une variété fermée. *Publ. Mat.* 33 (1989), 445–457.
- TAKAI, H. Baum-Connes conjectures and their applications. *World Sci. Adv. Ser. Dyn. Syst.* 5 (1987), 89–116.
- A counterexample to strong Baum-Connes conjectures for foliated manifolds. *World Sci. Adv. Ser. Dyn. Syst.* 7 (1989), 149–154.
 - On the Baum-Connes conjecture. In *Mappings of Operator Algebras. Progr. Math.* 84, Birkhäuser (1990), 183–197.
- TORPE, A.-M. K -theory for the leaf space of foliations by Reeb components. *J. Funct. Anal.* 61 (1985), 15–71.
- TU, J.-L. La conjecture de Novikov pour les feuilletages hyperboliques. *K-Theory* 16 (1999), 129–184.
- La conjecture de Baum-Connes pour les feuilletages moyennables. *K-Theory* 17 (1999), 215–264.

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