

## ABSTRACTS

- Sara Azzali: A Baum–Connes assembly map localised at the unit element of a discrete group

Abstract: Let  $\Gamma$  be a discrete group. In this talk, we use KK-theory with coefficients in  $\mathbb{R}$  to construct a Baum–Connes map localised at the unit element of  $\Gamma$ . The localisation is defined by a distinguished idempotent  $[\tau]$  of the commutative ring  $KK_{\mathbb{R}}^{\Gamma}(\mathbb{C}, \mathbb{C})$  which is canonically associated to  $\Gamma$  via its standard trace. We construct a natural Baum–Connes type morphism  $\mu_{\tau}$  between the  $\tau$ -parts of the usual left and right hand sides. We show that the  $\tau$ -form of the Baum–Connes conjecture is weaker than the classical one, but still implies the strong Novikov conjecture. Joint work with Paolo Antonini and Georges Skandalis.

- Siegfried Echterhoff: The minimal exact crossed product and the Baum-Connes conjecture

Abstract: If  $G$  is a locally compact group which acts on a  $C^*$ -algebra  $A$ , then the original Baum-Connes conjecture with coefficients asserts that a certain assembly map

$$\mu : K_G^*(\underline{EG}; A) \rightarrow K_*(A \rtimes_r G)$$

from the equivariant  $K$ -homology  $K_G^*(\underline{EG}; A)$  of the universal proper  $G$ -space  $\underline{EG}$  with coefficients in  $A$  into the  $K$ -theory of the reduced crossed product  $A \rtimes_r G$  should always be an isomorphism. However, it was observed by Higson, Lafforgue, and Skandalis in 2002 that the conjecture fails for some non-exact groups. Recently, Baum, Guentner, and Willett proposed a new version of the conjecture where the reduced crossed product is replaced by the smallest exact crossed-product functor which dominates the reduced crossed product. In this lecture we will report on recent joint work with Alcides Buss and Rufus Willett on the new conjecture and the properties of the smallest exact crossed product functor.

- Martin Finn-Sell: Taming some monster groups.

Abstract: In this talk I will present some very recent work on trying to prove the classical Baum-Connes conjecture for certain limits of groups - examples of the type of limit I will be interested in are "lacunary hyperbolic groups", which contains many of the Gromov Monster counterexamples to the Baum-Connes conjecture with coefficients. I will describe related ideas from coarse geometry - motivated by the Willett-Yu explanation of the two trace argument of Higson, as well as the necessary representation theory to get the method started. I will then state the results, and motivate their technical nature by explaining how to use them in their current form.

- Ryszard Nest: TBA

- Damian Sawicki: Non-surjectivity of the coarse assembly map for warped cones

Abstract: The warped cone construction associates an unbounded metric space to a compact dynamical system. We will discuss the proof of the conjecture of Drutu and Nowak that, in the case of actions with a spectral gap, the assembly map in the coarse Baum–Connes conjecture is not surjective for these spaces.

- Alain Valette: Inverting the assembly map (after S. Nishikawa)

Abstract: In a recent preprint (<https://arxiv.org/abs/1808.08298>), Nishikawa introduces a property  $(\gamma)$  for elements  $x$  in the Kasparov ring  $R(G)$ : it says that the Fredholm module defining  $x$  carries a compatible action of  $C_0(X)$ , where  $X$  is a  $G$ -compact model for the classifying space for proper actions of  $G$ . The basic observation is that  $x$  then defines a morphism  $K_*(C_r^*(G)) \rightarrow KK^G(C_0(X), \mathbb{C})$ , that is a candidate for a right inverse for the Baum-Connes assembly map. It is proved that, if  $x = 1$  in  $R(G)$ , it is indeed the case. Using this, new proofs of the Baum-Connes conjecture with coefficients are obtained for Euclidean motion groups, and for groups acting properly co-compactly on locally finite trees.

- Qin Wang: The coarse Novikov conjecture and Banach spaces with property (H)

Abstract: The coarse Novikov conjecture is a geometric analogue of the strong Novikov conjecture, while property (H) is a geometric condition to Banach spaces introduced by G. Kasparov and G. Yu in their research on the strong Novikov conjecture. In this talk, I will discuss applications of coarse embeddings or fibred coarse embeddings of metric spaces into Banach spaces with property (H) to the coarse Novikov conjecture.

- Christopher Wulff: The duality between coarse assembly and co-assembly from an index theoretic point of view

Abstract: Emerson and Meyer constructed their 'coarse co-assembly' map as a dual to the well-known coarse assembly map. Its domain is the reduced  $K$ -theory of the stable Higson corona and not –as one might expect– the  $K$ -homology of the Roe algebra. In this talk I will give an index theoretic interpretation of this duality that indicates, that the reduced  $K$ -theory of the stable Higson corona is indeed a good replacement for the  $K$ -homology of the Roe algebra.