ECOAS 2018
October 13 and 14
Abstracts

Sarah Browne, Penn State
Quantitative E-theory

Abstract: Quantitative E-theory is an ongoing project joint with Nate Brown which aims to create a new approach to tackling results like the Universal Coefficient Theorem (UCT) for new classes of C*-algebras. In recent years, many people have been working on classifying C*-algebras and these results assume the UCT, which requires further understanding. The inspiration is work by Oyono-Oyono-Yu, who used a quantitative approach of K-theory to prove the Künneth Theorem for new classes of C*-algebras. An ongoing project of Willett-Yu extends the quantitative approach to the KK-context. Quantitative E-theory is a generalisation of E-theory and so I will begin my talk by defining the notion of E-theory and talk about how we get the definition of Quantitative E-theory. Then I will state results connecting this definition to E-theory and the UCT.

Kristin Courtney, WWU Münster
Amalgamated free products of strongly RFD C-algebras over central subalgebras*

Abstract: In 1992, Loring and Exel proved that the unital full free product of two RFD C*-algebras is again RFD. Though this fails to hold in general for full amalgamated products, Korchagin showed in 2014 that it does hold when the algebras are assumed to be separable and commutative. We generalize this result to pairs of so-called "strongly RFD" C*-algebras amalgamated over a common central subalgebra. Examples of strongly RFD C*-algebras include just-infinite RFD C*-algebras, reduced group C*-algebras of virtually abelian groups, and... what else? This is joint work with Tatiana Shulman.

Marius Dadarlat, Purdue University
A Dixmier-Douady theory for strongly self-absorbing C-algebras*

Abstract: The classical Dixmier-Douady theory classifies the stable continuous trace C*-algebras in terms of the third cohomology group of their spectra. We plan to give a friendly introduction to a generalization of the Dixmier-Douady theory for continuous fields whose fibers are stable strongly self-absorbing C*-algebras. An interesting feature of the theory is the appearance of additional characteristic classes, in higher dimensions. If time permits, we will discuss the Brauer group in this context.

This is joint work with Ulrich Pennig.

Daniel Drimbe, University of Regina
W^*-superrigidity for coinduced actions

Abstract: We prove that if Σ is an amenable almost-malnormal subgroup of an icc non-amenable group Γ which is measure equivalent to a product of two infinite groups, then the coinduced action $\Gamma \curvearrowright X$ from an arbitrary probability measure preserving action $\Sigma \curvearrowright X_0$ is W*-superrigid. In particular, we obtain that any Bernoulli action of an icc lattice in a product of connected non-compact semisimple Lie groups is W*-superrigid.

James Gabe, University of Glasgow
Traceless AF embeddings and unsuspended E-theory

Abstract: A celebrated theorem of Kirchberg states that any separable, exact C^*-algebra embeds into the Cuntz algebra $\mathcal{O}_2$. In the same spirit, I have shown that a separable, exact C^*-algebra embeds into the cone $C_0((0,1],\mathcal{O}_2)$ if and only its primitive ideal space has no non-empty, compact, open subsets. Consequently, this characterises when traceless C^*-algebras are AF embeddable, and (under nuclearity assumptions) when Connes and Higson's E-theory can be unsuspended. The latter result uses recent results of Dadarlat and Pennig.

Bin Gui, Rutgers University
Strong commutativity of unbounded operators in 2d conformal field theory

Abstract: Given two unbounded self-adjoint operators A and B commuting on a common invariant core of them, the strong commutatity problem asks if A and B commute strongly, in the sense that the von Neumann algebras generated by A and by B commute. This problem has always been important in the functional analytic approach to quantum field theory. In this talk, I will discuss this problem in the context of 2d CFT.

Corey Jones, Australian National University
Generalized crossed products and discrete subfactors

Abstract: We introduce a generalization of the crossed product construction for C* and von Neumann algebras called the realization functor. Here, a group action is replaced by an action of a tensor category together with a connected C*-algebra object internal to that category. We will present the result that every discrete, extremal, irreducible extension of a II_1 factor is uniquely characterized as such a crossed product, and we discuss applications and examples. Based on joint work with David Penneys.

James Lutley, University of Ottawa
Title TBA

Abstract: TBA

Jesse Peterson, Vanderbilt University
Properly proximal groups and their von Neumann algebras

Abstract: We introduce a wide class of groups, called properly proximal, which contains all non-amenable bi-exact groups, all non-elementary convergence groups, and all lattices in non-compact semi-simple Lie groups, but excludes all inner-amenable groups. We use properties of these groups to obtain the first W^*-strong rigidity results for compact actions of $SL_d(\mathbb{Z})$ for $d \geq 3$. This is joint work with Remi Boutonnet and Adrian Ioana.

Rolando de Santiago, UCLA
L^2 Betti numbers of groups and s-malleable deformations

Abstract: A major theme in the study of von Neumann algebras is to investigate which structural aspects of the group extend to its von Neumann algebra. I present recent progress made by Dan Hoff, Ben Hayes, Thomas Sinclair and myself in the case where the group has positive first L^2 Betti number. I will also expand on our analysis of s-malleable deformations and their relation to cocyles which forms the foundation of our work.

Rufus Willett, University of Hawaiʻi at Mānoa
Property (T) for groupoids

Abstract: Property (T) is a strong rigidity property for groups: roughly, it says that any representation that is close to being trivial is actually close to the trivial representation. Motivated mainly by the problem of constructing exotic ‘Kazhdan projections’ in groupoid C*-algebras (and the associated K-theoretic consequences), I’ll introduce a topological notion of property (T) for groupoids that generalizes the group case. This is related to, but in some ways quite different from, the earlier measure-theoretic notion of property (T) for groupoids as developed by Zimmer and Anantharaman-Delaroche. I’ll try to explain all this, and also some other connections and examples. This is based on joint work with Clément Dell’Aiera.