24th WCOAS, Oct 15–16, 2016
University of Wyoming

- All lectures are in Business Building, Room 129.
- Package pickup on Saturday at 8:00.
- Conference Dinner: Altitude Chophouse & Brewery (320 S 2nd St) at 18:30.

Saturday		
8:30 – 9:10	Guoliang Yu	*K-theory of group Banach * algebras and group actions*
9:20 – 10:00	Judith Packer	*Wavelets and spectral triples for fractal representations of Cuntz algebras*
10:00–10:30	Coffee Break	
10:30–11:10	Valentin Deaconu	*Cuntz-Pimsner algebras from group actions*
11:20–12:00	Farzad Fathizadeh	*Twisted spectral triples and the Chern-Gauss-Bonnet theorem for C*-dynamical systems*
12:00–13:30	Lunch	
13:30–14:10	Hans Wenzl	*Subfactors and Tensor Categories*
14:20–15:00	Daniel Drimbe	*Cocycle and orbit equivalence superrigidity for coinduced actions*
15:00–15:30	Coffee Break	
15:30–16:10	Weihua Liu	*On noncommutative distributional symmetries and de Finetti theorems associated with them*
16:20–17:00	Ian Charlesworth	*An alternating moment condition for bi-free independence*
18:30	Conference Dinner	
Sunday		
8:30–9:10	Guihua Gong	*Classification and invariants for inductive limit C*-algebras*
9:20–10:00	Yasuhiko Sato	*Automorphisms with the Rohlin property on nuclear C*-algebras*
10:10–10:50	Qingyun Wang	*A self-absorbing action on the Jiang-Su algebra*

TITLE AND ABSTRACT

Ian Charlesworth, University of California, Los Angeles
An alternating moment condition for bi-free independence

Abstract: Bi-free independence was introduced by Voiculescu in 2013 as an independence relation on pairs of algebras, generalizing free independence to deal simultaneously with "left" and "right" variables. So far, it has been characterized abstractly and through a vanishing mixed cumulant condition. I will introduce a new characterization of bi-free probability analogous to the alternating-centred-products condition for free independence. I will also present an ongoing approach to bi-free liberation which this leads to.

Valentin Deaconu, University of Nevada, Reno
Cuntz-Pimsner algebras from group actions

Abstract: We discuss various constructions of C*-correspondences $\mathcal{X}$ arising from group representations $\rho : G \to U(\mathcal{H})$ and from the action of a group G on a graph $E = (E^0, E^1, r, s)$. The class of Cuntz-Pimsner algebras $\mathcal{O}_{\mathcal{X}}$ is very large, and in some cases we can identify them as crossed products and determine their K-theory.

There are connections with graph C^*-algebras, Doplicher-Roberts algebras, Nekrashevych algebras of self-similar group actions and with Cuntz-Pimsner algebras considered by Kumjian. We illustrate with several examples.

Daniel Drimbe, University of California, San Diego
Cocycle and orbit equivalence superrigidity for coinduced actions

Abstract: Popa's deformation/rigidity theory led to a remarkable cocycle superrigidity theorem for Bernoulli actions of groups with property (T) (2005) and of products of non-amenable groups (2006). More precisely, Popa obtained that every cocycle for such an action with values in a countable (and more generally, in a $\mathcal{U}_{fin}$) group is cohomologous with a group homomorphism. In this talk, we will present a generalization of this theorem to coinduced actions.

Farzad Fathizadeh, California Institute of Technology
Twisted spectral triples and the Chern-Gauss-Bonnet theorem for C*-dynamical systems

Abstract: Using an analog of the Hodge-de Rham operator, I will construct ordinary and twisted spectral triples for an ergodic C*-dynamical system, when the invariant state of the system is perturbed by a conformal factor. Then, the Fredholm index of the Hodge-de Rham operator and the Euler characteristic of the analog of the de-Rham complex will be discussed, and I will show that they match and are independent of the conformal factor, hence the analog of the Chern-Gauss-Bonnet theorem. This is joint work with Olivier Gabriel.

Guihua Gong, University of Puerto Rico
Classification and invariants for inductive limit C*-algebras

Abstract: I will talk about the classification of inductive limits of homogeneous C*-algebras with ideal property. The classifying functor of this class of C*-algebras then consists of ordered total K-theory, together with the pairing to the Hausdorfflized algebraic K_1-groups of each unital hereditary sub-C*-algebras.

Weihua Liu, University of Indiana Bloomington
On noncommutative distributional symmetries and de Finetti theorems associated with them

Abstract: I will introduce the notion of noncommutative distributional symmetries in noncommutative probability. Then, I will introduce de Finitte type theorems associated with those symmetries.

Judith A. Packer, University of Colorado, Boulder
Wavelets and spectral triples for fractal representations of Cuntz algebras

Abstract: Here we discuss the wavelet decompositions of certain fractal representations of Cuntz-Krieger C^*-algebras first described by M. Marcolli and A. Paolucci, and relate them to the eigenspaces of Laplacians associated to spectral triples constructed from Cantor fractal sets that are the infinite path spaces of Bratteli diagrams coming from the representations. In particular we make connections between these wavelets and the spectral triple and the Laplace–Beltrami operator on the associated Cantor set first constructed by J. Pearson and J. Bellissard, and A. Julien and J. Savinien. We emphasize particularly the case of Cuntz C^*-algebras $\mathcal{O}_D$ and prove that in this case, the orthogonal wavelet decomposition and the decomposition via orthogonal eigenspaces match up precisely. This work is joint with C. Farsi, E. Gillaspy, A. Julien, and S. Kang.

Yasuhiko Sato, Kyoto University, Japan
Automorphisms with the Rohlin property on nuclear C*-algebras

Abstract: In the current study of C*-algebras, there are many branches of the Rohlin property for group actions, the Rohlin property, tracial Rohlin property, Rohlin dimension, and weak Rohlin property. In this talk, we will focus on the difference of such Rohlin properties of automorphisms and try to integrate them in the case of nuclear C*-algebras. Starting from Connes' Rohlin property, we shall see a kind of evolutionary process of Rohlin properties in the C*-algebraic context. In particular, the Rohlin property, introduced by Bratteli-Evans-Kishimoto, is very useful to show the classification theory of dynamical systems. I will also explain the classification of automorphisms in the case of nuclear finite C*-algebras.

Qingyun Wang, University of Oregon
A self-absorbing action on the Jiang-Su algebra

Abstract: Let G be a finite abelian group, we shall construct a self-absorbing action α of G on the Jiang-Su algebra with the weak tracial Rokhlin property. Let A be a simple, unital, separable C*-algebra with a mild condition on the trace space. We shall show that this action α is absorbed by any action of G on A with the weak tracial Rokhlin property. Thus this action is the analogue of the Jiang-Su algebra in the equivariant setting. This is joint work with Chris Phillips.

Hans Wenzl, University of California, San Diego
Subfactors and Tensor Categories

Abstract: Some of the most basic examples of subfactors come from groups acting via automorphisms on factors. We review how one obtains nontrivial generalizations of such examples. Although they are connected to quantum groups, they are best described in terms of tensor categories. In particular, we give an elementary construction of finite analogs of certain symmetric spaces, such as the ones coming from $O(N) \subset U(N)$ in the subfactor context.

Guoliang Yu, Texas A&M University
*K-theory of group Banach * algebras and group actions*

Abstract: I will discuss the computation of K-theory for group Banach * algebras and its connections to group actions on Banach spaces. This is joint work with Gennadi Kasparov.