Schedule

	Monday, Dec. 16	Tuesday, Dec. 17	Wednesday, Dec. 18
10:00-10:30	Introduction (Tomforde)	Survey #3 (Deeley)	Survey #5 (Brown)
10:30-11:00		Break	Break
11:00-11:30	Survey #1 (Gillaspy)	Research Talk #3 (Deeley)	Research Talk #5 (Brown)
11:30-Noon	Lunch		
Noon-12:30		Lunch	Lunch
12:30-1:00	Research Talk #1 (Gillaspy)		
1:00-1:30		Survey #4 (Arici)	Survey #6 (LaLonde)
1:30-2:00	Survey #2 (Schafhauser)	Break	Break
2:00-2:30	Break	Research Talk #4 (Arici)	Specialized #6 (LaLonde)
2:30-3:00	Research Talk #2 (Schafhauser)		
3:00-3:30		Discussion	Discussion / End
3:30-4:00	Discussion	* Talk by Chris Phillips	
4:00-4:30			
4:30-5:00		Coffee and Discussion	
5:00-5:30			
5:30-6:00			
6:00-6:30	Dinner and Discussion	Dinner and Discussion	
6:30-7:00			
7:00-7:30			
7:30-8:00			

Survey Talks are 30 minutes. There are breaks after each survey talk during which we can get coffee and talk informally with the speaker about the topics of their talk.

Research Talks are 60 minutes.

At the end of each day we will have a 30 minute discussion where we can share ideas, brainstorm possible projects, and explore potential collaborations.

There will be dinners on Monday and Tuesday evening, as well as coffee time at a nice cafe on Tuesday, which will provide further opportunities for discussion.

* Chris Phillips is visiting the UH Math Department and will be giving a Seminar Talk 3:30-4:30 on Tuesday in Room 646 of building PGH. You are welcome to attend. Chris's title and abstract are included with the titles and abstracts for this workshop.

MONDAY

Speaker: Mark Tomforde
Subject: Introductory Talk on Cuntz-Pimsner Algebras

Speaker: Elizabeth Gillaspy

Subject of Survey Talk: (Higher-rank) graphs, their C*-algebras, and their K-theory

Title of Research Talk: Wavelets and spectral triples for (higher-rank) graphs

Abstract of Research Talk: In joint work with C. Farsi, A. Julien, S. Kang, B. Mesland, and J. Packer in varying constellations, we have discovered a neat connection between wavelets for (higher-rank) graphs (or, occasionally, Cuntz-Pimsner algebras) and several flavors of spectral triples for the associated C*-algebras. In this talk I will introduce and motivate the various spectral triple constructions, describe the relevant wavelet decompositions, and highlight the connections between the two. An open problem would be finding a joint generalization of the results I will discuss for higher-rank graphs and for Cuntz-Pimsner algebras to the setting of product systems.

Speaker: Christopher Schafhauser

Subject of Survey Talk Classification of C*-algebras

Title of Research Talk: Traces on topological graph algebra

Abstract of Research Talk: A topological graph E consists of a pair of locally compact Hausdorff spaces E^0 and E^1 of vertices and edges, respectively, and range and source maps $r, s\colon E^1 \to E^0$ such that r is continuous and s is a local homeomorphism. There is an associated C*-correspondence over $C_0(E^0)$ given as a completion of $C_c(E^1)$ and hence a corresponding Cuntz-Pimsner algebra $\mathrm{C}^*(E)$ which agrees with the usual Cuntz-Krieger graph C*-algebras in the case E^0 and E^1 are discrete. A few years ago, I described the space tracial states on $\mathrm{C}^*(E)$ which are invariant under the gauge action on $\mathrm{C}^*(E)$ – it is isomorphic the the space of Radon probability measures on E^0 which are invariant under a certain action of E^1. I'll discuss this result and some problems which were left open.

TUESDAY

Speaker: Robin Deeley

Subject of Survey Talk: C*-algebras and hyperbolic dynamical systems (more specifically the construction of C*-algebras from Smale spaces).

Title of Research Talk: The K-theory of the stable and stable Ruelle algebras of a Wieler solenoid

Abstract of Research Talk: Wieler has shown that every irreducible Smale space with totally disconnected stable sets is a solenoid (i.e., obtained via a stationary inverse limit construction). Through examples I will discuss how this allows one to compute the K-theory of the stable algebra, S, and the stable Ruelle algebra, $S \rtimes Z$. These computations involve writing S as a stationary inductive limit and $S \rtimes Z$ as a Cuntz-Pimsner algebra. These constructions reemphasize the view point that Smale space C*-algebras are higher dimensional generalizations of Cuntz-Krieger algebras.

Speaker: Francesca Arici

Subject of Survey Talk: Noncommutative topology

Title of Research Talk: Noncommutative circle and sphere bundles via Cuntz-Pimsner algebras

Abstract of Research Talk: In this talk I will recall how Pimsner algebras of self Morita equivalences can be thought of as total spaces of quantum circle bundles, and the associated six term exact sequence in K-theory can be interpreted as an operator algebraic version of the classical Gysin sequence for circle bundles.

After reviewing this construction, I will report on work in progress concerning the construction of higher dimensional quantum sphere bundles in terms of Cuntz-Pimsner algebras of sub-product systems. Based on (past and ongoing) joint work with G. Landi and J. Kaad.

WEDNESDAY

Speaker: Jon Brown

Subject of Survey Talk: Etale groupoid C*-algebras

Title of Research Talk: Coordinatization of graded Cartan pairs.

Abstract of Research Talk: Let C^*-algebra that is acted upon by a compact abelian group. Suppose the fixed-point algebra of the action contains a Cartan subalgebra D satisfying an appropriate regularity condition, then A is the reduced C^*-algebra of a groupoid twist. Moreover the embedding $D \hookrightarrow A$ is uniquely determined by the twist. These results generalize Renault's results on Cartan subalgebras of

Speaker: Scott LaLonde

Subject of Survey Talk: Groupoid C*-algebras and Crossed Products

Title of Research Talk: Morita equivalence of groupoids and their C*-algebras

Abstract of Research Talk: In this talk I will discuss some of my work on groupoid C*-algebras, crossed products, and Fell bundles, with Morita equivalence as a central theme. In particular, I will mention some structural results pertaining to nuclearity and exactness of C*-algebras associated to groupoids, as well as exact groupoids. I will also describe some unfinished work related to moves on graphs, including some possible questions about generalizing these moves to other objects (such as topolgical graphs, inverse semigroups, or higher-rank graphs).

IS THERE A CUNTZ-PIMSNER CONSTRUCTION FOR L^p OPERATOR ALGEBRAS?

N. CHRISTOPHER PHILLIPS

ABSTRACT. For $p \in (1, \infty)$, and to some extent for $p = 1$, there is a recently initiatated theory of operator algebras on L^p spaces. Surprisingly, despite the lack of an adjoint, there are analogs with partially similar behavior of some of the standard examples in C*-algebras, including AF algebras, Cuntz-Krieger algebras, full and reduced crossed products, groupoid C*-algebras, and the Toeplitz algebra. There are also ways in which the behavior is quite different. For example, when $p \neq 2$ there is much more rigidity.

The Cuntz-Pimsner construction generalizes Cuntz-Krieger algebras and crossed products by $\mathbb{Z}$, both of which have L^p operator algebra analogs. In one other case, an L^p operator version has been done "by hand", namely L^2 as a $\mathbb{C}$–$\mathbb{C}$ bimodule. For $p \neq 2$, the algebras one gets from $l^p(\mathbb{N})$ and $L^p([0, 1])$ are not isomorphic to each other.

In this talk, I will give a brief introduction to L^p operator algebras. Then I will describe some of the algebras corresponding to some cases of the Cuntz-Pimsner construction, describe ways in which they resemble and don't resemble the corresponding C*-algebras, say something about what has been done with these algebras, and state some open problems.

Date: 17 December 2019.