

New Hampshire Operator Theory Symposium 2010

Schedule of Events

10:00 - 11:00

Speaker: Emily Peters

Title: Planar algebras and exotic subfactors

Abstract: Subfactors (of von Neumann algebras) have a strong invariant, introduced by Jones, called the "planar algebra." The main advantage of working with planar algebras is that we can prove subfactor theorems by drawing pictures. In this talk, I will introduce planar algebras and describe recent work with Bigelow, Morrison and Snyder on constructing exotic subfactors. This work completes the classification, begun by Haagerup in 1994, of small-index subfactors with index less than $3 + \sqrt{3}$.

11:00 - 12:00

Speaker: Junhao Shen

Title: II_1 factors with a single generator

Abstract: Generator problem for von Neumann algebras asks whether every von Neumann algebra on a separable Hilbert space is generated by two self-adjoint operators, or by a single generator. In the talk, we will discuss generator problem for II_1 factors by introducing a new invariant for II_1 factors firstly. Then we will explain how this invariant is related to generator problem. Next we will compute this invariant for various types of II_1 factors and provide new examples of II_1 factors with a single generator.

12:00 - 1:30

Lunch in Kemeny 300

1:30 - 2:30

Speaker: Don Hadwin

Title: MF Traces and a Lower Bound for the Topological Free Entropy Dimension (joint with Qihui Li, Weihua Li, Junhao Shen)

Abstract: Suppose $\mathcal{A} = C^*(x_1, \dots, x_n)$ is an MF- C^* -algebra in the sense of Blackadar and Kirchberg. We define a family of traces, called *MF-traces*, on \mathcal{A} in a natural way from the definition of MF-algebra. We prove that the set of MF-traces on \mathcal{A} is nonempty, compact and convex. Suppose τ is an MF-trace on \mathcal{A} and π is the corresponding GNS representation, and suppose X is a selfadjoint operator in $\pi(\mathcal{A})''$. Then the topological free entropy dimension $\delta_{\text{top}}(x_1, \dots, x_n)$ is no less than the free entropy dimension of (x_1, \dots, x_n) with respect to τ . If \mathcal{A} has no finite-dimensional representation or infinitely many inequivalent finite-dimensional representations, then $\delta_{\text{top}}(x_1, \dots, x_n) \geq 1$. Let J be the largest ideal annihilated by all the MF-traces. If $\mathcal{A}\backslash J$ is finite-dimensional or \mathcal{A} is nuclear and $\mathcal{A}\backslash J$ is RFD, or if \mathcal{A} is nuclear and every trace on \mathcal{A} is an MF-trace, then $\delta_{\text{top}}(x_1, \dots, x_n) = 1 - \frac{1}{\dim(\mathcal{A}\backslash J)}$.

2:30 - 3:30

Speaker: Qihui Li

Title: Amalgamated Free Products of MF Algebras

Abstract: The concept of MF algebras was introduced by Blackadar and Kirchberg in 1997. This class of C^* -algebras is of interest for many reasons. For example, it plays an important role in the classification of C^* -algebras. In this talk, we will discuss the full amalgamated free products of unital MF algebras and residually finite-dimensional algebras with amalgamation over a finite-dimensional C^* -subalgebra. The reduced free product construction, and more generally the reduced amalgamated free product construction for C^* -algebras was introduced independently by Voiculescu and Avitzour. At the end of this talk, we will give a new result about the reduced amalgamated free product of two full matrix algebras.

3:30 - 4:00

BREAK

4:00 - 5:00

Speaker: Matt Mahoney

Title: An Intermediate Category Between KK and E

Abstract: One can think of Kasparov's KK-theory and Connes and Higson's E-theory as categories in which the objects are C^* -algebras. The morphisms in these categories are, respectively, homotopy classes of KK-cycles and homotopy classes of asymptotic morphisms. There is a canonical functor from KK to E, which is a natural equivalence in many (but not all) cases. In this talk, I will discuss an intermediate category of (graded) C^* -algebras which factors the canonical functor from KK to E. The arrows of this new category are constructed out of data called "asymptotic pairs", which are similar to unbounded KK-cycles, but subject to a weaker equivalence relation. The usefulness of this new category will be shown in an explicit composition product formula in the new category that extends the usual composition product of KK-theory.

DINNER

Dinner will be at Jesse's in Hanover. The reservation is for 6:15. From Dartmouth, take N. Park St South, back towards I-89. Continue straight through the funny intersection, with the Hanover Co-Op on the left, and onto Rt 120. The restaurant is on the left at the second set of lights and there is a gas station to the right.