Logic and Operator Algebras
Logique et Algèbres d'opérateurs
(Org: **Ilijas Farah** (York) and/et **Bradd Hart** (McMaster))

BRUNO DE MENDONCA BRAGA, York

IONUT CHIFAN, Iowa

ILAN HIRSHBERG, Ben-Gurion University of the Negev
Mean cohomological independence dimension and radius of comparison

I will report on joint work in progress with N. Christopher Phillips.

In 2010, Giol and Kerr published a construction of a minimal dynamical system whose associated crossed product has positive radius of comparison. Subsequently, Phillips and Toms conjectured that the radius of comparison of a crossed product should be roughly half the mean dimension of the underlying system. Upper bounds were obtained by Phillips, Hines-Phillips-Toms and very recently by Niu, however there were no results concerning lower bounds aside for the examples of Giol and Kerr. In the non-dynamical context, work of Elliott and Niu suggests that the right notion of dimension to consider is cohomological dimension, rather than covering dimension (notions which coincide for CW complexes). Motivated by this insight, we introduce an invariant which we call "mean cohomological independence dimension" (more precisely, a sequence of such invariants), for actions of countable amenable groups on compact metric spaces, which are related to mean dimension, and obtain lower bounds for the radius of comparison for crossed products in terms of this invariant.

SE-JIN KIM, University of Waterloo
Some logical aspects of hyperrigidity and C*-envelopes of operator systems

Hyperrigidity and the C*-envelope of an operator system provide an interesting interplay between operator systems and the theory of C*-algebras. In this talk we look at these properties from two contrasting viewpoints. On the one hand, we show that both hyperrigidity and C*-envelopes reflect to separable substructures in the sense of Farah. On the other hand, we show that hyperrigidity and C*-envelopes are badly behaved with respect to elementary equivalence. In particular, we find a sequence of hyperrigid operator systems whose ultraproduct is not hyperrigid and we find operator systems which are elementarily equivalent but whose C*-envelopes are not elementarily equivalent.

STEVEN LAZZARO, McMaster

LEONEL ROBERT, Louisiana

CHRIS SCHAFHAUSER, Nebraska

THOMAS SINCLAIR, Purdue

AARON TIKUISIS, University of Ottawa
Local-to-global tracial transfer of C*-algebra properties

In work on the Toms-Winter conjecture, a property called CPoU (complemented partitions of unity) was developed which provided a bridge between von Neumann algebra theory and C*-algebras. To be precise, it was used to prove that certain properties of tracial von Neumann algebras also hold for the uniform tracial ultraproduct of C*-algebras with CPoU. This has led to further applications in a new approach to the classification of C*-algebras.

However, the property was in many ways unsatisfactory due to a disconnect between what the property CPoU says and what it is really used for. I will discuss a model-theoretic analysis, which allows us to establish an equivalent* property (*: up to a small technicality), which captures much better how one should think of CPoU.