

THEMATIC SESSION: Operator algebra

Dynamical comparison and \mathcal{Z} -stability for crossed products of simple C^* -algebras.

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A question that has recently attracted considerable attention among researchers in C^* -algebras is whether the crossed product of a stably finite classifiable C^* -algebra by an amenable discrete group is \mathcal{Z} -stable, the latter being a key property in the framework of classifiable C^* -algebras. While conjecturally the answer could always be affirmative, all known arguments rely on certain topological assumptions on the tracial simplex of the algebras considered. We use an adaptation of dynamical comparison from topological dynamics to expand the current knowledge on the topic, verifying in particular the conjecture for certain actions of the integers on C^* -algebras whose trace space is a Bauer simplex and whose boundary is not necessarily finite dimensional.

We will introduce the notion of diagonal dimension for diagonal pairs of C^* -algebras in the sense of Kumjian, and will compare it with the usual nuclear dimension for C^* -algebras. For instance, the Jiang-Su algebra \mathcal{Z} admits a diagonal MASA \mathcal{D} such that the diagonal dimension of $(\mathcal{Z}, \mathcal{D})$ is equal to n for any given natural number n even though the nuclear dimension of \mathcal{Z} is equal to 1. We also show that the diagonal dimension of a uniform Roe algebra with respect to the standard diagonal is equal to the asymptotic dimension of its underlying metric space. Finally, we will discuss its relation to the dynamic asymptotic dimension of groupoids introduced by Guentner, Willett and Yu and the tower dimension of topological dynamical systems introduced by Kerr.

This is joint work with Hung-Chang Liao and Wilhelm Winter.