THEMATIC SESSION: Operator Algebras

Almost elementary dynamical systems and the classification of simple nuclear C*-algebras

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The classification of simple nuclear C*-algebras by K-theory and traces has seen vast progress in the past decades, developing from investigating mostly examples to a systematic, almost complete classification result. It turned out that not all simple nuclear C*-algebras can be classified, but a very large class of algebras can and is characterised by different equivalent regularity properties. Dynamical systems provide a rich source of examples of simple nuclear C*-algebras via the crossed product construction. Necessary and sufficient criteria for when crossed product algebras are classifiable are still lacking. We will review the crossed product construction and introduce almost elementariness, a regularity property for C*-algebras and dynamical systems. For C*-algebras this notion gives a new equivalent characterisation of classifiability, and for dynamical systems the condition appears close to being equivalent to classifiability of its crossed product algebra. It requires simultaneous approximations for the action and the algebra to exist, up to a small remainder.

This is joint work with my coauthors Joan Bosa, Francesc Perera and Jianchao Wu.