Nuclearity and generalized inductive limits

Kristin Courtney
WWU Münster
kcourtne@uni-muenster.de
Wilhelm Winter
WWU Münster
wwinter@uni-muenster.de

Part of Alain Connes' groundbreaking work in von Neumann algebra theory was to show that any von Neumann algebra which can be well-approximated by matrix algebras can actually be built from matrix algebras via an inductive limit construction, i.e., semi-discrete von Neumann algebras are hyperfinite. In the setting of C*-algebras, such a tidy result is too much to ask. The C*-analogue of the semi-discrete von Neumann algebras are nuclear (or amenable) C*-algebras, and many of these, such as the Cuntz algebras or irrational rotation algebras, are not inductive limits of finite dimensional C*-algebras. Building on work of Blackadar and Kirchberg, we give a generalization of inductive systems for C*-algebras, which allows us to characterize separable nuclear C*-algebras as (generalized) inductive limits of finite dimensional C*-algebras.