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The classification of well-behaved simple amenable C^* -algebras and applications

Abstract.

Amenable von Neumann algebras with separable predual have been classified for over thirty years, in terms of the Connes–Takesaki flow of weights (a functor for isomorphism, which determines isomorphism classes).

Separable amenable C^* -algebras satisfying a regularity condition have recently also been classified, in terms of K -theoretical data (a functor for homomorphisms, which determines isomorphism classes).

As a consequence of this classification, for either class of algebras, which in particular includes what values of the invariant are possible, a complete collection of models can be described, and the construction of these can be tailored to reveal interesting properties.