

Classification of C^* -algebras

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Classification is of fundamental importance in mathematics: to what extent can we distinguish two complicated mathematical objects by a simpler invariant? To every unital C^* -algebra A , one may assign its Elliott invariant. This consists of two abelian groups $K_0(A)$ and $K_1(A)$, the tracial state space $T(A)$, and a pairing map between tracial states and states on $K_0(A)$. Elliott conjectured that for any two separable simple unital nuclear C^* -algebras A and B , there exists a $*$ -isomorphism between A and B if and only if there exists an isomorphism of their Elliott invariants. The conjecture has been proven for many subclasses of separable simple unital nuclear C^* -algebras, but is now known not to hold in full generality, leading to reformulations of the conjecture. In this talk I will introduce the main concepts and milestones in the classification programme and discuss some of the interesting open problems.