# Weakly Stable Relations and Inductive Limits of $C^*$-Algebras

by

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## Abstract

We show that if $\mathcal{A}$ is a class of $C^*$-algebras containing a sequence $A_i$ and if $\mathcal{R}$ is a set of relations that is weakly stable for the class $\mathcal{A}$, then $\mathcal{R}$ is weakly stable for the class $\mathcal{B}$ defined by $\mathcal{A}$ together with any inductive limit $\varinjlim A_i$. Weak stability for a class $\mathcal{C}$ of $C^*$-algebras means that, in any $C^*$-algebra $A \in \mathcal{C}$, close to an approximate representation there is an exact representation.

We include examples of classes where some relations are not weakly stable. These relations give presentations for two-dimensional non-commutative CW-complexes.

We also prove that exact representations of the anti-commutation relations in any $C^*$-algebra always have non-exact representations near them.