The zero-product structure of C^*-algebras

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Abstract

It is well-known that every C^*-algebra is determined by its linear and multiplicative structure: Two C^*-algebras are $*$-isomorphic if and only if they admit a multiplicative, linear bijection.

We study if instead of the whole multiplicative structure it suffices to record when two elements have zero product. While it is not clear if every C^*-algebra is determined this way, we obtain many positive results. In particular, two unital, simple C^*-algebras are $*$-isomorphic if and only if they admit a linear bijection that preserves zero products.

This is joint work with Eusebio Gardella.