C^*-Algebras, and Gelfand-Naimark Theorems

Luke Armitage

University of York

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Definitions

C* algebra state, pure state * isomorphism representation, faithful representation

Examples

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Cool Asides

how these are forced by C* axiom

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G-N Theorems

Theorem (Commutative)

Every Abelian C^*-algebra A is $*$-isomorphic to $C(\mathscr{P}(A))$, the algebra of continuous functions on the compact Hausdorff space $\mathscr{P}(A)$ of pure states on A.

G-N Theorems

Theorem (Commutative)

Every Abelian C^*-algebra A is $*$-isomorphic to $C(\mathscr{P}(A))$, the algebra of continuous functions on the compact Hausdorff space $\mathscr{P}(A)$ of pure states on A.

Theorem

Every C^*-algebra has a faithful representation.

The GNS Construction

The method used to prove the GN theorem. Given a state on a C* algebra, we can construct We take

References

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