

Self-similarity and fundamental group of simple C^* -algebras

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An object is self-similar if some parts of it are similar to the whole. Typical examples are the Julia set of a rational function in complex dynamical systems and the fundamental of a type II_1 factor in operator algebras. We study a relation between self-similarity in geometric objects and self-similarity in operator algebras. We introduce the fundamental group $F(A)$ of a simple C^* -algebra A with a unique trace. Any countable subgroup of the multiplicative group of positive real numbers can be realized as the fundamental group $F(A)$ of a separable simple C^* -algebra A . We show that the degree of a rational function is in the fundamental group $F(A)$ of the C^* -algebra associated with a rational function on the Julia set.

This is based on joint works with Kajiwara and Nawata.

References

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