An introduction to noncommutative geometry

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Abstract

We give a brief and, hopefully, easily accessible introduction to the field of noncommutative geometry. For us, noncommutative geometry is the study of group actions on topological spaces using the traditional tools of algebraic topology. Interesting group actions are complicated, and may have isotropy, which means that the process of forming some sort of quotient topological space from the action does not result in a tractable object. But it is possible to construct a C*-algebra from a group action, and this C*-algebra plays the role in some sense of the C*-algebra of functions on the quotient space. All this will be explained in more detail. We will end by explaining an analogue of the famous Lefshetz fixed-point theorem that holds for a certain class of noncommutative C*-algebras.

This talk should be accessible to graduate students.