K-theory, dynamics, and the classification of C^*-algebras

Andrew Toms
York University

Thursday, April 3, 2008
007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

A C^*-algebra is a norm-closed self-adjoint subalgebra of the bounded linear operators on Hilbert space. K-theory is, roughly speaking, the algebraic topology these algebras. In 1960 James Glimm proved that C^*-algebras obtained as nested unions $n \times n$ matrices could be classified up to isomorphism by an invariant which was later recognised as K-theory. This was a bit surprising, as algebraic topology certainly does not classify CW-complexes up to homeomorphism! Glimm's result was later extended to locally finite-dimensional C^*-algebras by George Elliott, and this marked the beginning of what is now known as the Elliott Program, an effort to classify separable amenable C^*-algebras using K-theoretic invariants. In this talk I will give an introduction both to K-theory for operator algebras and to the results of Glimm and Elliott, followed by a history to date of Elliott's program and its connections to dynamics.

The talk will be accessible to senior undergraduates.

This talk should be accessible to undergraduates.

1206726610