Speaker: Nigel Higson

Title: C^*-algebras, noncommutative geometry and the Mackey bijection

Abstract: In the 1970's George Mackey suggested that there ought to be a correspondence between most irreducible unitary representations of a real reductive group G and the irreducible unitary representations of its so-called Cartan motion group (which is a much easier group to understand). Mackey's idea was kept alive by Alain Connes, who noticed a related correspondence in operator K-theory, and eventually a precise bijection was constructed between the irreducible "tempered" unitary representations of G and the irreducible unitary representations of its motion group (the final, decisive steps were taken by Alexandre Afgoustidis in his thesis). I'll review these developments, and then examine the next challenge: to give a conceptual explanation of the phenomenon that Mackey predicted. Here there are some interesting possibilities that seem to fit squarely within C^*-algebraic noncommutative geometry. This is joint work with Angel Roman.