Title: Continuous fields of twisted k-graph algebras inducing isomorphisms in K-theory.

Speaker: Aidan Sims (University of Wollongong)

Time and Dates: 3:30pm Thursday, 30 August and 6 September, 2012

Location: Room 15.113 (Access grid room)

Abstract: In 1984, Elliott famously proved that the $K$-groups of a noncommutative torus are independent of the angles of rotation appearing in the commutation relations. The fundamental idea of Elliott’s beautiful argument is that for each noncommutative torus $A_z$ one can construct a continuous field of $C^*$-algebras over $[0, 1]$ whose fibre over 0 is $A_1 \cong C(\mathbb{T}^k)$, and whose fibre over 1 is $A_{\bar{z}}$. An elegant induction combining naturality of the Pimsner-Voiculescu sequence and the Five Lemma then proves the desired result.

In this series of two talks, I will discuss how Elliott’s idea can be applied to twisted $k$-graph $C^*$-algebras. In the first talk I will describe how, given an abelian group $A$, each $A$-valued 2-cocycle on a $k$-graph $\Lambda$ determines a continuous field over the dual group $\hat{A}$ of twisted $k$-graph algebras, and present a couple of key examples. In the second talk, I will explain how to apply Elliott’s argument to obtain an isomorphism $K_*(C^*(\Lambda, c)) \cong K_*(C^*(\Lambda))$ whenever $c$ has the form $c(\mu, \nu) = \exp(ir(\mu, \nu))$ for some real-valued 2-cocycle $r$ on $\Lambda$.

This is joint work with Alex Kumjian and David Pask.