

**IMIA Operator Algebra Seminar**  
University of Wollongong

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  $A_z$ . 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  $\widehat{A}$  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.