

IMIA Operator Algebra Seminar
University of Wollongong

Title: The noncommutative geometry of the Quantum Hall effect

Speaker: Chris Bourne (Australian National University)

Time and Dates: 3:30pm Thursday, 11 October 2012

Location: Room 15.113 (Access grid room)

Abstract: The Quantum Hall effect was one of the first physical systems whose description relied on purely topological notions. Many descriptions of the effect arose soon after its discovery, but the first rigorous explanation that did not rely on unrealistic physical assumptions was due to Bellissard who used ideas from Connes' noncommutative geometry. In this talk, I will explain Bellissard's description of the effect using the more modern machinery of spectral triples. Time permitting, I will then explain how such a viewpoint gives an insight into so-called topological insulators, a relatively new phenomenon. I will aim to do this while keeping any assumed physics knowledge to a minimum.