

**IMIA Operator Algebra and Noncommutative Geometry Seminar**  
University of Wollongong

Title: Spectral triples, symmetric spectral triples and relative spectral triples.

Speaker: Iain Forsyth (University of Wollongong/Australian National University)

Time and Date: 3:30pm Thursday, 19 June 2014

Location: Room 39C.meeting room

Abstract: Spectral triples are a geometric way to obtain Fredholm modules and hence K-homology classes. There have been some attempts in the literature to slightly weaken the definition of a spectral triple, but recent work by Mesland, Rennie and myself shows that this seemingly harmless modification results in a failure to obtain a Fredholm module. Such a problem in particular occurs when one attempts to construct a spectral triple for the algebra of smooth functions on a manifold with boundary. I will discuss how one can instead construct spectral triples for the algebra of functions vanishing on the boundary, or the algebra of functions constant on the boundary. I will also discuss symmetric spectral triples (due to Hilsun) and relative spectral triples, which are generalisations of spectral triples particularly suited to manifolds with boundary.