IMIA Operator Algebra Seminar
University of Wollongong

Title: Noncommutative geometry and a local index formula in conformal geometry.

Speaker: Raphael Ponge (Seoul National University)

Time and Dates: 3:30pm Thursday, 23 August 2012

Location: Room 24.203

Abstract: In this talk, we shall make use of noncommutative geometry to obtain an index theorem in conformal geometry. This index theorem follows from an explicit and geometric computation of the Connes-Chern character of Connes-Moscovici's conformal Dirac twisted spectral triple. This (twisted) spectral triple encodes the geometry of the group of conformal diffeomorphisms on a spin manifold. The crux of of this construction is the conformal invariance of the Dirac operator. As a result, the Connes-Chern character is intimately related to the CM cocycle of an equivariant Dirac spectral triple. We compute this equivariant CM cocycle by heat kernel techniques. On the way we obtain a new heat kernel proof of the equivariant index theorem for Dirac operators. (Joint work with Hang Wang.)