University of Crete
Departments of Mathematics and Applied Mathematics

Analysis Seminar

10:00am, Wednesday, 29 January 2020
Room A-303

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A twisted local index formula for curved noncommutative four tori

We consider the Dirac operator of a metric in a basic conformal class on the noncommutative four torus, twisted by an idempotent (representing the K-theory class of a general noncommutative vector bundle), and derive a local formula for the Fredholm index of the twisted Dirac operator. Our approach is based on the McKean–Singer index formula, and explicit heat expansion calculations by making use of Connes' pseudodifferential calculus. As a technical tool, a rearrangement lemma recently proven in our previous paper (which considers the case of noncommutative two tori) is used to handle challenges posed by the noncommutativity of the algebra and the presence of an idempotent in the calculations in addition to a conformal factor.