MP 2: Noncommutative Geometry

Zeit: Dienstag 9:30–10:20   Raum: JUR H

MP 2.1   Di 9:30   JUR H

Spectral distance on the Moyal plane — •Pierre Martinetti — Universität Göttingen and Courant Centre

We compute the spectral distance, defined in Connes' Noncommutative Geometry, in the Moyal plane. We find that the distance between the eigenstates $m, m + 1$ of the quantum harmonic oscillator is proportional to $m^{-1/2}$. We also show how to truncate the Moyal spectral triple in order to obtain quantum metric spaces in the sense of Rieffel.

MP 2.2   Di 9:55   JUR H

Conjugate variables in quantum field theory: the conformal case — •Burkhard Eden and Klaus Sibold — Universität Leipzig, Institut für theoretische Physik, Vor dem Hospitaltore 1, 04103 Leipzig, Deutschland

Within standard quantum field theory of one scalar field we devise a scheme of constructing operators conjugate to the energy-momentum operators of the theory. We require them to arise from local operators, to represent charges, to transform as a vector under Lorentz transformations and to have dimension -1. These specifications single out the charges generating special conformal transformations. We solve all relevant eigenvalue problems, relate them to each other and reconstruct ordinary Fock space in terms of the eigenstates. We have a look at Pauli's theorem, point out applications of these conjugate operators and discuss the extension of the construction to other models.