Prof. Dr. Rainer Verch (Leipzig) Quantum Dirac Field on Moyal-Minkowski Spacetime

TIME:
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Universität Potsdam
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A sketch of an approach towards Lorentzian spectral geometry (based on joint work with Mario Paschke) is described, together with a general way to define abstractly the quantized Dirac field on such Lorentzian spectral geometries. Moyal-Minkowski spacetime serves as an example. The scattering of the quantized Dirac field by a non-commutative (Moyal-deformed) action of an external scalar potential is investigated. It is shown that differentiating the S-matrix with respect to the strength of the scattering potential gives rise to quantum field operators depending on elements of the non-commutative algebra entering the spectral geometry description of Moyal-Minkowski spacetime, in the spirit of "Bogoliubov's formula'', in analogy to the situation found in external potential scattering by a usual scalar potential.

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