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Abstracts of Short Communications and Posters

Section:

11. Mathematical Physics

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Quantum fields over noncommutative tori
A noncommutative spin geometry is a real spectral triple satisfying Connes' axioms; an example is given by the Dirac operator on a noncommutative 3-torus. These geometries are first-quantized fields and their Fredholm module structure allows to proceed to second quantization. The "quantum dimension" of this system can be computed from the Fredholm character and compared to the classical dimension of the spectral triple. This comparison is carried out for noncommutative tori, and is shown to be related to the fundamental local index theorem in noncommutative geometry. These results are joint work with J. M. Gracia-Bondía.
Reference: J. C. Várilly and J. M. Gracia-Bondía, On the ultraviolet behaviour of quantum fields over noncommutative manifolds, `hep-th/9804001`, San José, 1998.