A rigorous path integral for supersymmetric quantum mechanics and the Atiyah-Singer index theorem for the twisted Dirac operator

Abstract:
Alvarez-Gaum gave arguments based on path integrals in supersymmetric quantum mechanics for index theorems including the Gauss-Bonnet-Chern, Hirzebruch, and Atiyah-Singer theorems. In this talk, I summarize these heuristic arguments, and describe a new construction of path integrals. This is also a new construction of the heat kernel for a generalized Laplacian, and leads to rigorous path-integral proofs of these index theorems.

Host: David Meyer

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