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Signature quantization

Let $M = M^{2d}$ be a compact oriented manifold, L a line bundle over M and $\widetilde{N}$ a connection on this bundle. If the curvature form of this connection is symplectic one can associate with $(M, L, \widetilde{N})$ an elliptic operator: the spin-C Dirac operator, and the virtual vector space

$$Q(M) = -\operatorname{coKer} D \oplus \operatorname{Ker} D$$

is called the quantization of M. Signature quantization replaces the spin-C operator in this definition by the L-twisted signature operator, and I'll discuss in my talk "signature" analogues of a number of well-known theorems in the theory of spin-C quantization such as Kostant's theorem, the Bott-Borel-Weil theorem, the Khovanski theorem and the "quantization commutes with reduction" theorem.