Towards the index theorem on non-compact manifolds

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Abstract

One of the most exiting achievements of mathematics in the second half of the 20'th century is the Atiyah-Singer index theorem, asserting that the analytical and topological index of an elliptic operator on a compact manifold coincide. In the talk I will review the definitions of analytical and topological index and some of their generalizations, including the index of transversally elliptic operators, constructed by Atiyah in 1974. Then I'll discuss some extensions of these notions to non-compact manifolds, due to Atiyah, Vergne, Paradan and myself and will state an index theorem for equivariant Dirac operator on a non-compact manifold.