

The Oliver Club

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A Hirzebruch Riemann-Roch Theorem for Differential Operators

Let E be a holomorphic vector bundle over a compact complex manifold X . The Hirzebruch Riemann-Roch Theorem computes the Euler characteristic of E in terms of its Chern character and the Todd class of the tangent bundle of X . Every holomorphic differential operator D on E induces endomorphisms on each cohomology group of X with coefficients in E . The alternating sum of the traces of these endomorphisms yields the supertrace (or Lefschetz number) of D . Note that the supertrace of the identity on E is precisely the Euler characteristic of E . In recent years, a Hirzebruch Riemann-Roch theorem for differential operators has been proven by at least two different approaches. This result says that the Lefschetz number of D is the integral over X of a class in the top cohomology of X constructed out of D . In this talk, I shall sketch one of the approaches to this result. This result provides a direct bridge between the algebraic index theorem of Bressler, Nest and Tsygan and the Hirzebruch Riemann-Roch theorem.



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Thursday, March 26, 2009
at 4:25 PM in 251 Malott Hall

Refreshments will be served at 3:55 PM in the Mathematics Department lounge (532 Malott Hall).