

Holomorphic analytic torsion

Abstract:

The R-torsion was introduced by Reidemeister to distinguish between spaces that are homotopically equivalent but not homeomorphic. Thus it is a very subtle topological invariant. Later Ray and Singer introduced the analytic torsion, and the holomorphic analytic torsion, that can be seen as infinite dimensional analogues of the R-torsion.

Bismut and collaborators have defined higher analytic torsion forms for submersions, that play an important role in the index theorem and in the Riemann-Roch theorem.

In this talk we will review the theory of analytic torsion, we will show how to extend the definition of analytic torsion to arbitrary morphisms, and discuss its role in the arithmetic Riemann-Roch theorem.